

# **Website showcasing the Gaming Innovations of Valve Software**

## **Project Report**

**DT228**

**Computer Science**

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**19/12/2020**

# Declaration

I hereby declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

Signed:

A handwritten signature in black ink that reads "James Clarke". The script is cursive and fluid, with the first letters of the first and last names being capitalized and prominent.

James Clarke

19/12/2020

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# 1. Problem Description

My website is an informative website on the video game company 'Valve Software'. Valve is a very innovative company, with almost all their games showcasing new technologies that have changed how even other companies view and develop games. My website focuses on this innovation by showcasing a different game that Valve has developed on each page and explaining the innovations in new technology that game brought forth.

The archetypical users of the site would be anyone interested in learning about the history of video games, especially anyone that is interested in developing games themselves. Through the lens of focusing on just one company, Valve, you can clearly see how video games have improved overtime, and it is important to know as a video game developer what has been done before you.

This site allows game developers to learn about the technical details of games in the past, so they can use this knowledge developing their own games.

## 2. Research

I researched many websites during the development of my own, to see how other websites looked and functioned. Here is a list of the main sites I viewed as part of my research process:

1. [www.fandom.com](http://www.fandom.com) This is a website that is similar to the vastly popular online encyclopaedia site, wikipedia.com, except it is used by "fandoms" for creating detailed Wikipedia-like pages of their favourite TV shows, movies and games. I used this site for research as it is a website that manages and displays a lot of information, and is focused on being informative, which are qualities that I intended for my own project.
2. [www.odeoncinemas.ie](http://www.odeoncinemas.ie) I used this website for research as it is a website that I use often and one that utilised forms a lot when taking user information, which I took notes from when designing my own form that my users would have to fill out. The website had also been visually updated recently so I took note of how it achieved its visual design as it was an example of how modern websites look.
3. [www.amazon.co.uk](http://www.amazon.co.uk) I used this website for research as it is one of the most popular websites, so I thought it would be good to take notes from. I especially used its many user forms for research, such as where the user enters their address.

### 3. Technology Selection and Site Architecture

I will be using HTML5 and CSS3 for the creation of my website as these are the latest and most up to date versions of HTML and CSS.

My site will consist of 5 pages, which will be able to be accessed through a navbar at the top of every page.

The first page will be the home page, as it will be the first page that the user sees when they access the site. This page will give an introduction and overview of what the site is about and will have links to each page of the website.

I will have 3 pages dedicated to 3 different games created by Valve. These pages will give a short description of the games and focus on the new ideas and technologies they introduced. These pages will have images relevant to the content at hand, to make them more visually appealing to the user.

My final page will contain a contact form that the user can fill out and submit if they want to contact the creator of the website to get more information on the games shown, or if they have any other queries about the site. The contact form will contain various questions that the user can fill out before submitting, some will be required, and some will not be.

My website will be designed to be viewed on all devices such as smartphones, tablets, and PCs, as I do not want to exclude any users.

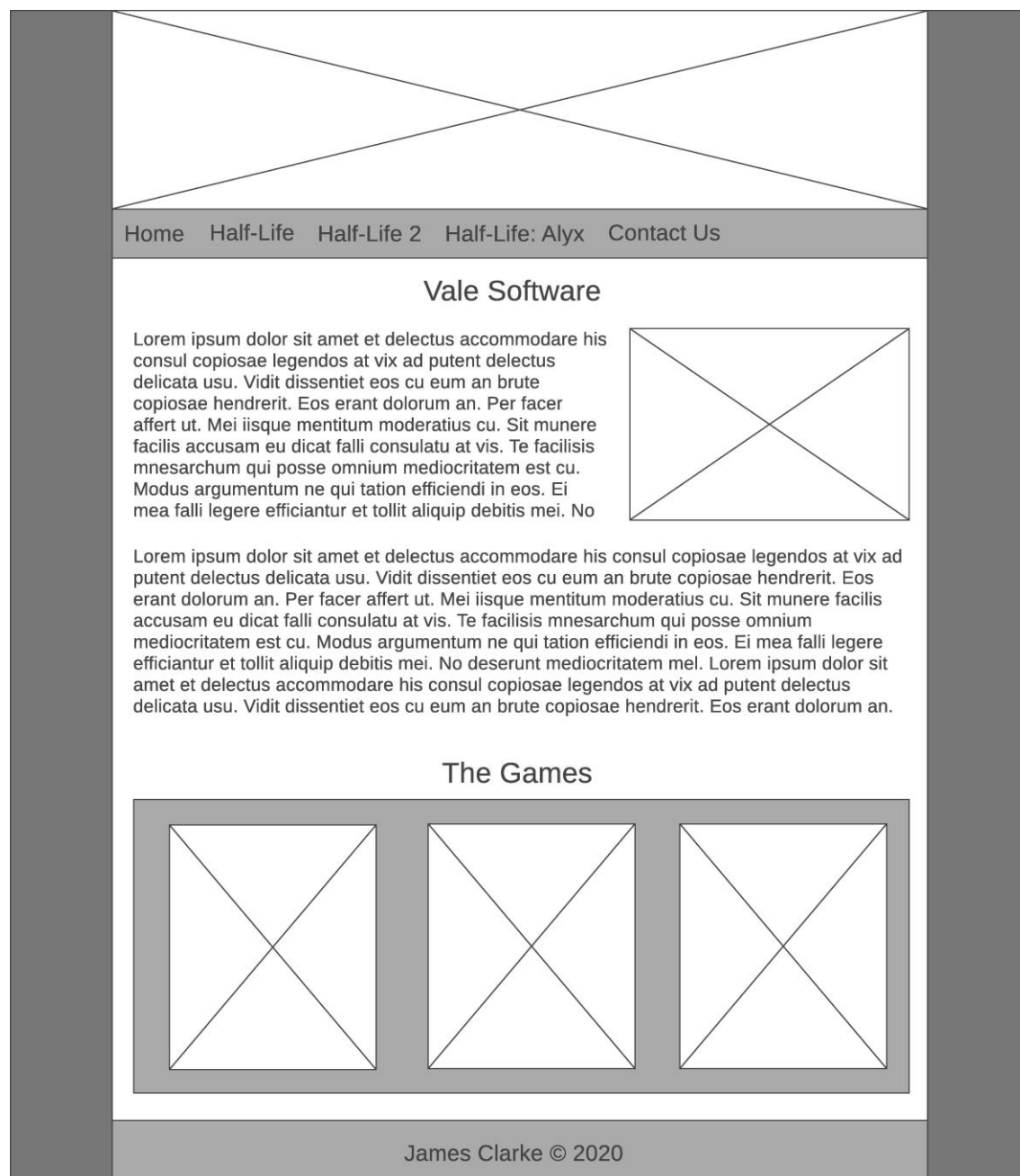
When creating my website, to ensure that it is supported on various browsers, I will pay close attention to what HTML, CSS and JavaScript features I am using, and if they are supported by most browsers. I will test my website on multiple browsers, such as chrome, Firefox, and safari, to ensure it looks and functions the same across them all.

