

BSc (Hons) Computer Science

Comparing ASP.NET and Web Builder Development Methods

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28/03/2019

Supervisor: Chris Armstrong

Declaration

This dissertation is submitted in partial fulfilment of the requirements for the degree of Computer Science (Honours) in the University of the West of Scotland.

I declare that this dissertation embodies the results of my own work and that it has been composed by myself. Following normal academic conventions, I have made due acknowledgement to the work of others.

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Course Description: BSc (Hons) Computer Science

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Dissertation Title: Comparing ASP.NET and Web Builder Development Methods

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Project Title: Comparing ASP.NET and Web Builder Development Methods.

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Outline of Project:

The project will investigate the differences in using Microsoft's ASP.NET Framework and a web builder platform to create web applications. The comparison will help indicate which option is better for a web developer to use in terms of development and how well web applications operate for both developers and users. The outcome of this research should also help highlight the shortcomings of web builder software and stress the requirement for professional web developers.

To compare these methods, development will be carried out on two websites using each approach. To ensure the comparison is consistent as possible, a basic prototype design will be created prior to actual development.

Once both approaches have been completed and compared it should show which is better in terms of development speed and performance elements such as scalability, functionality and usability. Other factors pre-existing will come into the comparison such as internet connectivity and experience.

A Passable Project will:

- Project will be researched to ensure the correct resources and skills are available and that elements of the research are compared correctly.
- Deliverables will be developed in an adequate fashion and tested.
- Documentation providing testing results and comparison between both approaches.
- Final deliverables should contain enough functionality to gather results.

A First-Class Project will:

- Deliverables will be completed in a robust fashion and testing should be consistent between both to collect solid results.
- Deliverables should be developed following a suitable methodology.
- Documentation should contain a clear process of how the deliverables were designed and developed along with in-depth results of findings with a detailed comparison plus should provide a critical analysis of the project.
- Results would be analysed with conclusions drawn.

Reading List:

I. Spaanjaars, 2010. Beginning ASP.NET 3.5: In C# and VB, 1st Edition

J. Skeet, 2013. C# in Depth, 3rd Edition

Resources Required: (hardware/software/other)

Desktop Computer with following:

Internet Connection (Website Builder may require a live connection) Microsoft Visual Studio (Development for ASP.NET) Microsoft Office (Produce documentation) Microsoft Visio (Produce designs for website) Website Builder (Various available, found online)

Marking Scheme:

Marks

e.g.	Introduction	5
-	Literature Review	15
	Web Design	15
	Development	25
	Testing & Analysis	20
	Conclusion	10
	Critical Self-Appraisal	10

Signed: Row Malker

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Paul Walker	Chris Armstrong	Rebecca Redden	Mark Stansfield

IMPORTANT:

- (i) By signing this form all signatories are confirming that the proposed Hons Project will include the student undertaking practical work of some sort using computing technology / IT, most frequently achieved by the creation of an artefact as the focus for covering all or part of an implementation lifecycle.
- (ii) By signing this form all signatories are confirming that any potential ethical issues have been considered and if human participants are involved in the proposed Hons Project then ethical approval will be sought through approved mechanisms of the School of CEPS Ethics Committee.

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ABSTRACT

The web development industry has been growing and changing over the last three decades bringing many different approaches for designing websites and applications. This research report compares two of these approaches which are web builder software and the ASP.NET Framework. The researcher firstly gathers existing information on web development and design to relate findings to the inexperienced and experienced in web development before designing their own websites using the mentioned approaches while gathering additional data via surveys & interviews. The results provide many contrasts and similarities between both methods along with great dependency on web design in general. This allows the researcher to conclude that while both methods differ, they are both vital to the modern world of web development along with the importance for potential people who wish to employ a website to understand what's required.

CHAPTER 1: INTRODUCTION

This research will attempt to dive into the differences of development for those who use website builders against those who use Microsoft's .NET Framework which requires more skills and knowledge to use. Understanding both approaches will allow advantages and disadvantages to be determined for both the inexperienced and experienced in web development. Results may assist others in various aspects if they are debating on wither to commit and learn a coding language to build their own applications or if they would rather use the easier option with builder software.

1.1. AIMS AND OBJECTIVES

The Aims of this research are to:

- Understand the differences in development methods between both web builder software and Microsoft's .NET Framework
- Understand the advantages and disadvantages of both these development approaches in the aspects of the inexperienced (e.g. Business CEO) and experienced (e.g. Web Developers)
- Design two websites using each approach to gather robust results for comparison

The Objectives of this research are to:

- Research into a web builder software and Microsoft's ASP.NET Framework
- Review current designs created via both approaches
- Design two websites using both approaches
- Perform a comparison on each to determine the advantages and disadvantages for the inexperienced (e.g. Business CEO) and experienced (e.g. Web Developers)
- Perform a comparison into which performs better in terms non-functional requirements

1.2. JUSTIFICATION

Ever since the internet came along, there have been webpages constantly being added for various reasons in professional or personal use and today there is generally something for everyone with roughly 200 million websites active as of 2017 (internetlivestats.com 2018). With the rapidly growing use of people using the internet daily, more will wish to leave their mark with their own websites or services. This traditionally required skills of a web developer with coding experience in various programming languages although it is now easier than ever before with the rise of website builder services which simplifies the process for inexperienced users.

CHAPTER 2: LITERATURE REVIEW

2.1. WEB DEVELOPMENT INDUSTRY

To understand the purpose of this research, a brief history of the web development industry will be discussed along with reasons that make websites a worthy option for people and businesses today before leading into the main discussion.

While it was a concept in the 1980s, the World Wide Web didn't become popular until the 1990's when many breakthroughs occurred. The first is the Hypertext Markup Language concept by Tim Berners-Lee which was created in 1990 which is the foundation of the World Wide Web and continues to be the heart of its infrastructure today. Technological breakthroughs continued in 1993 with the release of the Mosaic web browser which has been credited in some cases of being the first application to make the web accessible to the public with its user-friendly graphical interface and ease of use. It was due to this that others started noticing the potential in the web which resulted in businesses such as Google or Amazon taking advantage of the opportunity and such has turned them from mere influential examples into corporate giants today (Emery, C. 2016).

Through the 2000's, foundations of the web became stronger and the web became more of a mainstream place for telecommunications while advancements continued. This also led to rapid advancements in what some defined as evolutions of the web. In 2004, Dale Dougherty defined the term web 2.0 which brought in the ability to create website types and features popular for the mid 00's. These features can include blogs for posting content including images or text which could be considered one of the earliest forms of social networking. RSS feeds (Really Simple Syndication) which pulls in information from other websites or services to feature on webpages and Wiki's which allow public access to edit information about countless topics Aghaei, S., Nematbakhsh, M and Khosravi, H (2012).

Some of these advancements were the addition of Cascading Style Sheets (CSS) which allows more freedom in how content looks and is positioned. CSS also helped solve the problem with too many images slowing down websites since they would demand a lot of bandwidth and has been a bit of a problem even into recent times. With this new language, it helped reduce the number of images on websites by providing styling features which were originally handled by images. Zakas, N (2013). Another feature that came along was Flash video which allowed more multimedia and animation although this has since been made redundant due to HTML5 embedding video. (Emery, C. 2016).

This leads to modern times when promoting yourself, an interest you wish to share with others or for a business all benefit greatly from websites. Comparing a more traditional business that only operates locally without a website with a business that has a website, the differences will be great in many ways for the latter. This is due to many reasons which will be briefly discussed.

Websites are near essential for a business today as they exponentially extend your potential reach to people who share your interests or clients for business which in turn can increase your scope. The extended reach and scope lead into the fact that time zone no longer becomes a limiting factor as websites remain live constantly which makes them fundamental to get ahead of competition. When people wish to promote their products, having a website is a great utility as it provides a place where the product can be listed, displayed and coupled with all relevant information. This makes it easier for clients to scale up and assess a product to ensure it is suitable for them before purchasing while giving you or your business a highly professional and competent image (novasoftware.com).

Linking to having a professional image, a website is an official and credible source for information on you or your business which is great for those that don't have an accessible headquarters or office. This allows the website to become your office in a sense and all business enquiries can be done remotely (visswebsolutions.com).

2.2. Web Development Methods

With some history and a brief explanation as to the meaningfulness of web development explained, it leads into the options available today for creating websites. There are numerous options although for this research, four examples will be evaluated as to what makes them great approaches although only two will be developed as deliverables due to time constraints.

2.2.1 Web Builders

Despite all the great advancements with web development technology it was generally a different story in earlier years for practical development as some methods required people to learn coding languages to get the features they wanted their website to provide and how they wanted it to appear. This was combined with the time aspect as websites had to be manually written which was time consuming work. In result, most people who wanted a website would need to hire somebody else to do it which can be costly. This changed with web builder software services which made it simpler for people with no technical knowledge to build their own websites. There are many advantages for people to use web builders since the idea is to simplify the process, these applications generally feature user friendly interfaces with drag and drop interaction and no need for any coding which is an off putter for most people. Hostgator.com offers a definition of web builders:

"In general terms, website builders are all-in-one tools that let users build a site quickly, without needing to know any coding or site design skills." (Kelly-Barton, C. 2018)

The first major advantage of web builders which according to the definition is they save a lot of time. This makes web builders very appealing for those who wish to expand their business reach with a website but don't have much time to spend creating them. Users can simply pick from a range of existing templates, upload or link their content and publish to begin their online business. Having the website live and operating even if not entirely complete allows businesses to operate while editing may take place is possible with online web builders (Bailey, K. 2018).

The second main advantage also mentioned in the definition is lack of knowledge isn't a problem with web builders as there is no coding required or any professional design requirements. Web builders will allow users to pick and choose from various pre-existing design templates and styles and edit them to your own preference via a user-friendly interface (Bailey, K. 2018).

The third major point that isn't a part of the definition but still a fundamental advantage is cost. Many of these services have free trail periods or free accounts providing the essentials although more features may be available through premium profiles or packages. These services are available for online use through an internet browser or downloadable offline use although online providers also throw in hosting services for their users. This saves locating a 3rd party service to host their website therefore creating an all-in-one package. Downloadable options may also be optimal for the freedom to edit a website while offline or if traveling although offline solutions may require the user to find their own hosting solution which may add to the cost. Regardless of builder choice, it is clearly more affordable than hiring a professional developer to build your website and ensures you're getting exactly what you want for your money (Bailey, K. 2018).

2.2.2 ASP.NET

The next method of web development is through ASP.NET which equips web developers with the tools they need to build and write immersive applications. It's important to know that using ASP.NET requires experience with the coding language C# or Visual Basic to write much of the functionality and more custom styling requires some CSS knowledge. Wakefly.com have a definition for ASP.NET:

"ASP.NET is an open source, server-side web application framework created by Microsoft that runs on Windows and was started in the early 2000s. ASP.NET allows developers to develop web apps, services, and dynamic websites." (wakefly.com, 2018)

The origins of ASP.NET were created originally in the OOs as Active Server Pages and has evolved into the modern framework which it is today providing layers of services and infrastructure to aid developers in building vastly immersive web applications. ASP.NET offers many advantages over other web development methods in its area although some are up for debate compared with other methods such as PHP (Walker, P. 2018).

Firstly, to use ASP.NET the developer must have access to Microsoft's Visual Studio software which can be freely obtained from the Microsoft website although more features are available in the premium version. This provides the developer the environment where they can utilise what ASP.NET has to offer such as automatic deployment and a drag-and-drop interface like web builders. Using Visual Studio, developers can view a graphical view which gives a preview of what the page will appear like when published and allows responsive editing, so developers can ensure everything is right before deployment. The code view can be used for those who prefer to write their pages without any graphical indication but if a developer so chooses, both can be used at once on their screens which can give a wider range of view and preference.

Being able to develop a website quickly is something also possible via ASP.NET. This is due to while coding is still required to use ASP.NET, the coding requirements required are vastly lower compared to other coding methods. This is because when developers add objects onto their page, it creates the code automatically. This is done via a similar interface that some web builders have with a drag and drop interface so when users drag and drop items onto their page from one of many toolboxes, the code is created. This saves users from spending hours coding tedious HTML for positioning (Vidjaya, I. 2017).

Another great feature of ASP.NET is that it's a server-side technology which is helpful for those wishing to deploy websites quickly and to as many audiences possible. While computer technology constantly evolves, people may be left with older devices which client-side technologies aren't ideal for. ASP.NET can help these older devices by saving them from their browsers causing higher CPU usage needed to run the JavaScript on most websites. This also links to the fact not all browsers share equal support for JavaScript so if a user is using a browser that may not support some JavaScript features, ASP.NET will have already executed the operations on the server allowing the user to still use the website. Server-side technologies are also great for speeding up load times which is vital to get people to use a website as many will quickly leave a slow website (Wilson, M. 2015).

Since ASP.NET is a Windows creation, it reaps the benefits of having top grade security and monitoring features. Security is provided via Windows built-in authentication, so developers can be assured their webpages will be secure. In addition to this, ASP.NET constantly monitors active pages and can identify traits that indicate unlawful breaches such as infinite looping or memory leaking and once any illegal activity is identified, they will be terminated, removed and then the website may restart itself to return to typical operation. Another benefit from constant monitoring is a process fails then another will quickly replace it ensuring consistency in service. (Vidjaya, I. 2017).

2.3. EXAMPLES OF WEB BUILDERS AND ASP.NET TYPES

There are numerous web builders and ASP.NET versions available for use but also it's important that while there are web builders, there are also content management systems which work similarly. There are also many live examples of fully immersive websites designed by both web builders and ASP.NET of which some examples will be referred to. Some have advantages over others, but this research will only utilise two of these examples.

2.3.1 WordPress

WordPress is credited with being one of the first most successful solutions of an accessible option for regular people to create and publish their own web content. WordPress was created in 2003 originally as a tool to develop online blogs rather than websites which puts it in an older place of the spectrum among web development methods. This is because WordPress is considered a content management system instead of a web builder although the similarities are important to note when comparing to web builder. Today, WordPress can be used to create fully fledged websites due to various updates and development over its lifespan making it a top competitor for being a content management service. According to W3Techs:

"At the start of 2017, WordPress powered 27.3% of all websites. By October 2018, WordPress had made it to the current market share of 32.0%. Some quick math should tell you that WordPress gobbled up an additional 4.7% of the total website market – good for ~17.2% growth." (W3Techs.com, 2018)

This is a quite an important statement since it shows the growth of WordPress being used to power currently existing websites is constantly increasing and at a healthy pace along with a decent amount of growth of market share. These points are due to its aged popularity and various updates to the platform which has improved user experience which makes it reputable.

There are some advantages of using WordPress compared to other approaches, the first would be the themes it offers users to skin their websites. These themes in some ways are better than preexisting templates as they are more flexible for editing and can give clients more customisation for how they wish their website to appear. In addition to this, WordPress features plugins which enable a website to provide more functionality allowing for better engagement with users. These plugins require no coding knowledge and can be used to link a website to social media platforms e.g. Facebook or Twitter, provide videos from external sources e.g. YouTube or to simply allow viewing for images or photos in a smoother format e.g. Slideshows. WordPress sites are also very easy to update which makes it easier for websites to consistently provide new information for its users. According to Don Campbell:

"If you can create a Word document, you can publish a new article to your WordPress website." (Wolfe, L. 2018)

This statement expresses how easy it is to produce and publish an update on WordPress allowing for news to be quick and constant for viewers plus hassle free for the website owner or business (Wolfe, L. 2018).

Due to the popularity of WordPress, a client who chooses to make a website with them will have a better chance to gain a higher site ranking compared to a lesser known platform. To back this, major search engine Google have publicly shown their support for WordPress to those who wish to build websites for their businesses. This links into the support WordPress has due to its large community there is a deep pool of experienced web developers and designers or anyone with know-how to help people with obstacles they may encounter. This provides an efficient web development experience and promotes better learning. (Wolfe, L. 2018).

Since WordPress is an open-source platform, some feel it may not be adequate to meet the needs of large scale enterprises although many notable entities and companies utilise WordPress for their blogs or websites. For example, Figure 1. shows Sony Corporation use WordPress in their PlayStation Blog and use it to run their Sony Music Website.



Figure 1. Examples of Sony owned websites & blogs with WordPress (wpbeginner.com, 2018)

It isn't only companies that use WordPress either but also large popular franchises such as Star Wars use the platform to run their official blog along with popular television series The Walking Dead. The below images in Figure 2. shows some examples of these websites. (wpbeginner.com, 2018).

28. The Walking Dead – AMC

5. The Official Star Wars Blog

Figure 2. Examples of popular media franchise using WordPress (wpbeginner.com, 2018).

Looking at these examples it shows that WordPress has enough flexibility to provide something for everyone no matter their interest which makes it a viable web development solution while maintaining direct competition to the next example.

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<complex-block>

2.3.2 wix

WiX is a popular web builder service of recent years that has a more modern approach to helping people build websites compared to WordPress which some feel is slightly outdated. According to websitebuilderexpert.com:

"Over 132 million people use Wix worldwide! 82% of customers subscribing to Wix stay with them for a year or longer, and new users are signing up all the time, with an average of 45,000 new sign-ups every day. In fact, between April and June 2018, a huge 5.8 million users registered with Wix" (websitebuilderexpert.com, 2018)

These figures show WiX is offering a competitive service with a large amount of customers deciding to stick with it along with a large influx of new users daily. The below graph in Figure 3. also provides an insight to WiX's growth between 2017 and 2018. According to W3Techs, WiX has gone from 0.4% to just under 1% in usage terms within a year which shows a healthy growth increase.



Figure 3. Usage of WiX in websites (W3techs.com, 2018)

Outside of statistics, WiX offers both a basic web builder which is ran via its artificial design mode which makes it suitable for beginners to create a fully functional although basic websites without much difficulty. WiX can also provide a fully developed WiX editor which is more suitable for those with more experience and allows greater flexibility with editor options allowing developers to get their website to look and function more to their needs and standards (Wycislik-Wilson, M. 2018). WiX offers various plans for users and unlike many other website builder services, they won't tie clients into long term contracts. WiX users can start off with the free plan and if they desire some more features, can upgrade to an affordable plan on a monthly contract with the ability to cancel at any time (Gaille, B. 2016).

This point is an important concern with deciding which service to utilise as while web builders may be affordable, if a client isn't satisfied with what the service has to offer and had entered a long-term plan they cannot back out and are stuck with what they have which can be troublesome and perhaps restrictive for businesses.

Since WiX provides everything in a single package, users only need to contact their support team for solutions to their issues. This can save people searching the internet for solutions themselves which can be tedious and time consuming if the problem is unique. WiX although does have a FAQ area which can solve some problems quickly although these are mainly common problems and more case specific problems will require real support (Gaille, B. 2016).

Also included in the single package, WiX offers other important features such as speed and security. Regardless of the plan a client is using, the speeds are of average performance allowing them to compete with existing websites although more bandwidth is only available on more premium packages. Security isn't a concern for WiX users as all WiX websites are hosted by WiX themselves, so they are responsible for any breaches or exploits taking place on the websites. This in turn takes a load of responsibility off the client allowing them to focus on getting their website the way they want it (Gaille, B. 2016).

There are many successful websites that were created via WiX ranging from personal profiles and artists to clothing brands. These websites can be compared with WordPress and show there is a good degree of competition in the industry despite these methods work in different ways although in the end both methods result in well finished websites. The below Figure 4. shows some examples of clothing brands using WiX such as Jellyfish & Co and Adam McCain (Tuca, A. 2018).

7. Jellyfish & Co

3. Adam McCain



Figure 4. Current clothing brand websites created via WiX (themeisle.com, 2018)

The next examples in Figure 5. shows some artist and designer websites of Leandro Pedretti and Natalie Latinsky. Having a diverse pool of various website purposes makes WiX a great contender in the web development market (Tuca, A. 2018).

6. Leandro Pedretti

8. Natalie Latinsky



Figure 5. Current artist & illustrator websites created via WiX (themeisle.com, 2018)

2.3.3 ASP.NET Web Forms

As mentioned earlier, ASP.NET was developed from ASP or Active Server Pages in the early 00s and has become a leading web development method. According to W3Techs in Figure 6. below, it shows ASP.NET is used by websites that generally support high traffic although it is isn't used as a web development method as commonly compared to PHP.



ASP.NET Market Position, 20 Nov 2018, W3Techs.com

Figure 6. ASP.NET Market Position, W3Techs.com, 2018)

It's important to know there are several types of ASP.NET that weren't mentioned previously although this research will only cover two. This is because ASP.NET covers the main information that all the versions have although each other version has its advantages over each other. Firstly, the ASP.NET approach itself uses Web Forms to display layout which is done by following the page controller approach. This means there are controllers dictating every page which is where the code for that specific page is stored. This shows there is no separation of concerns present in ASP.NET as both the web form and its controller are linked together which can cause trouble with automated testing (webdevelopmenthelp.net, 2018).

ASP.NET uses viewstate to achieve stateful behaviour which means it is linked to the state of the server. The idea was when ASP.NET was being developed it was to provide developers with a similar development experience compared to WinForms although this causes the page size to be larger than it could be which can cause problems in web environments (webdevelopmenthelp.net, 2018).

Since ASP.NET is server-side it's able to provide a development environment which only takes minimal knowledge of HTML, CSS and JavaScript although since developers only need basic knowledge, it means there is less control over the coding languages than some developers may like which may cause unacceptable restrictions (webdevelopmenthelp.net, 2018).

The great advantage of ASP.NET Web Forms is the amount of control libraries that are available although it has less available access to other technologies hence it uses the Rapid Application Development approach. This makes ASP.NET more suitable for smaller websites or applications which don't require large teams to assemble (webdevelopmenthelp.net, 2018).

Many websites today have been built by the ASP.NET approach. W3Schools is a great example of this which is a free website used to teach coding basics of various languages as shown in Figure 7. below.



w3schools.com

Figure 7. W3Schools as an example of a website developed via ASP.NET (w3schools.com, 2018)

2.3.4 ASP.NET MVC

ASP.NET MVC (Model View Controller) is considered by some the more modern approach to use for web development over older ASP.NET Web Forms although it can depend on the project, cost and team size.

Unlike ASP.NET Web Forms, ASP.NET MVC uses a different approach for rendering its pages which is known as the front controller approach. This means there isn't a controller attached to each page and instead there is only a single common controller handling all pages which makes separation of concerns much better since views and controllers are completely separated and not locked together like the page controller approach. This makes automated testing a much easier feature of the MVC approach and is considered one of its leading features (webdevelopmenthelp.net, 2018).

ASP.NET MVC uses the opposite approach compared to ASP.NET Web Forms which is the stateless approach allowing better output although due to this, it means developers will need in-depth knowledge of HTML, CSS and JavaScript. Despite the deeper coding knowledge required, it allows more control over the code compared to the limitations on ASP.NET Web Forms (webdevelopmenthelp.net, 2018).

ASP.NET MVC does not follow the rapid application development approach which is considered a disadvantage of the method as it decreases productivity within development teams although overall this approach is better advised for larger development teams who may work on big projects and cooperate with other teams (webdevelopmenthelp.net, 2018).

There are more and more examples of ASP.NET MVC appearing due to its popularity in recent years. StackOverFlow shown in Figure 8. is the website developers' visit to ask questions about various computing technologies was entirely built using the MVC approach.



Figure 8. StackOverFlow as an example of a website developed via ASP.NET MVC (dzone.com, 2018)

2.4. CHOOSING THE RIGHT APPROACH

This research aims to find the best option possible for both users (e.g. inexperienced individuals or businesses) and actual web developers. To determine right approach, it depends on numerous factors although when it comes to **users** or businesses Don Campbell believes in two scenarios:

"They don't have a website, and don't know how much it should cost, or who to trust" (Wolfe, L. 2018)

Don Campbell's second scenario is:

"They have a website, but it's not really helping their business (it's a glorified online brochure.) Maybe they even paid thousands of dollars for a nice looking one. They also struggle with updating it. Many times, they have to pay someone every time they want to make a change." (Wolfe, L. 2018)

Both these scenarios are aimed at an individual or business point of view although from different aspects. The first view is a user or business is looking into getting a website while the second is when a business has a website, but it isn't up to standards. Both these scenarios share important traits that are worth considering when deciding on wither to pick between a web builder services or to use ASP.NET.

2.4.1 Primary Considerations

One of the main important factors when it comes to businesses wanting to do anything is weighing up how much it will **cost** them in money and **time**. Like anything else in a business, there are many things to consider the first being the type of website it is. This matters as it can be more expensive to setup an ecommerce website compared to a simple blogging site because of the functional requirements. An online shop will require a fully functional and secure transaction system compared to a blogging site that only contains perhaps some forums (Schaferhoff, N. 2018).

Every website requires a domain name (e.g. www.google.com is a domain name) and a place where it will be hosted which is usually on a server. There are services online that offer domain names for sale along with hosting services that will agree to host a website for a fee (Schaferhoff, N. 2018).

The next concern is how the website will be powered. This could be done by HTML, PHP, ASP.NET or perhaps a web builder or content management system. As previously discussed, web builders' offer plans for users which can vary in price for benefits and ASP.NET requires costs for a premium edition of Visual Studio to gain access to better features plus the formerly mentioned domain and hosting services. Even once the method is determined, not all the functionality may be included and hence may require further support from plugins or other third-party services (Schaferhoff, N. 2018).

With all prior concerns in mind, the next step is if the business will build this themselves or hire someone else to assemble it. With a web builder approach this isn't likely required unless time is an issue, despite web builders being quick, it still may not allow enough time for a business employee to assemble effectively. Hiring someone to do it for them is an option although this will add to the cost and if the chosen option was with a web builder they may have been better having a custom website created in ASP.NET instead (Schaferhoff, N. 2018).