## 4. Low Fidelity Prototype

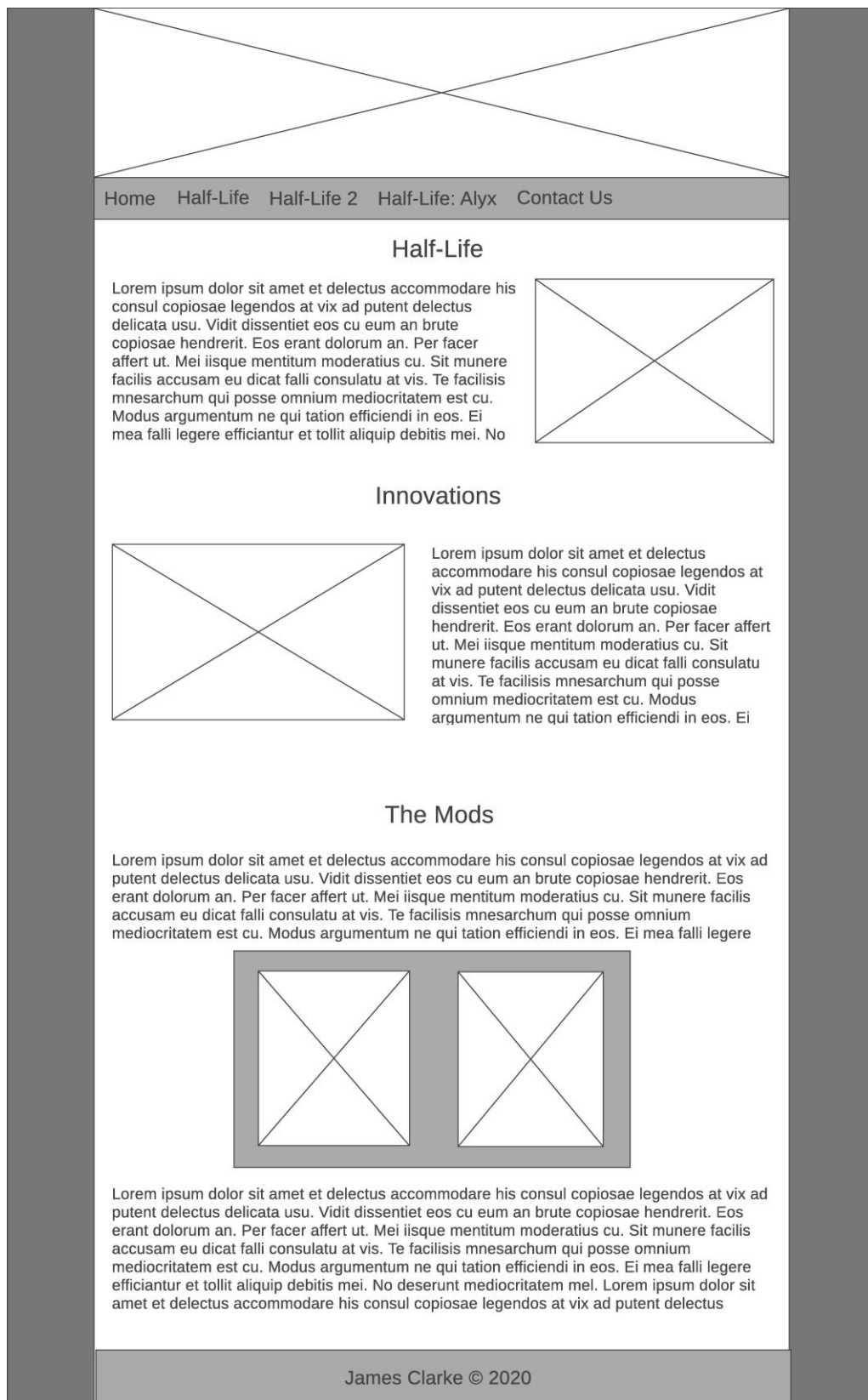
Below are the Low Fidelity prototypes I created while starting work on my project.

I decided on this prototype as the content was clear and well laid out. It follows the standard conventions of many websites, with a header image and navigation bar at the top and a footer at the bottom of each page. This layout will be familiar to users, so will not confuse novices and allow experienced website users to navigate the pages and find content easily.

### Page 1: Home Page



## Page 2: Page describing 'Half-Life' Game



## Page 3: Page describing ‘Half Life 2’ Game

Home

Half-Life

Half-Life 2

Half-Life: Alyx

Contact Us

Half-Life 2

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Name	==
Age	==
Role	==

The Innovations

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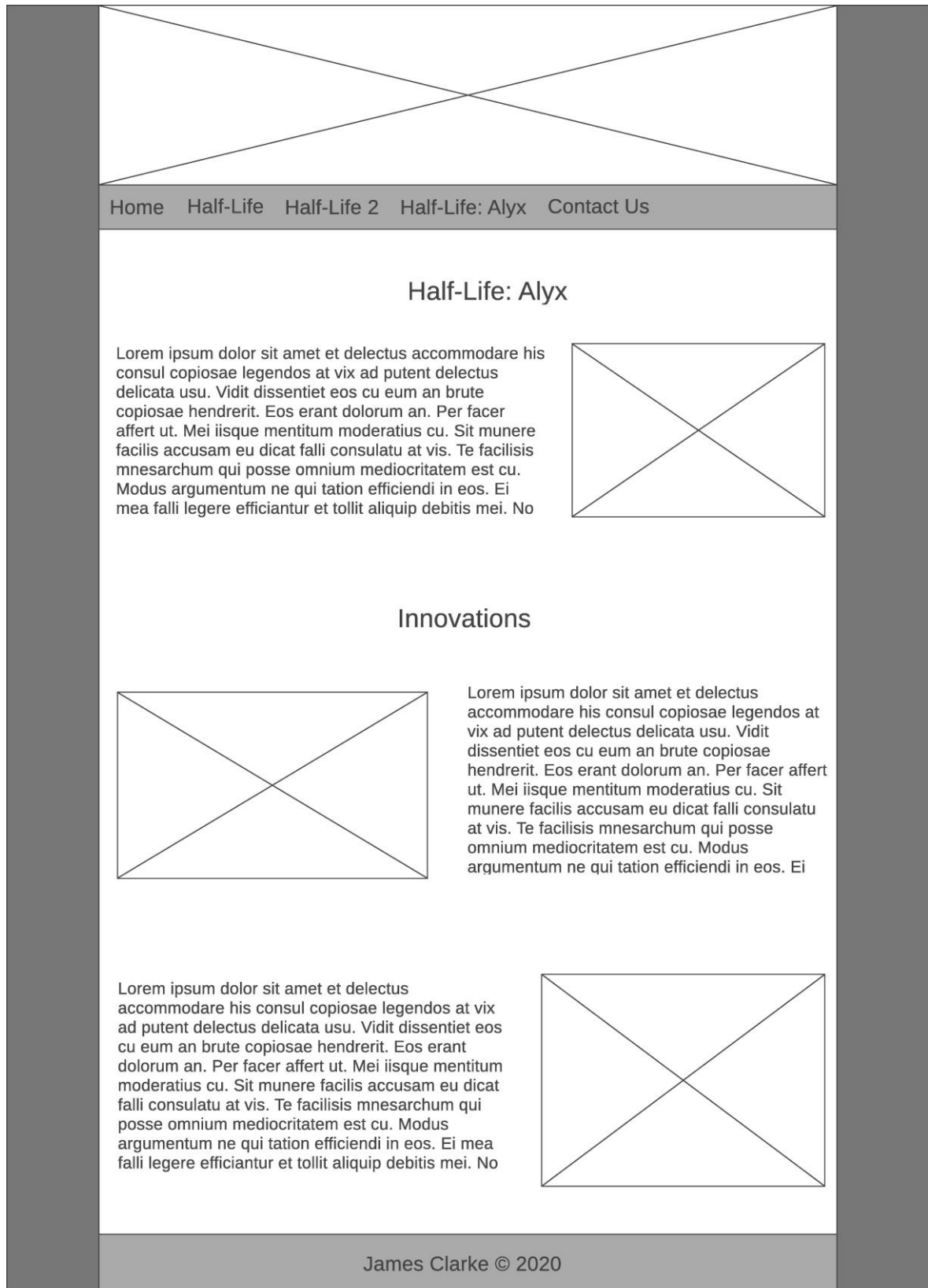
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James Clarke © 2020



## Page 4: Page Describing 'Half Life: Alyx' Game



## Page 5: Contact Form

HomeHalf-LifeHalf-Life 2Half-Life: AlyxContact Us

Send us a message!

Lorem ipsum dolor sit amet et delectus accommodare his consul copiosae legendos at vix ad putent delectus delicata usu. Vidit dissentiet eos cu eum an brute copiosae hendrerit. Eos erant dolorum an. Per facer affert ut. Mei iisque mentitum moderatius cu. Sit munere facilis

First Name:

Last Name:

Email:

Please Select your gender:

☐

☐

☐

What Device did you view this website on?

What games are you interested in hearing more about?

Lorem ipsum

Comment

Submit

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## 5. Development Plan

I will use one CSS file to style all five pages, as this will the styling of the entire website to be quickly changed and edited. I will not hard code any stylings into any of the HTML pages.

I will also use one JavaScript file and will not hardcode and JavaScript into any of the HTML pages.

First, I will create the basic layout of my five webpages. Each page will have a different background image to distinguish them from each other. I will achieve this by assigning the body of each page a unique ID which I will then use CSS to set the backgrounds for.

My website is all going to use the font ‘Sans Serif’ as this is a clear and easy font to read.