Finally, maintenance and marketing are vital for a website to keep operating. Web builders usually offer a form of maintenance via a support system which is useful although a custom website built in ASP.NET may require third party support (Schaferhoff, N. 2018).

2.4.2 Business Size

Businesses also need to take a step back and review the scale of their business and what they wish their website to do. If the website is for a small to medium business that doesn't need complex functionality then it is better to use a web builder service or a content management system since as previously mentioned, these services provide everything necessary to get a website running while being affordable, easy to run or to update. If the business is large enterprise they may require more features such as more customising with code, dedicated servers to provided faster speeds and more back up assess (Kelly-Barton, C. 2018).

2.4.3 Web Builder Limitations

While it seems clear individual users or small to medium level businesses may wish to use these services, for large businesses or experienced developers they may cause problems. These limitations also highlight the strengths of developers and show they still have a purpose in web development.

Firstly, web builders sadly have caps on their storage and bandwidth allowances which can have an impact of the content you can add to a website. High quality videos or images may severely drain the allowance which causes frustration at being unable to express the content the way it's desired. This can also be expressed via the potential limited number of webpages a website can have which can be a problem in larger businesses with many products to advertise (Douglas, J. 2016).

If a company decides to use a web builder, they may find their website has advertisements placed on it although it can depend on the plan chosen. Advertisements are something visitors generally want to avoid as it makes the website look cheap and unprofessional. This can also lead to poorly experienced web users to clicking on these advertisements and getting lost in the process which will cause website visitor count to decrease (Douglas, J. 2016).

The previous point leads into another sometimes-restrictive feature which is analytics. Analytics allow people to view extra information about a website e.g. visitor count, which country people are mainly visiting from or what product is most popular. These features can help make great business decisions and those without access are missing out (Douglas, J. 2016).

A common feature of the modern online business is the ability to render a website on a multitude of devices e.g. Computers, Tablets and Smartphones although this is a downside to using a web builder which may be frustrating since it means two instances of the website must be created. This is usually because the way someone interacts with a mobile device compared to a computer is different so having a website designed only for computer use will make it non-user friendly on a mobile device. This includes problems like difficulty reading the screen or lack of touch screen functionality. Professional web developers will be able to ensure this compatibility is a front runner and is a major reason to consider hiring (perth-web-design.com, 2018).

A major hindrance of web builders for an experienced web developer is the fact the code cannot be manipulated. This means if there is something a developer wished to edit within the theme, they cannot edit the CSS code responsible for changing it. The code is generally inaccessible for export as well which means if there is a specific feature or change that needed to be done, then all the work would be lost as the developer would need to start again in another development environment like ASP.NET or using another web builder or CMS (perth-web-design.com, 2018).

Overall in terms of choosing between web builders and learning to use or hiring web developers to build something in ASP.NET, it seems clear that if what a user or business needs is relatively simple then web builders are the optimal choice. Web builders seem more suitable for small to medium businesses where are hiring a professional developer seems more the optimal option for a larger scaled business that requires much more flexibility and customisation in their websites functionality. To back this up, Marc Schenker states:

"A 2017 survey of people who've used website builders confirms that 42% use them for business purposes and the majority only have a beginner-to-intermediate understanding of creating sites." (Schenker, M. (2017).

Considering the number of websites created today with web builder services, 42% is quite large. The most important area of this quote shows that majority of these people only have beginner to intermediate knowledge which makes web builders more suitable for these individuals. Content

management systems seem to be the middle ground between easy websites without much in-depth customisation or control and more complex websites with complete customisation and full control.

CHAPTER 3: PRELIMINARY WORK

3.1 DEVELOPMENT METHODOLOGY

Agile is a suitable research methodology for this project due to it working in shorter bursts on specific areas then testing them which allows more period related issues to be resolved instead of being left until the end. This means the researcher has the area fresher in the mind which allows problem solving to be performed much quicker. The methodology can also have room to adapt to changes that may happen throughout development as new information may come to the researcher's attention which may change the deliverable in some form. This would be harder to implement with a waterfall methodology as there is less room to implement changes into the schedule.

There are many other project management methodologies that could be used for the creation of this application such as the classic waterfall methodology although this methodology may not be suitable for website development. This is due to the waterfall methodology in general being more rigid and less open to viewing any progress until a later period which causes problems more than most other styles due to its complexity. Therefore, to manage the development of this application the Agile methodology (shown in Figure 9.) will be used due to its advantages in software development.



Figure 9. Agile Methodology (Source: tristatetechnology, 2016)

Agile takes a more progressive and flexible approach to development which allows requirements and solutions to easily change through the process while not affecting the time schedule. The changes happen due to constant communication by involved parties such as the client, the developers and the users. SCRUM is also a widely used sub form of agile that acts as a process framework which aims to keep each development cycle as short as possible allowing developers more time to make their work more robust. When an agile scrum process is used it helps to increase quality, adapt better to changes, have better estimates in development time and allows more control of the project schedule. (cprime.com, 2018)

Agile development provides benefits for all who use the product, those who create it and manage its development. It focuses on having shorter development cycles which allows features users want in their applications to be developed much quicker. This in turn helps managers of products as it's their job to please end users and shows they are listening to what users want. This can be done by focusing more on a specific element that users may wish for which speeds up development process giving time for other tasks on the schedule. Development teams also benefit from an agile approach as this methodology allows them to do more of what they wish to do and less non-productive work such as creating specifications which in turn allows them to focus more on the features which makes them feel better about their work and feel it's more valued. (cprime.com, 2018)

3.2 Research Methodology

To gather information during this research proposal, there will be a combination of both qualitative research and quantitative research.

For qualitative research methods, people who are thinking or have went through the process of deciding an approach to website creation may be interviewed. This will provide usable feedback in the different perspectives people have when it comes to what they think of web builder software and if they are or were open to having a professional developer build a website for them using ASP.NET. It will also give peoples opinion's on learning a coding language which shows if there is reluctance at the prospect or any other emotion surrounding the topic. These interviews on people who have or are about to go through the process can provide more in-depth opinions which can give weight to an analysis.

Quantitative research will include surveys which will be carried out during the research. This allows the researcher to gain opinions of their views of available web development options that currently exist, how important design aspects are and if they could be improved. The surveys may ask specific questions linked to an area of web development or be aimed at a certain group of people to answer although there may be another survey directed at existing web developers to assess their specific opinions. Surveys can provide a lot of results without organising interviews and at a much quicker rate which quickly gives useable responses for analysis.

CHAPTER 4: WEB DESIGN

4.1 PREREQUISITE CONSIDERATIONS

Before beginning main development, the researcher must first form a series of designs and plans to adhere to during development. This prevents more backtracking if additional requirements arise and promotes a smoother and quicker workflow. This is also important in a business scenario as it costs time and money to build websites hence time lost while figuring out what to do can cut into time that could have been used conducting business as the website would be live much sooner. This in turn creates a loss in money despite wither the website was built for free or by a paid developer.

The researcher has opted to ensure some fundamental elements are robust when considering their website designs as they will improve the overall quality of both deliverables which entails many considerations and should be adhered to when planning. Building websites without tackling these considerations for live use will likely result in many post release changes which could take a long time to resolve. For this research, it's important for the developer to consider what type of website or what type of content will it provide before proceeding. This needs to be researched to ensure that:

- The chosen web builder software provides that specific functionality
- Does the researcher have the **ability** create these features?
- The content can be made within the project time-frame

These points make the researcher reflect on what they can manage but not the purpose of doing them. There are a few more points the researcher must consider before proceeding:

- What is the **Purpose** of the websites?
- What is the target **audience**?

One of the most important points when attempting to make a website is its purpose. There are many purposes for a website from retail business websites, online gaming websites to web blogs or forums hence a user must know what they want before thinking about anything else. Having the purpose defined helps along the road through development to ensure the final product meets that purpose and doesn't venture away from the project scope. The audience allows the researcher to consider specific requirements the demographic may require which can boost the popularity of the website by providing the features these people desire.

4.2 CHOOSING A DESIGN

Considering these points, the researcher has decided to build websites which provide blog services for online gaming since they provide enough functionality for comparing results between both development methods. With the purpose identified, this allows them to take the steps to decide the features and functionality required and forget about the non-related elements. Since the purpose reflected the goal is to create a website to focus on online gaming then the audience is identified. This indicates that the website will only be used by those interested in specific games or a specific game which narrows the audience further. Since online gaming is aimed more at younger generations then it's unlikely there will be older people using it which would require either older or more specific navigation and interaction which make it easier for them to understand. Typically, younger generations or those interested in gaming culture will already have a degree of knowledge on how to interact with other websites or media of the same kind hence development focus should be on enhancing their experience rather than catering for people outside the target audience. More accessibility can be added for people outside the target audience when the main project is finished.

It's been decided that WiX will be the chosen web builder platform used for developing a website since it can provide the desired functionality. WiX was considered along with WordPress although WiX was chosen due to being both a web builder service and a content management system which allows more options for developing allowing better information for comparison during the analysis stage. The researcher felt WordPress requires more knowledge to use and is therefore too similar to ASP.NET development to show clear contrasting results for the research. Online blogs are not a new feature of websites and aren't overly complex to create hence they fit better with the project time-frame compared to a much larger website with more complex functionality and features. Working from this angle also allows more features to become added on if time permitted.

4.3 FUNCTIONAL REQUIREMENTS

With the website design defined, the developer needs to identify which functional requirements are needed for them to operate properly. Functional requirements are elements that are vital to ensuring the websites provide the services the design requires.

Firstly, since the theme is an online blog, there must be the ability for users to create new topic posts for discussion with other users plus the ability for them to add their own responses. This indicates a blog system is needed in place to allow them to create and comment on them. An instant messaging feature would also be required to allow more fluid and rapid discussion.

The researcher has decided that users will need to sign up to the service to create posts although guests may respond to some topics without registering. Both these requirements would be handled by guest and user accounts. User accounts will allow users to sign into the website and perhaps access areas or restricted forums where guests cannot. When users decide to sign up, they will require an email address and be prompted to create a secure password providing authentication and security. The researcher feels requiring a user account to create posts will keep the website cleaner from guests posting spam and other unwanted content plus will help promote a community environment. Having guest access is not wholly bad as it allows users to take in enough of the website and environment to decide if they wish to bother signing up to make most of more features.

Users may wish to host events hence the ability to create events would be required. This would include a date system and the option for user to indicate wither or not they are interested in that specific event. This gives a greater impression on user's interests in event types and could be used as a motive for improvement in the future.

4.4 Non-Functional Requirements

Non-Functional requirements indicate the features of the websites that can impact its behaviour but not prevent users from using it.

Performance is an important aspect of website design as poor performance can annoy users and be as equally disastrous as poor design with functional requirements. Performance can be measured in for example how quickly the website takes to load or how long it takes to process requests. This requirement is not entirely a responsibility of the researcher or hosting service as internet connection speed can also cause poor performance on a user's end. The researcher must ensure they provide adequate performance for its users to ensure it keeps up with the competition of other websites and provides a quick and smooth experience. In relation to the research, performance will be both an attribute while testing and comparing the development methods which could produce comparable results.

Accessibility is a vital feature with websites due to people from all types of backgrounds using them, they must support their requirements. This can fall into different categories such as if they provide

the ability to translate into another language or are there any services which aid visually impaired people. Other elements of accessibility can be the websites layout in general if specific areas or services aren't quick to access then it will annoy users and result in less usage. E.g. if they wished to sign into their account although the log in screen was in an awkward location or it wasn't highlighted properly.

Availability can link to the previous point as the device people access the website on can matter and more so today with great reliance on mobile technology such as smartphones and tablets. Providing touch screen support for these devices is required plus ensuring the layout is mobile friendly as a desktop layout may not be as usable or accessible on a smartphone.

4.5 PHYSICAL DESIGNS

The researcher has created various design wireframes to help give them a good idea of how features will piece together during development. Figure 10. displays the homepage where users will arrive onto when they first load the websites. From here the main piece of content will be the latest blog topics in current discussion which dominate the page. This is to encourage users to consider taking part in them and it further makes them consider signing up to the website plus the blog is the main purpose of the website hence they deserve to be the dominant feature.

Website Title		
Home Blog Contact Us Search Bar 🔿	Sign Up Sign In	
Latest Posts Topic 1 Cp Topic 2	Poll Question Answer 1 🗹 Answer 2 🗆 Answer 3 🗔 Submit	
Topic 3	Events Event 1	
Topic 4	Attending? Event 2 Attending?	

Figure 10. Website Homepage

Users can also access several other areas of the website from here such as the buttons which allow them to sign up or sign into their accounts. Accessibility has been considered so these features are located on the navigational bar along with some other vital buttons. This ensures users always have access to these services regardless of their position within the website and keeps them engaged. The search bar can shorten navigation times by searching the website for specific posts which might result otherwise require a lot of scrolling. The contact us button allows users to email questions to the admins if they have any issues such as account problems. This lets users know the admins are very involved with the community which reinforces user faith in the website and service.