Most images on my page will be styled with the same style to ensure consistency. This will be done by giving each picture the same class. All my images will have rounded edges give them a cleaner look.

All the main paragraph information text will be styled with the same class to ensure that the websites information is presented in the same way to avoid confusion. It will all be the same colour and size.

All my headings will be styled the same too, with the same font size and colour for all of them to ensure that user is never confused as to what is a heading and what isn’t.

I will use “line breaks” to separate and divide the content on my page. I will use the same line break everywhere to keep the pages consistent with each other.

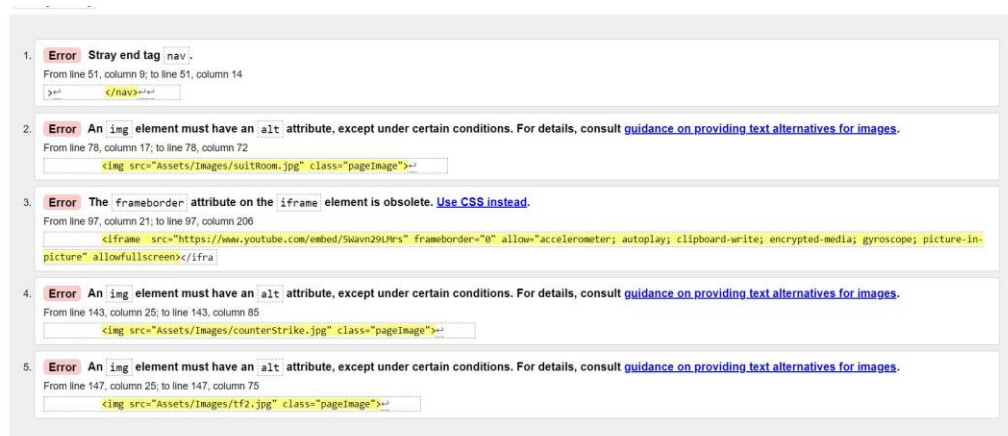
## 6. Testing Plan

### HTML & CSS Validation

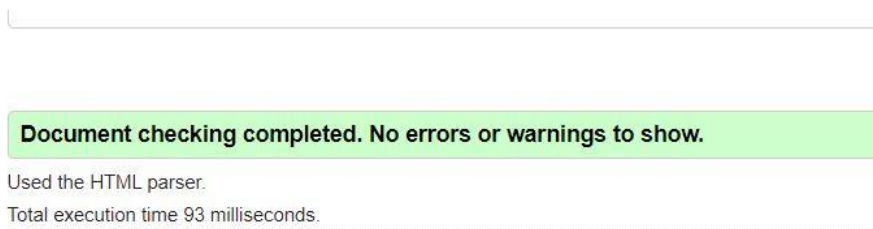
I tested my website vigorously throughout its development. One of the main tools that I used were HTML and CSS validators. The validators I used were the ones made available by W3:

HTML Validator Used: <https://validator.w3.org/>  
CSS Validator Used: <https://jigsaw.w3.org/css-validator/>

Whenever the validator gave any errors, I would solve them immediately.



*An example of error checking I carried out*



*After all the errors were resolved*

## Website Responsiveness

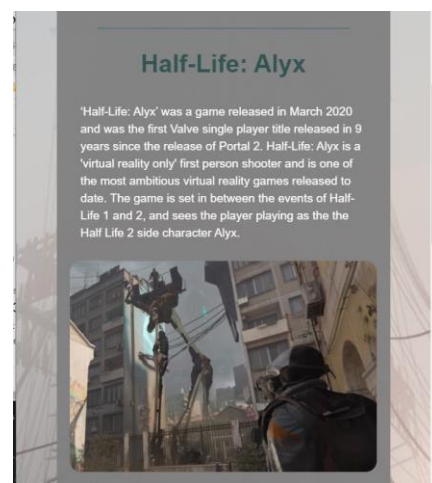
My website being responsive was one of my prime focuses as I had to ensure that my website would be accessible to any user, no matter what device they were viewing it on.

To ensure that my website could be as responsive as possible, I used Bootstrap Framework for the layout of my page.

I used the Bootstrap grid framework when creating my project along with a lot of my own CSS to ensure that my page was as responsive as possible. It took me a while to get the hang of the Bootstrap grid system but when I did it allowed me to create consistently responsive pages.

For my content areas, I made these responsive, aesthetically pleasing, and consistent by following the format of having many Bootstrap Rows containing a paragraph or two of text and an image.

In early stages of development, most of my Rows were 50% text and 50% image, achieved by using Bootstrap Columns. But I found through testing that when the page was being resized it meant the image was resized too small for the user to see, so I made my rows 60% text and 40% image, and this fixed the problem.