The blog tab which allows users to view more specific topics or categories can be seen in <u>Appendix</u> <u>A.</u> This provides diversity which can appeal to the target audience of the website while giving users organised areas to discuss their topics. Users should also be able to create new posts from this page although they will need to be logged in to do so. <u>Appendix B.</u> shows the webpage when a user chooses a specific category which displays the latest posts within that category. The user should then be able to select a post as shown in <u>Appendix C.</u> which may interest them and then select it to view the full post and write a comment below if they wished to voice an opinion about it.

The user must ensure they are signed in to take part in the websites services which goes for creating posts and commenting. If a user wishes to sign in or sign up they will select the button on the homepage which redirects them to interfaces which will ask for a username and password to log into a user account or if they are new to the site, then they can use a similar interface to create an account. Appendix D. shows the Login page and Appendix E. Shows the sign up page.

Users can also request password resets or can contact admins for support with their accounts or other problems which would be handled on the Contact Us page. This will provide an email or an interface which will prompt the user to enter information about their problem which will help the administrators solve the issue and maintain the users' confidence in the website and the overall service.

The website may also support a side bar that contains extra services or features for the users to engage in as a community such as attending events for their favourite games or taking part in website polls which are useful for gaining community opinions on specific topics which can be used as a guide for the researcher as into what direction the website should go or what topics they should focus on. These features will help make the website feel more complete as a service and ties the community together more socially which promotes better usability and may increase the chance of gaining more users.
CHAPTER 5: WEB DEVELOPMENT

With the planning done, the researcher can now move onto the main development phase of building the two deliverable websites via their methods. Each website will feature a detailed process of how main elements were done which can provide some information to use for analysis.

5.1. WIX DEVELOPMENT

The researcher will first work on developing the web builder website using WiX's online builder service. Firstly, the researcher needs to create an account with WiX which will allow them to have their own space to store their websites that are being built. Once they have created their account, WiX will ask the researcher what kind of website they want to create which in this case would be a blog website. The next screen takes them to a builder selection, the first is the basic builder which WiX will automatically create the website itself by answering a few questions. This would be too simple to test any development methods, so the researcher will opt for the second option of using the WiX editor which prompts them to choose a starting template as shown in Figure 11.



CHOOSE HOW YOU WANT TO CREATE YOUR WEBSITE



Answer a few simple questions and automatically get a website designed just for you in minutes.



Create Your Website with the Wix Editor

Start with a template and make it your own, with easy drag and drop & 1000s of design features.

Choose a Template

Figure 11. WiX website creation options.

Or

WiX will then load all the available templates for blog and forum websites which are the most suitable in layout for the content. This does not mean the researcher must select any of these templates as they webpage displays all templates suitable for different types of websites. The researcher will just choose one of the pre-existing templates to simplify the process of starting development.

5.1.1 Creating Website Pages, Navigation & Security

Once a template has been selected, the webpage will render a pre-made website with fully functional services and features along with the WiX editor interfaces. To create new webpages on WiX, the researcher simply needs to utilise the vertical menu bar on the left side of the screen. From here, the researcher has many menus and options to choose from to add new features to their website. For now, the researcher only needs to use the "Menus & Pages" tab which shows a list of the current webpages existing. Clicking the "Add Page" button will automatically add another empty webpage to the website. All the webpages here can be customised to have different layouts, names and permissions to better suit the researcher's needs. Figure 12. below shows an example of the WiX editor in the menu section.

	Site Menu	Site Menu ? X
0	Member Pages Dynamic Pages	습 Home
•	Page Transitions	 Image <li< th=""></li<>
		E About
		+ Add Page C+

Figure 12. WiX Menus & Pages Interface

Luckily, the researcher doesn't require to create many new webpages in the chosen template but to fit their designs, they must rearrange the page roles. According to the design, the website must have a Homepage where the most recent posts will appear which will give users the latest updates on blogging activity. The blog itself will be created under the Blog webpage which is where new posts can be created along with category navigation and a Contact Us page to provide support to users in case they are having issues such as posting problems or any other queries. To navigate between all

pages on the website, the template automatically provides a navigation bar, but the researcher can choose new ones if they wish from the editor's options. If users want to find something such as a post more directly, the blog area has a search bar which will locate any existing content or pages.

While it's good when users can navigate freely through a website, some features should be restricted to ensure the website environment doesn't become abused by people creating spam posts or comments. To prevent instances such as these, WiX automatically has set the website to be inaccessible to users who haven't been authenticated with a user account. Users have two places where they can log in or create an account the first being on the navigation bar as it was in the designs with the second is in the blog area itself. WiX allows users to sign up from a range of options such as via simple email and password or via another social media account such as Facebook or Google which may appeal to a wider range of users and keeps the website modern. Since WiX's Blog system has a specific structure, the administrator of the website must give permission to other members to become blog writers. This is an interesting discovery and one the researcher had not previously thought of but for sake of development, the researcher will register another user account and grant them privileges to write posts as shown in Figure 13. The initial intent was anybody could sign up and write posts although regular users can only react to posts and comment on them which in a sense does provide a community aspect which was desired in the design since website staff can identify individuals that are voicing their opinions and participating and may wish to elevate them to blog writers. This also provides a higher tiered security structure which would be helpful in live scenario.

Roles & Permissions + Add Contributor						
My Contributors	2015	DUT				
NAME	ROLE	DATE				
huntmaster98@live	OWNER	Tran	sfer site ownership (i)			
ccx92@hotmail.co.	JK BLOG WRITER	Last seen on: Mar 19, 2019				

Figure 13. Assigning Roles.

5.1.2 Creating Interfaces & Content

When the researcher creates a new webpage, WiX will by default create it with a header, a body and a footer which helps with layout and presenting interfaces on webpages. The header will contain the title for the website along with the navigation bar which will be accessible from anywhere in the website. The body will hold the main content of what the webpage is offering to the user such as a blog post and the footer contains extra information like advertisements to their other related services or copyright references.

The first page the researcher will create will be the homepage although due to the design, the blog itself cannot be the homepage, so the researcher must create a new page to act as one. The homepage needs to display the most recent posts mainly according to the design, so the researcher needs to add the "Recent Posts" function from the "Blog" section within the "Add" area on the editor. This will display the three most recent posts created on the website in which users can read, comment and react to with likes. The post also shows how many viewers have read the post. The editor will position the content on the page for the researcher to correctly position which can be done using the controls on the right side of the screen. Here the selected object be given a position via the X/Y axis and be given a custom width and height in pixels among other settings. The remaining features according to the design that must also be added are an events section and a way for polls to be held for users. The event feature can be found in the "More" section under Events. The interface guides the researcher on how to create their first event by offering the typical requirements needed to arrange events from posting the details and managing the guest list to arranging tickets and reminder emails which shows the editor has a high degree of support. The user poll feature isn't included within WiX's offered services although there is a large market place for third party apps that are compatible with the WiX editor that developers can utilise. These 3rd party services have a similarity to WordPress's plugin services and may require the researcher to sign up to them and pay a premium fee to use therefore the researcher will only be using freely available services.

The next page to be configured will be the blog categories page which was pre-created with the template. This saves the researcher a lot of time configuring a database to hold the information although the option to create them is available if more complex or specific features are needed. Since this is intended to be a gaming blog, the researcher will need to create new categories to group posts by when they are written e.g. a racing category will house blog posts relating to racing games. The category navigation bar appears at the top of the page below the header which will allow smooth transitions between each type. To create new categories, the researcher must go into

the Blog settings interface and under the categories section select to add a category as shown in Figure 14. When new posts are created, users will be given these new categories as options to attach their posts to before publishing them.



Figure 14. Blog Category Configuration

To add posts, the user with permissions can navigate to the category page or click on their account name on the navigation bar to get a drop down of options. Selecting "My Drafts" takes the user to their blog drafts page which provides the option to view all their previously created posts or to create new ones. The new post page as shown in Figure 15. gives the user a webpage full of options to ensure their post is custom as possible. Users can add a title and then write about their topic while having the freedom to add more media such as images or video. The user can also set which category they wish to set their post in and add even more complex settings such as search engine optimisation which will allow their post to place higher in searches which in turn promotes the website.

Upgrade your website to remove Wix ads Upg	rade Now	Post Settings		A
Muntmaster98	Post Settings	General	Categories	SEO
Add a Catchy Title	iour posts to life and bachtage	Post Publish Dal	te: Mar 19, 2019	Edit
(e.g., #new, #followme) to reach more people.	your posis to nie and nasnitags	Author ⑦	}	~
		Cover Image ⑦		_
		r	ন Unioad Cover Image	
		Display Cover In	nage	
	Cancel Publish :		Cancel	Save :

Figure 15. Creating a New Post

5.1.3 Configuring Webpage Design and Styling

As mentioned previously, the design of the website will follow the typical header, body, footer style although there are more customisation options to make webpages and their content stand out. To make a website more appealing, it's good to have an interesting but not intrusive background. To change the background, the WiX editor has its own section dedicated to customising page backgrounds as shown in Figure 16.

The researcher can choose from a wide range of pre-existing images to serve as one although they may upload their own if they wish. Backgrounds on WiX can also be animated which adds a subtle sense of life to the webpage behind the content. If the researcher decides they do not wish for a background, then a simple colour option is available although in this case the researcher will choose a background that has a theme relation to the purpose of the website. Once the researcher is happy with their choice, they can apply it to other pages on the website if they wish to keep the pages uniform. Beyond backgrounds, the header and footers can also be given custom designs which help them stand out from the body of the webpage. The researcher has decided for this website to allow the body background to also dominate the header with only the navigation bar and website title visible which keeps the feel of the website simple.



Figure 16. Background Editing

Compared to typical web development, WiX doesn't provide the option to use custom CSS to code visuals, fonts or padding. Instead, everything that can be added to the webpage is a pre-existing component which can be drag and dropped onto the page then stretched, recoloured and moved to suit the researcher's needs. This contrasts the research found earlier relating to images causing slower speeds on webpages which was why CSS was brought in making it an interesting method.

Basic colours and fonts are used universally throughout the website to provide simplicity for the sake of creating a functional and deliverable product yet also enough to consider the usability. Colours and fonts are ensured to be eligible despite their backgrounds and elements are placed neatly on the webpages which will respond to the screen size the user is viewing the website on. Sadly, the website won't be optimised for mobile devices due to the researcher's time-frame although WiX does have the support to ensure both desktop and mobile versions of the website can be customised.

5.2. ASP.NET DEVELOPMENT

To begin development on the ASP.NET website, the researcher first needed to create the project within Visual Studio using Visual Basic supported Web Forms. This selection is important, as so the software can retrieve the various underlying configurations, references and support the project will need to function properly according to the language.

5.2.1. Database Configurations

Before any visual work can be done on the website, the researcher must first create the databases and stored procedures that the website and its features will utilise in terms of blog posts, categories, user authentication and more. The researcher does this by using a LINQ to SQL connection to a database which is created with the project to support the user authentication and account services.

Server Explorer 🛛 🝷 🖡 🗙	dbo.AspNetBlog [Design]	→ × BlogFunctions.db	ml* Site.Master	Site.css
🖒 🛛 is is ii 🕼	술 Update 🛛 Script File:	dbo.AspNetBlog.sql		
Azure	Name	Data Type	Allow Nulls Default	
 Data Connections aspnet_BlogProject_2019 	#• PostID	int		
🔺 🔀 DefaultConnection (Blo	UserName	nvarchar(128)	✓	
🔺 🛑 Tables	Title	nvarchar(50)	✓	
MigrationHistc	Snippet	nvarchar(140)	V	
AspNetCategory	Post	nvarchar(MAX)	✓	
AspNetKeyword	Category	nvarchar(50)	✓ ('Default')	
AspNetRoles AspNetUserClain	Published	bit	✓ ((0))	
 AspNetUserLogir 	Created	nvarchar(50)	✓ (getdate())	~
AspNetUserRoles	🖬 Design 🖉 🕇 👔	ST-SQL		
▷	1 CREATE TABLE	[dbo].[AspNetBlog] (
Views	2 [PostID]	INT ID	ENTITY (1, 1) NOT NULL,	,
Stored Procedures	3 [UserNar	e] NVARCHAR (128) NU	LL,	
Functions	4 [Title]	NVARCHAR (50) NU	LL,	
Image: Synonyms	5 [Snipper	I NVARCHAR (140) NU	LL,	
Types	Cotoro	WVARCHAR (MAX) NU	ELUT ('Dofoult') NULL	
Assemblies		y] marchar (50) DE		

Figure 17. Database Interface Example

In the above Figure 17, it shows the data connections the developer has available within the project, in this case the "DefaultConnection" database can support the various tables and stored procedures the project needs. The researcher has created three tables dedicated to specific roles within the website. The first is the database table which will store all the blog posts users create on the website. The developer will need to assign roles that will need to be handled within that table for the website to function properly. Setting the "PostID" as the primary key allows the database to record each new post with a number as they are added and will be recorded with the integer data

type to reflect this while the "UserName" field contains the identity of the user who created and submitted the blog post to the website. Only logged in users may submit posts which is a break from the traditional plan of allowing guest access although it does provide better security for the website and less spam posts being created. The "Title" field is used to record the post title which is set as unique to ensure no future post titles can have the same title as to avoid confusion with previous posts. Looking at other examples of blog websites, the researcher decided to add in a "Snippet" field which allows users to write a small description about their posts before using the "Post" field to write their full posts and content. Each post must be paired with a category which is storage in the "Category" field to allow better organisation and filtering during information retrievals by processes on the website. The posts will also be recorded as to wither they have been published or not which can also help with search filtering. This is handled via the "Published" field which has a bit data type since the answer is binary so the post is either published or not. Finally, the "Created" field records the date and time a post was created which can indicate how recent the post was made and help gauge user opinion on how often the website is active.