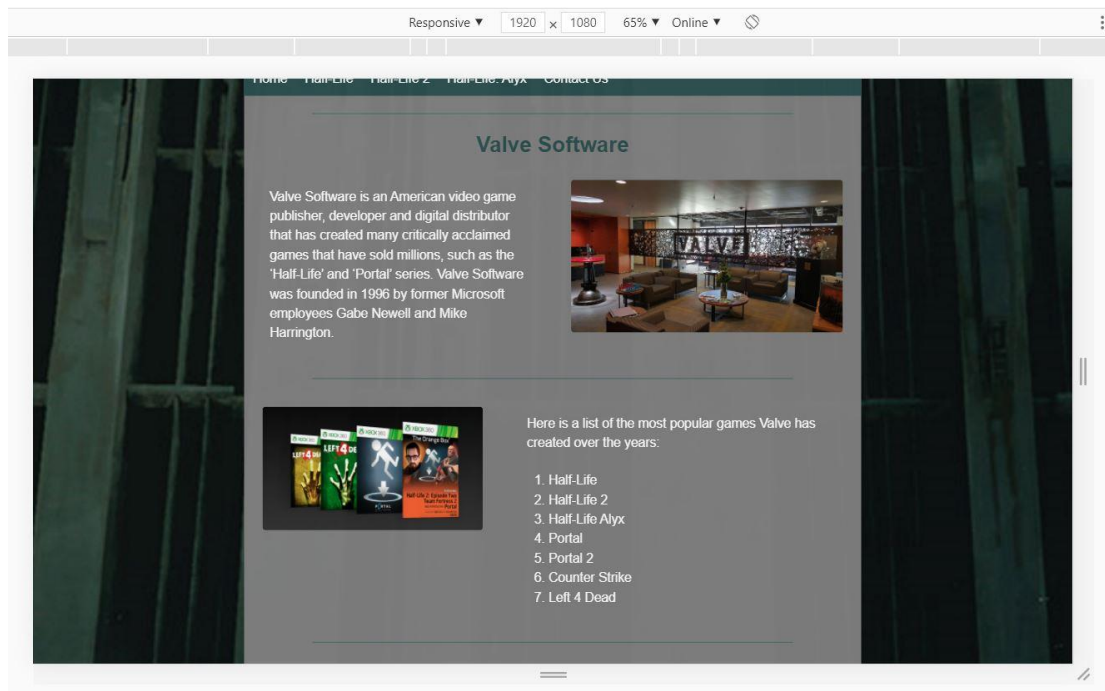


*An example of my site's responsiveness*

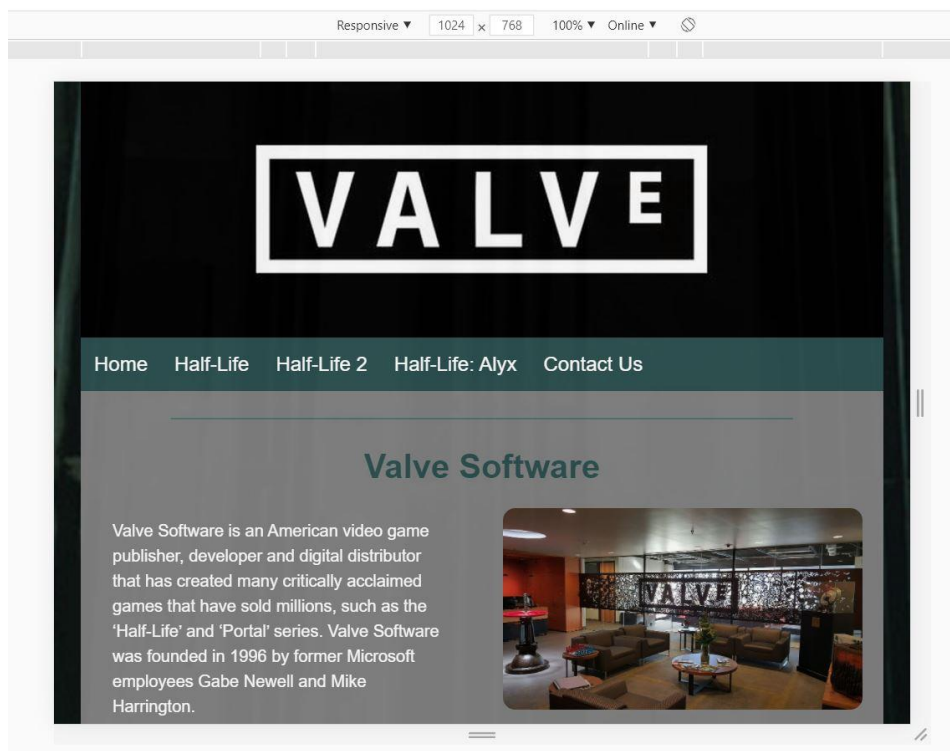
I used the ‘@media’ rule to ensure that the text was not too big on each device. I experimented with different pixel dimensions for each device type before deciding on what I have now:

```
/*Multimedia stylings:/*  
  
/*phones*/  
  
@media screen and (max-width: 699px) and (min-width: 200px) {  
  .textP {  
    font-size: 1.2rem;  
  }  
}  
  
/*tablets*/  
  
@media screen and (max-width: 1249px) and (min-width: 700px) {  
  .textP {  
    font-size: 1.25rem;  
  }  
}  
  
/*Computer screens*/  
  
@media screen and (min-width: 1250px) {  
  .textP {  
    font-size: 1.5rem;  
  }  
}
```

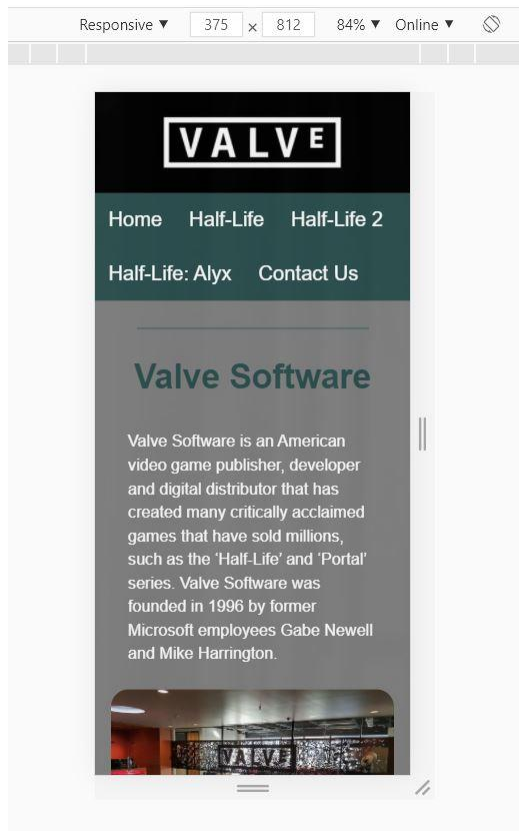
I used ‘rem’ units to style elements such as font as they allowed for dynamic text sizes. I also used ‘vh’ and ‘vw’ units for styling, as they allowed for dynamic measurements that changed depending on the viewport height and width.



*Website when viewed on a PC Screen (1920 x 1080)*



*Website when viewed on a tablet (iPad 4, 1024 x 768)*

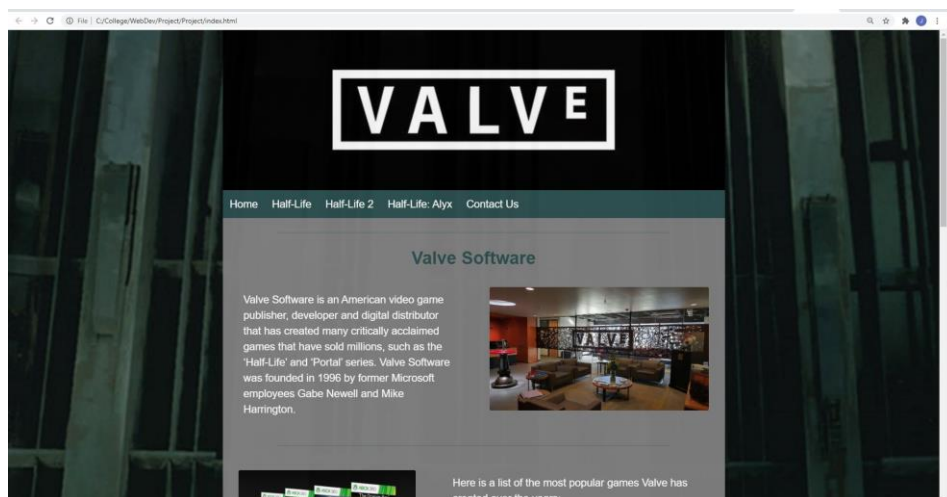


*Website when viewed on a phone (iPhone X, 375 x 812)*

## Cross Browser Compatibility

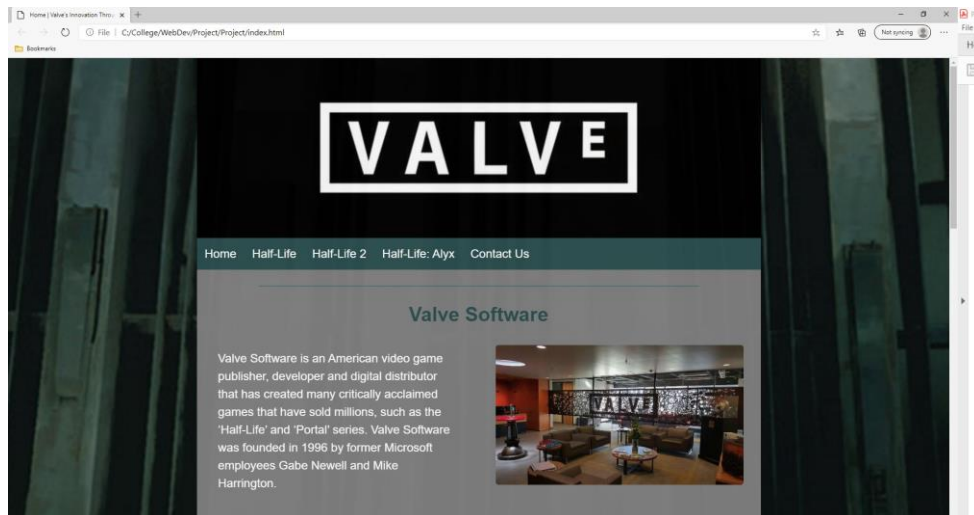
During development, I tested my website on many different browsers. I have tested my website on the following browsers, and it is fully functional on them all:

- Chrome
- Microsoft Edge
- Firefox
- Opera

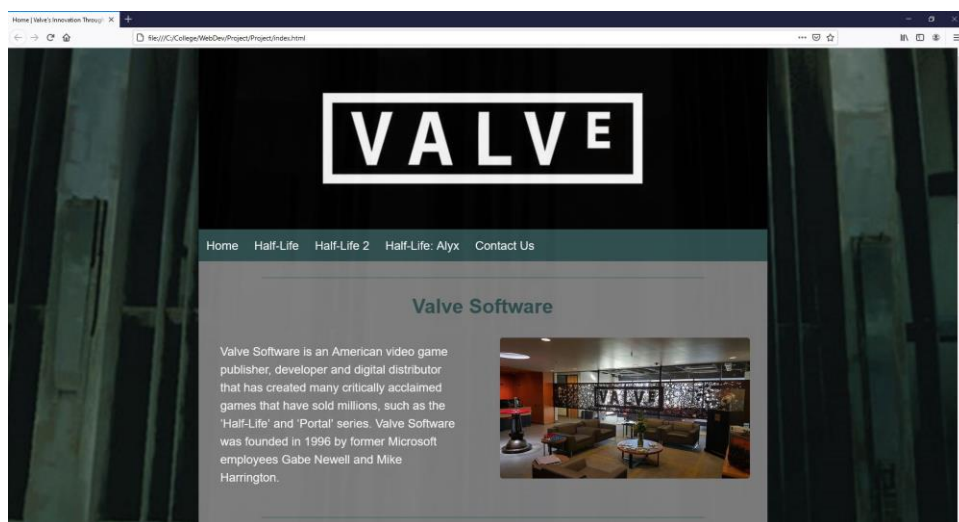


*Chrome*

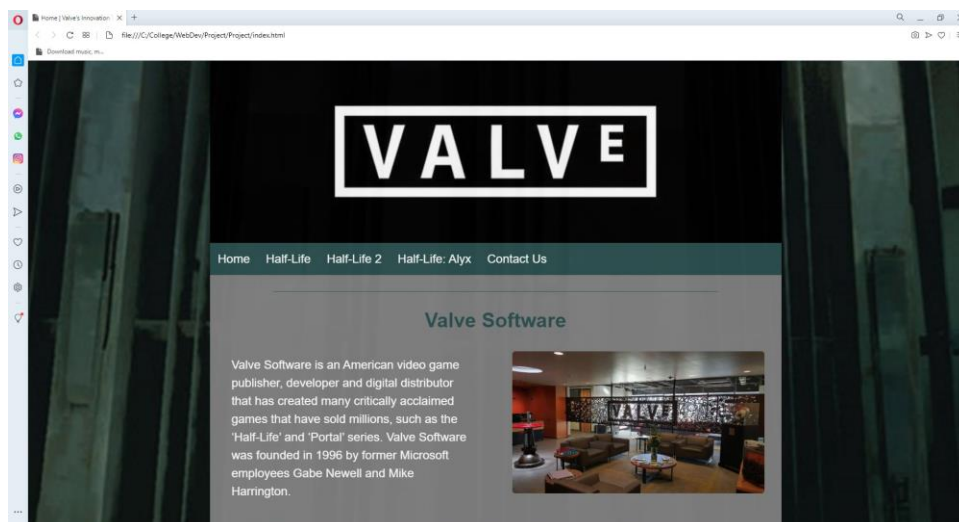




*Microsoft Edge*



*Firefox*



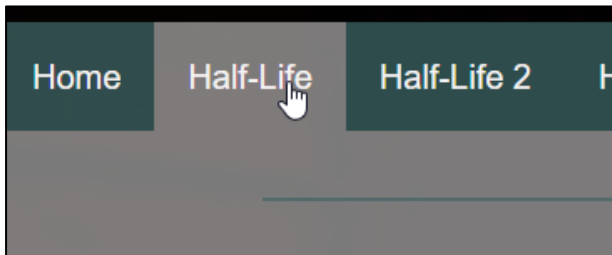
*Opera*

## 7. Site Evaluation

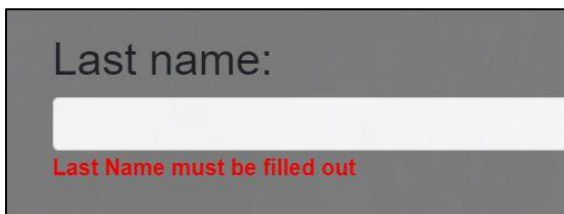
When creating my website, I was constantly evaluating it and thinking about how a user would interact with it. I followed Nielsen's 10 Usability Heuristics closely:

### 1. Visibility of system status

My website constantly gives feedback to the user relevant to what the user is doing and what the website is doing. For example, when the user hovers their cursor over the navigation bar, the mouse cursor changes to a pointer and the background colour of the selected item changes colour.



Probably the biggest example of user feedback would be the form validation on the contact form page. If the user does not enter any information or enters invalid information into the required fields, a relevant message will be displayed explaining where the user went wrong. This is essential, as without it, the user would have no idea where they went wrong or how to proceed.

A screenshot of a form validation message. It shows a grey rectangular box with the text 'Last name:' in a dark grey font. Below the text is a white input field. At the bottom of the box, the message 'Last Name must be filled out' is displayed in a red font.

## 2. Match between system and the real world

I always tried to keep my website contextual and understandable to the user.

The interactive menu I created, where an image changes when the user hovers their mouse over the relevant option, is an example of matching the system to the real world. As well as it being a fun to use and visually interesting menu, it creates a link to the real world as it applies the abstract concept of a menu linking to different pages describing video games to the real world object of a video game box that any user would understand.



By following general website conventions, such as a header and navbar at the top of the page, a footer at the bottom, etc., it means that my website layout will be familiar and hopefully easy to follow by all users.

The information that I have presented on my website is laid out clearly and consistently, using large, contrasting, easy-to-read text, horizontal line breaks dividing the text on my page into thematic sections and many images relevant to the text that is being displayed. All this combined allows for the user to view and understand the information provided quickly and easily.

## 3. User control and freedom

To allow maximum freedom to the user, a navigation bar is constantly available at the top of the screen, so that the user can easily navigate to any section they wish, no matter where on the website they are.

To ensure that the user never feels confused as to what page they are on, I used a different background image for each page. This helps the user to keep track of what page they are on, as well as allowing the user to instantly know when they have entered a new page.

On the contact form page, the entire contact form is available to the user at all times, so they can easily change any information they wish before submitting the form.

## **4. Consistency and standards**

My website follows the conventions of standard website designs. A header image and navbar is at the top, and a footer is at the bottom. The main content of the page is always located in the “body” section between the header and the footer.