Most of these fields are given character limits with their data types besides the main post field. This is to ensure the fields are used for their correct purposes e.g. Nobody posts their full blog in the title field along with lowering database storage requirements and processing times.



Figure 18. Stored Procedure Example

To ensure the created database tables are filled with their assigned information, the researcher has created three stored procedures the first shown in Figure 18. which will be used throughout the website to populate them. The procedure "CreateBlog" will be used later in the development but as shown, the procedure grabs the field values the user will enter and then inserts the data into the table. This process happens the same within the category and keyword tables.

5.2.2. Creating Website Pages, Security & Navigation

With the database tables and stored procedures created, the researcher can now turn to more visual development on the website by adding the pages users may navigate through when using the website.

To create new webpages, the researcher can add them to the project using existing templates as shown in Figure 19. To ensure the website remains uniform, the researcher ensured their webpages were created to follow a master page with their general layout. To ensure the webpages were organised, the researcher created three folders: "Admin", "BlogConfig" and "Categories". The "Admin" folder contains the area where user accounts with administrator privileges can view all the posts and add more categories to the website which would meet user demand while ensuring posts remain organised in the database tables until the page for the newer categories is created. The "BlogConfig" folder contains the Blog page which lists all the available categories, user posts and the interface page where new posts are created. The "Categories" folder will contain the webpages users can navigate to and view posts within that category. Alongside these new webpages are the pre-made webpages that came with the project such as the Default page which will act as the blog website's main homepage along with the "About" and "Contact Us" pages.



Figure 19. List of some Webpages in the Project.

Since the researcher enabled authentication with individual accounts when creating the project, there is an "Account" folder containing pages used for signing in, signing up, password resetting requests and more. The researcher doesn't need to change any of these settings if they don't wish to which is very helpful in terms of development. To ensure users cannot access specific pages without being signed in there are two methods of doing so. The first is configuring the authentication rule in the web configuration file which is easier although it cannot tell the difference between a regular signed in user or an administrator which would cause issues, so the developer opted for the second option.

Figure 20. Checking User Auth & Admin Auth Code

The code in Figure 20. above shows some code that first checks wither a user is signed into an account or not which will allow them access to use the features of the website. If the user isn't signed in, then they should be redirected to the log in page. To check if a user is registered as an admin, the code will check an existing user's account stored in the "AspNetUsers" table and then check to see if it has administrator status. If the user is an administrator, then they may pass into the webpage but if not then they will be redirected. When the pages are created, they are only accessible in the browser during test runs if the URL is entered which would not be helpful for users if the website was hosted live for use. This can be changed by adding links to these new pages on the navigation bar in the header of the website. Some will be inaccessible until log in and some will be invisible until log in or depending on account status.

5.2.3. Creating User Interfaces & Content

Firstly, the researcher needs to configure their "Blog" webpage since it will act as the homepage for the blog categories. This will be done using some hyperlinks within a table interface which can be inserted either by coding or using Visual Studio's toolbox. The researcher does this by opening the toolbox interface (as shown in Figure 21.) and dragging the component onto the screen where they wish to place it. This will automatically create the relevant code in the source view saving manual typing. The developer can also type it manually if they wish although the drag and drop method saves development time. Once this has been done, the researcher can then create several more webpages and add them into the new "Categories" folder for use later when the categories have been created and stored in the relevant table within the database. These pages will display the most recent posts created within that category via a data list which will be configured later although each page will display filtered results to stay relevant to each category webpage.



Figure 21. Example of Visual Studio's Toolbox

Once the Blog webpage is created and the hyperlinks correctly linked to their relevant category, the developer must now create the webpage where users will create their posts. There will be a total of four textboxes added to this webpage each for an input from the user to hold the post title, snippet, post content and to add any keywords to the post. To provide feedback to the user to indicate if

their title is taken or not, a label will be added to display text depending on the outcome. There will also be two list boxes which will hold the available categories and one to hold the keywords along with a radio button list to allow users to label the post as published or not. To submit their post, the user will click on a button when finished which will pass the information into the database tables and refresh the data views once configured.

With the components positioned correctly on the page, the researcher must now code the functionality to make them work. Since the title field is meant to be unique each time, the researcher must ensure that users are unable to enter taken titles. This is done via a simple if statement when the website will check the title input against the existing titles in the database table. If the title is taken, the label will display a message telling the user the title is taken and they should enter another while also preventing the user from inserting input into other fields and posting the blog. This ensures the user cannot cause the website to generate errors by attempting to post a blog with an existing title. If the title is available, then it will display a message saying it can be used. To ensure the feedback is quick and smooth, the researcher has put these components inside an update panel which uses AJAX (Asynchronous JavaScript and XML) to allow information inside to refresh or reload without requiring the entire webpage to reload.

Next, two of the stored procedures created earlier will be used the first being the CreateBlog procedure. This will be attached to the button the user clicks to post their blog, the stored procedure will run and take the data stored in the text input fields and store them into the table. The category list box will also need to take the selected value, convert it into a string to store the input along with the published or unpublished selection. To create new keywords, the "CreateKeywords" procedure will be used by taking user input from the textbox and placing it into the list view which will also add the word into the Keywords database table. Finally, the categories list box needs to be populated with valid categories as the user cannot post their blog without selecting a category. This is done by grabbing the categories from the category database table and placing them inside the list box. It should be known that the researcher must also initialise the BlogFunctionsDataContext reference otherwise none of the functionality will be able to interact with the database tables.

With the post creation webpage done, the researcher must now create a way to add new categories to the website before attempting to test any posts work. This will be done in the "AdminPage" webpage to ensure only website administrators can add new categories. First, the researcher will open the previously created webpage "AdminPage" and will add the components which consist of a textbox for entering the input, a label to return feedback and a button to submit the input if valid. The process works similarly to the previously mentioned title policy since there cannot be two of the

same category name, the website must ensure a duplicate cannot be submitted. The code will check the category table for names before performing an "if" statement which merely blocks the user entering input into the table if it already exists e.g. "Racing" cannot be entered twice and the label will display a message asking for another entry if the user attempts to add it. If the entry doesn't already exist, then it's a valid name for a new category which will be accepted and passed along into the category table via the "CreateCategory" procedure.

To finish setting up the admin page, the researcher needs to allow users to view all posts created on the website at will. This will be done via a grid view which displays specific information based on what the user wishes. For this instance, the user is going to want to be able to view the post title, its category, if it was published or not and when it was created. The researcher must link a data source to the data view which will be the same database connection the rest of the website uses which will allow access to the tables. The researcher will then be prompted if they wish to use an SQL statement or a stored procedure to retrieve the information or if they wish to specify table columns. The best option here is to use the second method since it allows the specific table to be selected so the chosen fields can be displayed. The correct table and fields will be checked, then more custom options can be applied in this case the results should be ordered by the post titles and display in descending order. This will then refresh the table when a new post is added which will appear at the top while others move further down the list when more are added. To make it easier to view, the researcher enabled paging so only a specific amount of posts will be seen before the user must select the next page of posts which removes a lot of tedious scrolling.

While the table shows some basic information of a post, not all of it is viewable here but this simply so administrators can locate specific posts easier without needing to scroll past lengthy posts. The developer will be adding a method to view the whole post by giving the grid view an extra column which will provide a link to each post on a separate webpage. When the developer chooses to add another column, they must choose from a list of available field types in this case, the option is a hyperlink field since when the user clicks the link on it then they will be redirected to the post. The text will be set as "View Post" with the Title identifier and a link reference in the data section as seen below in Figure 22.

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vailable fields:	Hy	perLinkField properties:		
BoundField	^	24 A		
CheckBoxField		InsertVisible	True	
HyperLinkField		NavigateUrl		
		ShowHeader	True	
		SortExpression		
		Target		
DynamicField	~	Visible	True	
	~	Data		
Add		DataNavigateUrlFields	Title	
elected fields:		DataNavigateUrlForma	~/BlogConfig/P	ost?Title={C
		DataTextField		
	r 🛛	DataTextFormatString		
	L ~	Styles		
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	Κ	Fartach la		
is view Post	He Th	e text within the header	of this field.	
]Auto-generate fields	Co	nvert this field into a Ter	mplateField	
efresh Schema			OK	Cancel

Figure 22. Adding/Editing new columns

To ensure the post will display when the link is selected, the researcher will need to add a form view component on the webpage the user is re directed to after selection. This form view will work similarly to the previously mentioned grid view with a small difference. The researcher will yet again need to create a new data source, link the database and select the blog table although this time the information will be all the fields of the blog and the information will be retrieved only by the title of the post as seen below in Figure 23. This links back to the previously setup column on the admin page's grid view which referenced the webpage with the title as the identifier.





Data view components are also setup on the main homepage to display the most recent posts with snippet information to encourage users to navigate to the relevant category to read the full post while other data views on each category page are configured to display the most recent posts only within that category.

5.2.4. Configuring Webpage Design & Styling

With the components and functionality in place, the researcher can now focus on making the website look more presentable for users. This is mainly done via CSS styling but can also be done by positioning and using certain classes in HTML. The HTML factors the researcher used during development of the website have been typical uniform which consist of division elements to make specific content more customisable e.g. the researcher wants something in the content to have a different alignment or font then a division can be setup to provide these specific settings for everything inside the tags. This results in numerous division tags for different content on each page as seen below in Figure 24.



Figure 24. Split Development View

Containers are another feature that are used throughout the website, these are used to provide a housing for content on the page which allow text to remain readable against the website background. In Figure 24, you can view both the code view and the graphical design view of what the website will roughly look like to a user. The container class automatically centres itself into the middle of the webpage with some padding on the edges which allow the background to still show. This gives the website a nice visual feel while allowing content to stand out. Since the website is simple without too much content for the sake of the research, the researcher has used the "jumbotron" class to increase the scale of most of the content on the website.

The data views can also be customisable to have various font, backgrounds and borders which can further make information standout for the user although the researcher decided to keep this simple by using one of the pre-existing templates provided. To ensure the data view displays correctly on different screen sizes, the researcher must sure the width isn't set by predefined pixel measurements since this means the view won't be responsible and will end up causing it to become too wide on specific screens e.g. a computer monitor may view the size perfectly, but a mobile screen will not. To counter this, the developer has set the width to measure by a percentage which allows it to respond to the devices screen size and render correctly and in line with the container. Examples of these in action can be seen in the <u>ASP.NET Interface and Content Tests</u> Appendix section.

The fonts used throughout the website won't change although the sizing will do for the heading banners on many of the webpages. ASP.NET provides a default eligible font which the developer saw no reason to change although If they wished to do so this can also be done in the CSS file shown in Figure 25.



Figure 25. Example of CSS

Having a clear and eligible font is vital in web development since people from different backgrounds will need to read it so having a fancy and difficult to understand font may cause problems for people with poor eyesight or if English isn't their first language which will put users of using the service.

The background can be set for the website by tagging the URL of the image within the CSS file. This can be done either locally by storing the image in a folder within the project which is what the developer attempted to do initially. An images folder was added to hold images for the background although the developer decided to opt to use the first method using the URL. This means there's less files and content to support in the project but the downside of using a URL is if the location hosting the image has issues then it may not be available and will revert to a default background.

CHAPTER 6: TESTING

6.1. WIX TESTING

With the configurations done on the WiX website, the researcher can now test its services to see if it functions properly as a blog website and works according to the design. The researcher will first test the ability to navigate the website before attempting to access restricted areas without being authenticated. Next the researcher will test the user interfaces to see if what is provided works as described e.g. is it possible to create blog posts.

6.1.1. Testing Website Navigation & Security

To ensure the user can reach all areas of the website, the researcher will attempt to view each webpage available with different levels of authentication. Firstly, the researcher will attempt to view typical pages to test which pages they can access without needing to log in.



Figure 26. Viewing the Blog Page (Unauthenticated)

The above image in Figure 26. shows the researcher can access the blog page without needing an account with the yellow highlighter indicating status. Currently, they may only view posts and read them fully. Further tests in the <u>WiX Navigation & Security</u> Appendix section also show that the user can view all pages without an account except the members' page. One certain test also shown an internal server error while attempting to load the blog page. The researcher decided this was more related to a connection error either on their side or the servers, but the page loaded when refreshed. When the researcher logs into the administrator account, they should be able to see more options available. This will include the ability to create blog posts and to comment on them plus access the editor.