The order of the items in the navigation bar are carefully chosen to ensure as little confusion as possible. The link ‘home page’ is located furthest left as per standard conventions, as the English-speaking audience (whom my website is targeted at) is used to reading from left to right, therefore perceiving the page furthest to the left as the “first” page. The last page I intend the user to view is the ‘contact page’, so that was placed furthest to the right in my navigation bar. The pages containing the three games that I talk about in my website were arranged in the navigation bar according to their release date, as this means that the user will hopefully look at each game in the order it was released, allowing them to see the progression from game to game.

Each page of my website follows the same colour palette and layout as each other to ensure the user is never lost or confused while navigating it.

## **5. Error prevention**

I used JavaScript to validate the contact form that is provided to the user before the information is sent beyond client-side. This will ensure that the user does not encounter any errors stemming from information entered incorrectly.

## **6. Recognition rather than recall**

I ensured that there would be no information that the user would have to recall in order to use my website. The contact form is located all on one page for this reason, as if it was spread out over multiple pages, it could get incredibly messy for the user.

## **7. Flexibility and efficiency of use**

All my pages being promptly available to access in the navigation bar at as soon as the user enters the page means that experienced users can use it very efficiently. For example, if a user wanted to come back to the site and just wanted to view the page on ‘Half-Life: Alyx’, upon entering my website they would be able to enter the page with one click without even having to scroll. This is opposed to having to click through multiple pages to get to the relevant one for example.

## **8. Aesthetic and minimalist design**

I made sure to only display information relevant to the site. I split my text up into multiple paragraphs interspersed with images to keep the page minimalist and aesthetic.

## **9. Help users recognize, diagnose, and recover from errors**

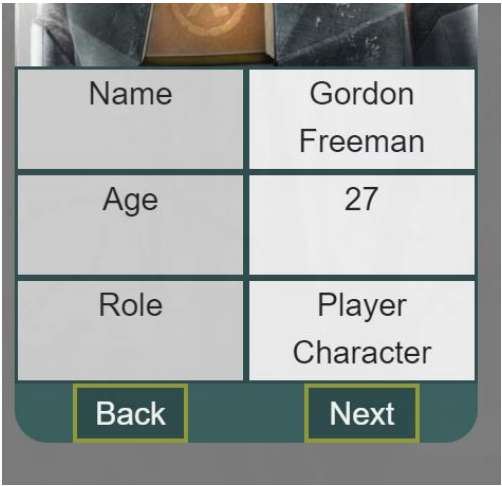
As mentioned previously, the error prevention generated by the JavaScript contact form validation ensures that if the user encounters an error, they know what they did wrong and how to fix it.

10. Help and documentation

I made sure to provide sufficient help and documentation to the user throughout my website to ensure that the user always knew what to do. For example, my interactive menu may have been overlooked by the user as if I had not pointed it out in instructions above it.



For my ‘Fact File’ I labelled the buttons as ‘Back’ and ‘Next’ to ensure that there was no confusion as to what it did. I also gave the buttons a yellow border so that they would stand out to the user.



## 8. Deployment

### Deployment

In order to make my website available online I would need to get web-hosting from a company online. I will then upload my website through a FTP (File transfer protocol) client. After the site is uploaded, I would have to submit my URL to Google search console at <https://www.google.com/webmasters/tools/submit-url> .

### Search Engine Optimisation (SEO)

To optimise my website for search engines I included Meta Tags relevant to each page. Each page has a description and keyword relevant to the page in the Meta Tags. Below is an example:

```
<!--Description-->
<meta name = "description" content = "This website gives information on the various video games created by Valve Software, and the innovations they have brought to the video game industry">

<!--Keywords-->
<meta name = "keywords" content = "Valve Software, Half-Life, Half-Life 2, Half-Life: Alyx, videogames">
```

# Appendices

This section contains the logs that I completed weekly during the development of my project.

## Week 1

The first project task that I completed this week was brainstorming and developing ideas. I wrote down all of my interests and decided on what ideas would allow not only for a visually interesting website, but one that I could fully showcase my web development skill set.

The main idea that I am leaning towards now is a website detailing the career of the musician, 'Joji', that I am a fan of, as I believe that it is open-ended enough for me to get creative with it, and my interest in the subject matter will motivate me to create a project that I am completely satisfied with.

I have already come up with pages that the website will include, such a page about the musician's history and a page with embedded YouTube videos of his latest music.

## Week 2

Over the week I changed my website topic as I believe that my new chosen topic will allow me to create a more dynamic and interesting website. The new topic that I have chosen is a website about the video games released by the popular video game company 'Valve' over the years.

I have researched similar websites and created a rough outline of how the website will look.

Over the week I have started developing my website, and I have now created 5 pages describing the various games, each one with images and text. I also have created a navigation bar to navigate to each page. I plan to clean these pages up over the coming week to make them more visually interesting and unique.

## Week 3

Over this week I focused more on the visual design of the five pages, using CSS rules to make the text I had written for the page more visually interesting. I added images to give context to the text, and embedded videos in the page.

I am currently in the planning stage for my JavaScript features and have many ideas that I plan to implement them over the coming week.

## Week 4

This week I started using bootstrap on my webpages to help create the page layouts more effectively. Bootstrap allowed me to create responsive elements more efficiently as well as lay out the page content more clearly.

I completed my first JavaScript element, which is an interactive menu that animates when the user hovers their mouse over an option.

I also added more content and images to all my webpages.

## **Week 5**

This week I completed my two remaining JavaScript elements, one being a “character fact file” that scrolls through various characters and details information on them.

My third JavaScript feature was the verification of a contact form for my website. The JavaScript checks all user inputs and returns relevant error messages if the user has entered information incorrectly.

I have also worked on the responsiveness of the website, to ensure it is accessible on all devices.