Home	Blog	Contact Us	About	Members	A (huntn	naster98	~
All Posts Rac	ing Shooting					Q	Q	0
Create a Post	1	+						
Ccx92 20 hc	2.✔ vurs ago • 1 min						:	
Call of [Duty							
This blog were mair	aims to discuss t istream until	he quality of the Ca	all of Duty franc	nise over the last dec	ade of how the games			
3 views Wr	ite a comment						\heartsuit	

Figure 27. Viewing the Blog Page (Administrator Authentication)

As seen above in Figure 27, the researcher has now logged into their account and can now view the same blog page but with the additional option to create posts. This will be the same for the blog writer account although a regular account will be unable to write any posts. The researcher also can see their account name in the account box indicated again by yellow highlighter on the navigation bar which displays their name to indicate they are currently logged in. They will now have profile editing and post viewing abilities such as changing their display name or adding a picture to allow some personalisation.

6.1.2. Testing User Interfaces & Content

Testing the user interfaces will be done by first attempting to create a post and then another user will attempt to leave a comment on it. The researcher should ensure that the editing options are available to modify their content before and after being published. Test posts can be seen in Figure 15. in the development section and in <u>Appendix G</u>. although the editing of a post can be seen in the below Figure 28. This shows the researcher highlighting a previously existing section of test and right clicking it which shows more options for editing. This includes font editing such as making the selection bold, italic or underlined to stand out against the rest of the text along with the ability to add more titles to the post which can separate larger posts in their own information divisions. Alignment and numbering options are also available and the ability to create hyperlinks to other webpages that may relate to the post.

ccx92 · 1 min read · Characters: 133					cters: 13	铰 Post Settings			
Call	Call of Duty								
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6 6	2 C)	E :</td <td>></td> <td></td> <td></td> <td></td> <td></td> <td></td>	>					

Figure 28. Editing a Test Post

Figure 29. shows that the other account has been able to successfully write a comment on the blog (note the username is now different) which can be seen by everyone viewing the webpage. These comments are tied to each blog post, so each post will only show comments relevant to that specific post.

Coxt	a few seconds ago	• :
		♡

Figure 29. Writing a comment

The researcher also needs to ensure that all fonts and colours match throughout the website to be consistent and eligible. This includes the background appearing on all webpages, the body content having a unique but clear colour which will allow text to be eligible. Using Figure 16. as an example, the darker background can be visible behind the content boxes containing the navigation bar and the blog sections. The text in these sections are all eligible against the lighter background which will give users a clearer area to write their posts or comments.

6.1.3. Testing Non-Functional Requirements

Since the website could be published and used on the free plan WiX offers, it was possible to do some of these tests on the website. The researcher would attempt to different pages within the website to see how guickly the performance response was and estimated how well the website would operate. Sadly, the website proved to be slow and could only be put down to do the free plan has limited features with a bandwidth speed cap being one of them. The website will also have limited storage space and contain advertisements which will turn users off since it ruins the professionalism of the website. The usability of the website was seen to work decently well with many small features added in by default although some could not be utilised as it meant setting up external services. The scalability of the website depends on the plan the website has so while it's on a free plan it won't be very scalable although there is no limit to how many members can sign up to the website hence it can maintain many members if required to do so although there may be notable performance dips due to heavy usage. The accessibility of the website is likely on par with many modern websites due to WiX's template ensuring a high-quality user experience meaning most features will be accessible to the typical user by default although support for impaired users is questionable. The website also won't appear very well on search engines due to lack of search engine optimisation and the provided domain name doesn't establish a very professional image. Mobile support wasn't configured for this website and therefore won't appear ideally on mobile which limits the user experience for users on these devices.

6.2. ASP.NET TESTING

With the website development finished, the researcher must now thoroughly test the system to ensure everything works according to the design and everything previously mentioned in the development phase.

6.2.1. Testing Database Configurations

To test the database configurations, the researcher will attempt to create a post on the website which should add an entry to the Blog table along with new keywords before attempting to add a new category. The below Figure 30. shows the prior entries of the blog table containing the submitted posts by a user. As seen on the created field, the date of creation is shown so when another entry is added, it will appear below the last entry currently on the table.

dbo.As	pNe	tBlog [Data] 🛛 😕 🗙	AdminPage.aspx.	vb Login.a	spx NewPo	ost.aspx*	Ŧ
= c	= 🖒 🏹 🌾 Max Rows: 1000 🔹 🖵 🖵						
		Title	Snippet	Post	Category	Published	Created
⊳		Need for Speed	My opinions of	Need for Speed	Racing	True	Mar 13 2019 6:
		Call of Duty ga	A blog about m	Call of Duty ga	Shooters	True	Mar 13 2019 7:
		Tomb Raider	A blog about m	Tomb Raider ga	Adventure	True	Mar 13 2019 7:
		Uncharted	A blog about th	The Uncharted	Adventure	True	Mar 13 2019 7:
		Forza Motorsport	A blog about F	Forza Motorspo	Racing	True	Mar 13 2019 7:
		Grid 2	A blog about th	Grid 2 is a video	Racing	True	Mar 17 2019 4:
¢		NULL	NULL	NULL	NULL	NULL	NULL

Figure 30. Test Result of Adding a new Blog Post

After the new post was created, the newest post has appeared in the table with the creation time highlighted by the researcher in yellow highlighter to prove when the test took place against the previous entries which also proves the ability to create posts is fully functional. This example will be used to later test wither or not the post appears in the various data views on the website. This test also proves that the keyword table is also being updated which can be seen in <u>Appendix H.</u> which was also taken after the test. To add a new category, the researcher needs to log into their account to access the administrator page and then add a category with the interface. The website should reject any duplicates should the researcher attempt to add them although different words will be permitted. The results for this test can be seen in <u>Appendix I.</u> and the interface can be seen later while testing the interfaces.

6.2.2. Testing Website Security & Navigation

Testing that all areas of the website are accessible means attempting to visit all webpages with different levels of authorisation. To do this, the researcher will attempt to visit the webpages that require clearance without being logged into an account to check if the proper response occurs as seen in Figure 31. When an unauthorised user attempts to write a post then they should be redirected to the log in screen although if they are logged in then they should be able to reach the new post webpage. This should also consider if regular users have the access to the administrator page and wither or not the option appears for the user. The test results as seen in the <u>Appendix J.</u> show the developer's email can access the administrator page although the other user account can only access the new post page (<u>Appendix K & Appendix L</u>). If they attempt to access the administrate they are merely redirected to the homepage (<u>Appendix M</u>).

Gaming Blog	Home Blog About Contai	ct	Register Log in
		Categories	
Create Advent Racing Role-Pl Shoote Strateg	Post ure aying rs y		
Gaming Blog	Home Blog About Cont	tact	Register Log in
Log in. Use a local acc	ount to log in.		Use another service to log in.
Email Password Register as a new o	huntmaster98@live.co.uk Remember me? Log in Iser		There are no external authentication services configured. See this article for details on setting up this ASP.NET application to support logging in via external services.
© 2019 - My ASP.N	ET Application		

Figure 31. Security Test

6.2.3. Testing User Interfaces & Content

To test that all interfaces work and that data views are correctly displaying the right information, the researcher must check each one. The homepage data view must only display post titles, snippets, category, creation date and time plus the user who posted it. The data views on the category pages should show the titles, snippets, post, creation date and time and the username. All data views should display content by their creation time the most recent being first on the list.

Testing the interfaces when adding new categories or titles should properly display warning or block progress if there are problems as shown in Figure 32, the Need for Speed title has already been used hence they must select another to continue. A test on the category interface can be seen in the <u>Appendix N.</u>



Figure 32. Title Interface

Figure 33. shows a test result of creating the new post that was earlier used to test the database entry for the blog table. The researcher has entered all the relevant fields, highlighted a category and entered a keyword. More tests are viewable in <u>Appendix O</u> and <u>Appendix P</u>.

Grid 2	Racing Abooters Shooters Adventure Strategy
Title Available	Enter a Keyword
A blog about the video game Grid 2.	grid 2
B I T Size 1 V	• • Unpublished Published
Grid 2 is a video game in the racing genre that focuses on racing sports cars around	
controlled private racing courses around the world.	
Post To Blog	

Figure 33. New Post Test

6.2.4. Testing Non-Functional Requirements

The ASP.NET site sadly won't be able to test many non-functional requirements due to it not being live hosted without 3rd party services. The website would need a custom domain name and hosting service to perform these tests although the researcher is able to test the usability of the website. The usability is sadly limited due to the researcher's limited knowledge of programming and as such has less features than the proposed design plan making it a limited website. Users can create accounts and make posts although they cannot leave comments. In this instance, the website would be more suitable to a solo blogger rather than a group. The mobile functionality of this website was not created due to delays on development and therefore was not configured although the website still could be used on a mobile device if required, it wouldn't appear in an ideal fashion.

CHAPTER 7: ANALYSIS

With the literature research completed along with both deliverables being developed and tested, the researcher can now reflect on the differences between the approaches used in designing both websites and how specific aspects were done in contract to each other. These findings will be used to produce strong results on how each approach can differ for an inexperienced user wishing to build a website compared to a more experienced developer.

7.1. DESIGNING A WEBSITE

While the researcher was designing their website plans, they attempted to do as much research as possible into the requirements on how to properly design them. This was explained in the design phase and expressed in their wireframes although this information was resourced by the researcher himself that knew some aspects of what they were looking for and had the time to do so. This is also combined with the fact they have had some prior experienced in web development aspects and therefore doesn't reflect the common individual who may wish to create a website but closer to a true web developer point of view.

According to statistics the user has gained from their own research and existing information, there is a clear importance to how first impressions can impact a user when they first visit a website. Since the researcher was unable to gain usable results from their own surveys, research done by several bodies the first being Northumbria and Sheffield Universities shows the impact on the user when they view a website for the first time has 94% impact on the user with an 88% chance of them never visiting it again (Sillence, E., Briggs, P., Fishwick, L and Harris, P. 2004). This is a very high percentage and thus indicates its importance when considering a website design. This also connects to research done by Econsultancy and Forrester which indicate that 95% of users believe a positive user experience is their most important concern (Gilliland, N. 2018) when they use a website plus websites that change their interfaces to improve user experience can see 200-400% increases in satisfaction (Gualtieri, M. 2009). Responsive design is also important today due to the original motive for this research that more users are beginning to use mobile devices compared to computers. According to Google's own research, 90% of users are likely to use multiple types of devices to visit websites and other research shows that websites that effectively have mobile support are more likely to be revisited which in turn promotes a better company image. The researcher can reflect on their initial designs and how implementing they drastically varied between approaches which can also reflect on them during development (Pham, D. (2012)

7.1.1. WiX Design Implementation Analysis

When using the WiX editor, the service was already very well prepared and equipped to handle the researcher's needs in terms of setting up the type of website they desired. This shows WiX has done expansive research onto what is needed or required in these specific website types and have gone ahead and created ready templates for use to quickly suit the users' needs and to cut down on design knowledge that inexperienced users may not have. Templates will also be updated, or new ones added to give more variety based on user requests or new research and trends to keep the service up to date and ensure all existing websites stay modern. Sadly, this research did not cover deliverables being developed for optimisation on mobile devices due to lack of time although both approaches have the support to do so.

7.1.2. ASP.NET Design Implementation Analysis

Using Visual Studio to design the same website regarding design didn't start with that much to work from. The software project created a basic default master page layout for the researcher to work from with pre-set CSS although the rest was in their hands. The default webpage also had some default components in place, but these were very generic and did not cater to a specific type of website. This is because Visual Studio doesn't have the services to know from the user what they intend to build besides the platform the application is intended for, the development method e.g. Web Forms or MVC and the language it is based from. In comparison to web builders, ASP.NET obviously has a lot less done initially which would require the individual making a website with it to have detailed plans and understand how they intended to implement the features they desired. This indicates that inexperienced individuals will struggle to use this software and framework to make any headway in development if they have no design in mind or programming skills to utilise.

7.1.3. Research Results

When the researcher was performing interviews with individuals with various backgrounds of knowledge in the research area, he learned that many of the less technology apt individuals wouldn't really have any idea on how to go about designing a website. This leads the developer to assume that due to this lack of knowledge, these individuals would more likely benefit from a web builder service or would just hire a professional developer. These same individuals also shown they had no interest in learning to develop their own websites with more complex requirements as coding in general implied to be an instant turn off either due to lack of free time to learn or due to the difficulty of understanding. The few more technology inclined people could respect the need to have some programming skills although many still indicated they would prefer to use a web builder platform. One indicated he researched different types of web builders to find a suitable solution for

his business but once his website was created he encountered issues and wished to transfer to WordPress. This proved impossible due to the service he was currently with refusing to disclose the code for the website indicating migration was not an option and as such, admitted he would need to redesign the whole website or get a developer to do it. This reinforces the information mentioned earlier in the literature review that it is important to fully research and understand the services before sticking with one otherwise it can cause costly issues in money, time or both. The surveys the researcher intended to use never received much response and therefore were considered to inconclusive for the project to use as a solid foundation to reinforce findings in the secondary research. The researcher has decided to provide these questions in the references section for review should potential developers wish to consider them in their own projects.

7.2. DEVELOPING A WEBSITE

Physical development of the deliverables varied in many ways which provided many learning experiences for the researcher and results to compare between them. The developer will compare several instances of development in both deliverables to help provide a clearer picture of results.

7.2.1. Creating the Project

Starting with WiX, creating the project was much faster and since WiX quizzes you on what type of website you wish to build, it can automatically provide suitable templates and thus a lot of the development is already completed from the start. Since the researcher chosen a blog website template, he had to cooperate with WiX's configured administrative system e.g. Blog writers must be assigned and therefore that may cause a restriction to the client's needs although on the flip side it does provide a robust sense of structure and security. ASP.NET development was much harder to begin and did cost the developer time in developing the deliverable due to configuration issues and lack of understanding in how they take effect. The developer must create a fresh project in Visual Studio, decide on the type of platform, add authentication and Visual Studio will create the project ready for development. Compared to creating one in WiX and ASP.NET, WiX has a large head start in this regard.

7.2.2. Navigation & Security

Navigation was a simple aspect in WiX since the developer could simply add webpages at will and they would automatically create all the relevant components to reach it such as a button in the navigation bar. ASP.NET required the researcher to add new web forms (webpages) which would automatically add them to the project although they wouldn't be reachable initially if an individual was using the website as mentioned previously. Reflecting on the only way they would be reachable at this stage is by entering the correct URL to the webpage in their browser which is terrible for a user experience. Buttons or hyperlinks had to be created separately to reach webpages which usually included positioning a button or a hyperlink manually on the webpage and then connecting the URL to them. Buttons may require coding to ensure on click events work which adds an extra layer of complexity. This may seem simple to an experienced developer or someone with prior experience, but it would be overly complex and alien to an inexperienced individual which further leans ASP.NET toward people with experience in the software and with programming ability.

The security for WiX was created along with the website template with only the administrator account being creation as an active member on the website. Security rules require an email and password to create user accounts or they may sign up via Google or Facebook. Website roles are also predefined and as mentioned in prior sections, only those with the authority can create blog posts. The administrator can elevate a registered user accounts access between various grades each with more privileges from being to merely write posts up to being able to edit the website in the editor software along with the administrator. This shows WiX has taken security seriously for its website users while also providing modern options for users to sign up with social media making it a flexible but secure service.

The security for ASP.NET is an optional feature if the developer wishes to add the functionality to their application while creating the project. This comes in a few different aspects such as individual user accounts which is the most basic form and security for more complex business environments such as education e.g. student accounts and staff accounts. Luckily if selected, Visual Studio will create and configure this security for the developer which includes webpages and database tables. If the developer wishes to create more restricted webpages then that requires manual configuration using either coding ability or using a simple configuration in the webpages configuration file to demand authentication which was shown in Figure 20. Overall, both approaches have adequate security by default for developers which saves time configuring it for both the inexperienced and the experienced which shows how seriously WiX and Microsoft take online security which is justified online today considering the various methods of attack.

7.2.3. Interfaces and Displaying Content

WiX has a very user-friendly way of adding, editing and displaying interfaces and content. The core of the editor is the drag and drop functionality which allows countless pre-configured components to be added to the webpages and then resized and edited to the users liking in a complete design view experience. ASP.NET also can add components to webpages with the drag and drop manner although this is an optional feature and likely created to assist newer developers. Components have names that will identify what they are within the ASP.NET web pages e.g. if the developer wishes to add a hyperlink then they must either drag it from the toolbox onto the screen which will automatically create the code or write the code themselves which would be <asp:Hyperlink> to create the component. Inside this tag the developer will customise the hyperlink with an identifier such as "hyperlink1" and the URL that it leads to before closing the component with </asp:Hyperlink>. This may seem too complex for inexperienced individuals although it's good that Visual Studio has an option for creating content manually for experienced developers. This freedom between a complete design view with a drag and drop toolbox may encourage students or others willing to learn and not be turned off by the complete source code interface. Those who like to see a bit of both to see how the code becomes created can also use the split view to have both a design and source code view. Experienced developers may prefer hard coding components like these although it will depend on the developer and their level of experience. Overall, both approaches can easily add components to create interfaces and customise their content although again, ASP.NET provides more freedom in this aspect if the developer has the technical knowledge on how to do so. The interfaces themselves will vary within ASP.NET since it will be depending on their design where as some aspects of WiX will be non-editable and therefore the developer will need to stick with what's provided. This is a downside for WiX as it imposes restrictions on what developers may wish to create on their website make it stand out from the rest.

7.2.4. Configuring Physical Design and Styling

Continuing from the lack of flexibility WiX has with its interfaces, this can also impact certain design areas. Comparing the design wireframes and the final deliverables, it's clearer to see that both achieved aspects the other did not. When the developer wanted to display the latest posts on the homepage, the component that allowed them to do so had limited layout options which meant the overall display would be different compared to the design.

The ASP.NET website was able to follow the layout slightly better in some respects due to the more freedom of customisation which gave the researcher more satisfaction with their product. While the researcher could have added the side bar that contained the side content such as events and polls, they decided to scrap this due to lack of remaining development time and lack of use since they weren't configured. The WiX website did not allow a side bar to be added which was disappointing for the researcher as it meant the desired features would need to be placed elsewhere. This lack of flexibility may be a hindrance to experienced developers and may cause frustration since they may have a great idea that just isn't doable on WiX although there is enough flexibility and functionality to design and style a simple website for both the inexperienced and experienced. Styling the WiX website also had limitations since when the researcher went to customise a specific object, the editor only offered a limited range of colours because the editor doesn't allow any coding. This would not be a problem on the ASP.NET website since if the researcher knows how, they can perform a wide range of styling options with colours and custom sizes using CSS. Some WiX components would not be ideal in specific sizes which again caused limitations on where they could be placed. This also links back into all the images and components used to make up for the lack of CSS access potentially slowing the website down reducing performance. Limited styling options on WiX will prevent websites from being able to stand out on their own against other WiX websites and custom websites owned by large companies in general. Considering WiX is a popular service and despite the number of templates and options on offer, there is a high chance of another website looking very similar to the developers simply due to the limited options against an overwhelming number of users. If WiX allowed some coding freedom for those who could make most of it then perhaps WiX would be better with its styling options. On the positive side, both approaches had the ability to ensure all webpages had either shared a specific layout or ensured that specific settings like backgrounds or colours were universal throughout the website which creates a uniform and consistent appearance for users.

7.3. TESTING A WEBSITE

Testing the websites worked in similar fashions although the WiX website probably had the most realistic tests. This is because WiX can publish and host your website live for use whereas the ASP.NET website would need to find a 3rd party hosting service and in some cases a unique domain name to go live which may cost money and the researcher stated during the project they didn't wish to spend money on this research. The WiX website also didn't need to be published to test some features since many aspects could be seen working while in the editor, but it also provided a preview mode in case the researcher wanted a realistic testing stage. The WiX website was found to be slow at updating and navigating but this is mostly likely due to it being the free service and therefore the quality might increase if a premium solution was purchased as was mentioned in the testing phase. It's important for individuals who wish to use a web builder service that they consider these aspects and choose accordingly since it may be cheaper than finding a custom domain and 3rd party hosting.

The ASP.NET website needed to be ran in the browser using the localhost which can only merely ensure functionality, styling, security and content work correctly. This means any tests on the speed of the website wouldn't be accurate since it isn't being externally hosted and relies on the researcher's computer to run. Once tests are complete the developer must end the run to edit any code otherwise the website may crash. The ASP.NET website tests would require code to work properly to test functions otherwise the website again may crash, but Visual Studio will highlight the problematic area with the code. This feedback is very useful for developers since it narrows down their search for problems. Webpages will also display errors if not configured correctly e.g. the researcher tries to open the restricted administrator page without having logged in but hasn't configured the code to redirect them to the log in screen. Overall, each are fully testable assuming the developer has the 3rd party services available.

CHAPTER 8: CONCLUSIONS

With the research done and results reviewed, the researcher can now give recommendations of the research performed to better suit both inexperienced and experienced groups along with a conclusion to the research. This is also the time to reflect on the project to identify shortcomings of their work which could have been improved or if there was anything they would have done differently.

8.1. **Recommendations**

The researcher will evaluate recommendations for both inexperienced users and experienced users on what is the most suitable option for them in terms of their potential goals and level of experience in various aspects of web development.

8.1.1. Inexperienced Users

The researcher advises that both inexperienced and experienced individuals consider researching best practices with web design regardless of approach since extra tips or information can go a long way in making websites standout from the crowd. This has more value with web builders due to their high usage and limited customisation options although as mentioned during the investigation that user interface design is a large deciding factor for users if they are going to bother using a website.

It's the researcher's opinion that if an inexperienced user desires to create a website, they should first assess what they wish for their website to do. If they only wish to create a simple website, then they should stick with a web builder software since they have good design templates which cuts down on design time. They should also watch for the best deals in premium services to make most of their website e.g. provided domain name, greater storage and bandwidth allowance. This is important since sticking with the free option will look less professional and 3rd party advertisements will dissuade people from using the website.

Individuals or organisations who require a complex website for business will unlikely have the time to spend learning programming languages to create websites themselves thus its simpler to pay a developer and source a hosting service along with a domain name. If they are still intent on creating one themselves then they must understand that they will need to set aside plenty of time to learn relevant coding languages to make most of the freedom Visual Studio and ASP.NET can provide.

8.1.2. Experienced Users (Developers)

Experienced web developers will understand the importance of project design and know that numerous factors can make a difference in using a website. Developers constantly aware of the latest design trends can attempt to implement and experiment more freely than with a web builder which can give them an edge on the competition. Experienced users can follow the same guides as an inexperienced user in some respects although it still depends on how complex their website is and its purpose. Even an experienced developer can make more use of a web builder if it's for a simple website although they might find the lack of freedom in customisation limiting.

Since these individuals are already knowledgeable about programming then there's more liberty in choosing although while it would be easy for them to build a simple website, it would still take longer to create than a web builder with their templates. Although in contrast to this, developers may also retain templates from making prior websites if their template is suitable, which can reduce developing time while giving them their freedom in customisation.

Working in the industry may have its benefits so developers may know which back end service providers are better than others and ensure they get better quality service and prices on custom domain names, hosting, storage allowance and bandwidth compared to an inexperienced individual who may be clueless and make a poor choice.

8.2. CONCLUSION

The researcher has identified several key points during the research which are prominently mentioned during various stages. These points will be reviewed, and the researcher will give advice based on the secondary findings along with their own primary findings and experiences during the project.

Regardless of web development approach, potential developers or those interested in employing a website must consider design with utmost importance. Design has appeared numerous times and according to secondary research statistics and primary research while developing, the researcher can confirm the importance of design in web development. Despite the researcher taking utmost consideration while designing their websites before development, there were new learning experiences that happened during the process which were eye-openers and, in some respects, helped improve the design. With the original knowledge of 200 million plus websites active today, design will only become more important in ensuring businesses get an edge over their competition with well thought through and planned user interfaces, professional yet sensible colour schemes and smart functionality with a consideration for handicapped users.
Web builders have proven that in today's world, it is no longer necessary to hire a web developer to create a simple website e.g. blog or forum but more complex websites with specific functionality will still require these experienced individuals plus with the increasing amount of businesses online, people in these jobs will not suffer from lack of work. Instead, their work will be more specific and more likely aimed at businesses which require large multi-purpose websites which will need large development teams instead to sole developers. The user-friendly interfaces have come a long way from the earlier days of web development to now supporting the drag and drop interface and simpler styling controls which will be more relatable to general editing skills which even the most inexperienced user should possess e.g. editing shapes on Microsoft Word is done the same on WiX. With web builders automatically supplying the back-end services this makes people seeking a quick and simple website to get up and running in a seamless process without the need of other 3rd party vendors for services. The prospect of having an-all-in-one package for designing, developing and deploying a website shows modern efficiency in web development and has further integrated the process into a more casual procedure rather than a complex development project.

ASP.NET has proven throughout development that it has a wide range of supporting infrastructure and tools which can be added to web applications making it a very diverse framework. Visual Studio also provides a very robust development environment allowing personal preference for developers e.g. some may like hard coding and use the source view while others may prefer a more graphical view or a mix of both. This allows developers to be more comfortable in their work environment and will promote productivity. The development approach does require a degree of technical knowledge to make the most of although the limits on what a developer can do with ASP.NET are near bounder less if they know how and as such the researcher would not recommend building ASP.NET websites without some form of experience in both web design and in either C# or Visual Basic first a minimal along with some CSS experience to improve the product visually.

Regardless of approach and experience, web builder users, ASP.NET developers or any other developers in a web development approach should ensure they thoroughly test their websites before deploying them for business. Sticking to the design, managing the project well and ensuring milestones are achieved can reduce maintenance or numerous updates in future to bring the quality up to scratch. Testing throughout development is also a good chance to review certain choices if a better solution presents itself which can provide multiple benefits such as simplifying a required process which would reduce development time and cost.

8.3. CRITICAL ANALYSIS

When I began this project, it took me awhile to come to terms with the goals and objectives since it could go in many directions and could have become a much larger project than intended. This is because there are more web development methods to compare that weren't covered in this project aside from the deliverables I made along with the other options also mentioned in the report. Sticking to my initial proposal helped keep me on track in this aspect although perhaps in future it would be interesting to pursue this project again and expand the scope. This potential of having numerous deliverables also made it difficult to determine wither the research was mainly a development project or a social experiment although I believe what has been done results in a great combination of both which has provided both development experience for me and a wider outlook on the web development industry for what is required to make a good website today along with methods on doing so. This also ties well into my initial justification for the project since it poses a firm question which reflects on the number of online users today before leading into the subtle questions of how to do this? How do I make my website stand out from these countless others?

The literature review was slightly taxing to express properly into a format which best suited this research. I found countless scores of helpful for information which helped give me a good foundation of existing results and opinions of test my own experiences against although it was difficult to pick and choose the best. This was expanded by the goal of comparing the methods for two different demographics of which some would appeal to less. To help readers reflect further on the initial justification, I felt doing some basic history into the state of web development in the past would help show some evolution trends that could help promote the research question followed by some basic benefits of employing websites. This would give them a greater understanding of the importance of the research and how websites affect business and society today.

Going through what web builders were would help readers understand how they work and give them an initial idea of their benefits before moving onto ASP.NET. By this point there would already be a contrast in development methods before even naming any specific vendors or approaches which starts to open the debate. Since the specification decided on two deliverables, I had to decide on which web builder and method of ASP.NET to use since there were several and decided to use the potential candidates as main examples in the report. I then went through advantages and disadvantages of these options and gave visual examples to show that despite the different approaches, robust fully functional websites can be created and readily used for business using either. Doing this creates some familiarity with these choices which will help readers understand the later deliverables and test results. Since the research considers different demographics, the secondary research had to reflect on them both for giving existing information on what should be considered before planning on getting a website. This of course had more groups to consider such as business environments along with casual or personal projects. I decided to focus on businesses here since there was a larger information pool of sources I could use which could also be used for the more casual groups. I feel this section of the research could have been improved a lot more than other areas, but I believe it gets enough of a point across for what people should consider in different situations.

Deciding on a development methodology for this project was a simple choice for me since I had used the agile style in several previous projects and it is much more practical in development projects. I would say for anyone who attempted this project using another methodology that they would struggle and would easily believe there would be more problems and errors at the end compared to mine. This is due to the rigid procedures e.g. the lack of testing during development which other methodologies don't really permit. Agile also allowed me to reflect on many smaller choices and reassess if they could be changed or improved. The research methodologies mentioned during the report were to do interviews and host surveys. Sadly, while I had created a survey, I wasn't able to gain enough feedback on them to use as a strong basis for the project although I felt that adding in the questions I asked into this report anyway would assist in giving other potential web developers questions to consider. I believe if I deployed the survey much sooner I would have had more chance to gain more feedback although many of the questions didn't come to me until development and thus by that point is was beyond the point when I'd have enough time to collect any usable results. The interviews yielded results that I expected since most were not very technical people although the few that did give good results were slightly helpful in coming to my conclusions and recommendations. I believe with a wider pool of people in different demographics would have provided more usable results.

The design phase of this research took a lot of consideration and research and even doing so combined with prior experience, I didn't manage to cover everything. This shows how deep of the importance is for design in web development which as mentioned in the report can have consequences if not considered. I originally intended to make forums the theme of my deliverables although switched to blogs since they were similar and, in a sense, simpler to make while maintaining enough aspects to test which allowed a basic change in my wireframes. Other design aspects that weren't included in the report were use case diagrams and class diagrams due to time problems which would have provided more insight into how these deliverables would function although to a standard reader, the graphical view seemed more relevant to ensure I covered.

Development of the WiX website went a lot quicker than expected and surprised me in terms of how robust it was in providing modern templates. These templates also seemed to be more modern than my wireframes even, so it gave me more design insight to consider in future projects. The interface of the editor was quick to learn which will please potential WiX users although I did find the customisation options lacking more so in the aspect of layouts. This restriction was mentioned in the secondary research and my own research proved this to be true although overall, it is great for a building a simple no fuss website.

The development on the ASP.NET website had more problems which I anticipated although one of these was not what I expected. The problem that occurred was during the development phase, mainly with the Visual Studio software. While I had ensured I had the software and it worked, I had issues positioning objects in the design view which hindered my ability to progress with the development. This caused me to lose out on a few weeks of development time which has ultimately affected the quality of the goal product I was aiming to make with the design although this didn't entirely affect the overall research. This is due to the research being based upon the development methods and their processes and not the final product so there was still plenty to test from what I managed to develop. Despite this, I am disappointed I couldn't complete the ASP.NET website to the standard I wished for because I picked the deliverables to be on a simple yet useful website type to both provide results for comparison but also as a learning experience for myself. In relation to this, I feel my limited web development experience hindered the potential outcome of the research since a much more experienced developer could have carried out this project and likely found more results to compare than I did. Some examples of this would be my lack of CSS knowledge which I spent awhile on trying to figure out to improve the visual quality of my ASP.NET website to show for testing or my abstract knowledge in understanding how specific pieces worked together e.g. the comment section on the ASP.NET website wasn't added because I couldn't figure out how to get the blog database to accept new comment entries.

While there were a few problems during this project another was during the testing phase about one of the project goals being a comparison on non-functional aspects such as performance, scalability and usability. This proved too much of a task for me on the ASP.NET website nearer the end of the project due to hosting requirements and without a proper basis to collect and compare live results. The intention was to host the website using a service I used previously called firebase although errors kept occurring during the hosting process and since I was already pressed for time with the development delays, I decided it wasn't worth the extra time and effort to bother with since I had other more important tasks to complete. While I gave basic reviews of my experiences using my live WiX website, I believe with more research and time, it could have been possible to achieve this goal for both the deliverables. Despite this, since these requirements were nonfunctional, they are less relevant to the development process and therefore I feel this lack of information will not hinder anyone looking for an insight into evaluating these development methods.

Regardless of going through the process of developing two websites myself to compare or contrast information referenced in the literature review, the results of this research were mostly obvious from the start although while that was my mind-set at the start and now, I admit I did learn from this project that it was more than beyond the obvious which I think is a great aspect to take away from this experience and hopefully this report can lead others to a similar realisation.

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APPENDICES

DESIGN WIREFRAMES

Appendix A. Categories Page

Website Title									
Home Blog Contact Us	Search Bar 🔎	Sign Up Sign In							
ВІ	og Categories	Poll							
Category 1 Name Brief Introduction	Latest Post	Answer 1 2							
Category 2 Name Brief Introduction	Latest Post	Answer 3							
Category 3 Name Brief Introduction	Latest Post	Events Event 1							
Category 4 Name Brief Introduction	Latest Post	Attending? Event 2							
Category 5 Name Brief Introduction	Latest Post	Attending?							
		_							

Appendix B. Specific Category Page

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Website Title									
Home Blog Contact Us	Search Bar 🔎	Sign Up Sign In							
Back New Post	Category 1	Poll Question Answer 1 📝							
Post Name 1 Post Username	Latest Reply	Answer 2 Answer 3 Submit							
Post Name 2 Post Username	Latest Reply Comment	Events							
Post Name 3 Post Username	Latest Reply	Event 1 Attending?							
Post Name 4 Post Username	Latest Reply	Event 2 Attending?							

Appendix C. Specific Category Post

Home Blog Contact Us Search Bar Back Post Name 1 Username Post Time/Date Post Title Post Content (Text, Images, Video)	P Sign Up Sign in Poll
Back Post Name 1 Username Post Time/Date Post Title Post Content (Text, Images, Video)	Poll
Post Title Post Content (Text, Images, Video)	Question
	Answer 1 MI Answer 2 Answer 3 Submit
	Events Event 1
کچیا Username Write a comment Sub	Attending? Event 2 mit Attending?

Appendix D. Sign In Page

Website Title										
Home Blog Contact Us Search Bar 🔎	Sign Up Sign In									
Sign Up Please enter a Username Enter Username Please enter a Password Enter Password Sign Up Already have an account? Sign In Sign In	Poll Question Answer 1 Answer 2 Answer 3 Submit Events Event 1 Attending? Event 2 Attending?									

Appendix E. Sign Up Page

Home Blog Contact Us	Search Bar	2	Sign Up Sign
Sign In			Poll Question
Enter your Username			Answer 1
Enter your Password Enter Password			Submit
Sign in			Events Event 1
Contact Us			Attending? Event 2

WIX NAVIGATION AND SECURITY TEST RESULTS

Appendix F. Error Loading Blog Page

Home	Blog	Contact Us	About	Mer
{"error":"Internal	server error:	8bde23f0-4b32-11e9-	-9ce1-57e21ee70dad"	}

WIX USER INTERFACES & CONTENT TEST RESULTS

Appendix G. Creating a New Post



ASP.NET DATABASE CONFIGURATION TEST RESULTS

dbo.AspNetKeyword [Data] 🗢 🗙 dbo.AspNetBlog [Data]									
= 🕐 🏹 🌾 Max Rows: 1000 🔹 🗊 🗊									
	KeywordlD	BlogName	Keyword						
⊳	20	Need for Speed	Need for Speed						
	21	Call of Duty ga	COD						
	22	Tomb Raider	Tomb Raider						
	23	Uncharted	Uncharted						
	24	Forza Motorsport	Forza Motorsport						
	25	Grid 2	grid 2						
0	NULL	NULL	NULL						

Appendix H. Keyword Table Test Result

Appendix I. Category Table Test Result

	CategoryID	Name		CategoryID	Name
D	3	Racing	⊳	3	Racing
	4	Shooters		4	Shooters
	5	Adventure		5	Adventure
	5	Chartenne		6	Strategy
	0	Strategy		7	Role-Playing
	7	Role-Playing		8	Stealth
0	NULL	NULL	0	NULL	NULL

ASP.NET SECURITY AND NAVIGATION TEST RESULTS

/iew Posts				
Title	Category	Published	Created	View Post
Uncharted	Adventure	<i></i>	Mar 13 2019 7:47PM	View Post
Tomb Raider	Adventure	2	Mar 13 2019 7:39PM	View Post
Need for Speed	Racing	2	Mar 13 2019 6:23PM	View Post
Grid 2	Racing	2	Mar 17 2019 4:08PM	View Post
Forza Motorsport	Racing	2	Mar 13 2019 7:50PM	View Post
orza Motorsport	Racing	2	Mar 13 2019 7:50PM	View Post

Appendix J. User Test 2 (Admin Access)

Appendix K. User Test 2 (New Post)

Gaming Blog		Blog About	Contact	Admin Area	Hello, huntmaster98@live.co.uk	Log off
Post Title Enter a brief d	escription				Racing Shooter Adventu Strategy Enter a l	s re Keyword
B I T Size	1 •				Unpublist	ed Published
Post To Blog]					

Appendix L. User Test 3 (Regular Access)

Gaming Blog		Blog	About	Contact	Admin Area	Hello, ccx92@	hotmail.co.uk! Log of	ff
Post Title			3				Racing Shooters Adventure Strategy	*
Enter a brief	description						Enter a Keyword	•
B I T Siz	1 •						Unpublished Publis	• hed
Post To Blog								

Appendix M. User Test 3 (Unable to access Admin Page)

Gaming Blog	Home	Blog About	Contact	Admir	Area Hello, ccx92@hotma	ail.co.uk! Log off
			Latest P	osts		
Welcome to Up.	Blog Web	site! To view	<i>r</i> posts featured on this page o	r to view the blog se	ervices, please Sign I	In or Sign
Grid 2 A blog abou Racing Mar 17 201 Posted By:	ut the video 9 4:08PM huntmaste	o game Grid r98@live.cc	2. D.uk			

ASP.NET INTERFACE AND CONTENT TESTS

Appendix N. Category Interface Test



Appendix O. Homepage Data View Test



Appendix P. Category Data View Test

Uncharted

A blog about the Uncharted games.

The Uncharted games are play station exclusives which have amazing single player stories.

Created: Mar 13 2019 7:47PM

By: huntmaster98@live.co.uk

Tomb Raider

A blog about my opinions of Tomb Raider games

Tomb Raider games have been released over the last 20 years making it a very aged franchise.

Created: Mar 13 2019 7:39PM

By: huntmaster98@live.co.uk