HSC Software Design and Development
2017
Assessment Task 2

YEAR	HSC		
UNIT TITLE	Defining, Understanding, Planning and Designing		
DATE GIVEN:	Term 1 Week 2	**DATE DUE:**	Term 1 Week 6 Thursday Period 2
WEIGHTING	15%	**TOTAL MARK**	/ 35
TYPE OF TASK	Written report		

HSC: SOFTWARE DESIGN AND DEVELOPMENT

Assessment Task 2 - 2017

Group

Completed by Patrice Harapeti, Nathan Harris and Ronan Fitzpatrick

Our Group Logbook is found here.

Submitted on the 9th of March, 2017.

Work Distribution:

Ronan Group Patrice Nathan P. Harris

Option 2 - Major Project Part A Completed Collaboratively (Groups of 2 or 3)
Section 1

1. Create a log book for use throughout the development of the project. This will also be used for Assessment Task 4. **See page 22 of your Course Specifications Document for logbook requirements**. You may choose to complete all documentation for this task within the logbook or you may choose to keep the work separate. All members of the group must have access to the logbook. Students must make individual entries each time they complete work for this task.
2. Select a topic you would like to work on. This topic must be significantly different to any projects already completed.
3. Define the problem - Give a description of the problem you are hoping to solve. Include functionality requirements, compatibility issues, performance issues and boundaries of the problem.
4. Existing solution - Investigate any existing solutions or solutions that have a similar purpose to your proposed solution. Compare and contrast at least two solutions with your proposed solution.
5. Initial system documentation - create an IPO chart for your proposed software project. **See page 12 of your Course Specifications Document for IPO charts.**
6. Initial system documentation - create a data flow diagram for your proposed software project. **See page 12 of your Course Specifications Document for DFDs.**
7. Determine which program development environment / programming language you are going to use to complete your final project. Explain why this environment / language suits the purpose of the project you are going to develop. **See page 25 of your Course Specifications Document for language specifications.**

Section 2 Ronan Group Patrice Nathan P. Harris

1. Interface design - individually create a screen that could be used as an introductory or splash screen for your project. You need to apply good screen design principles. You may use any program to create the screen - it does not have to be created in the programming language you will eventually use.
2. Print or take a screen captures of each screen.
3. Evaluate the screen(s) designed by each of the other members of your group. Have at least one other student (not necessarily an SDD student) also evaluate each screen. Include the evaluations in your documentation.
4. Create a summary of the evaluations indicating which features / comments will be taken into consideration when redesigning the final screen.
5. As a group, redesign your introductory / splash screen taking ideas from part 4 into consideration.
6. Explain which features of your final interface demonstrate good design principles. Justify your answer
7. Explain how your have taken into consideration the results of your evaluations. Justify your answer.
8. Prepare an initial Gantt chart for your project. It should include tasks from both Assessment Task 2 and Assessment Task 4 as well as showing major milestones. Indicate on the Gantt chart how resources are allocated including which tasks are allocated to group members.
9. Storyboard - create a storyboard to represent your proposed solution. Include information of the purpose of each screen as well as major design details. **See page 20 of your Course Specifications Document for storyboards.**

Brainstorm

Platform
Unity
Mac/osx, Windows

Name
Platonic Whispers of Darkness: Unsolvable mysteries of the faith

Variables

Distance

- Users use the distance gun
- They get a reading

Color

- Users look at the star and identify the star

Size

- Crosshair template which changes as
- Scan shows size - ‘cheat sheet’ tells class within size range
- Diameter of the star is shown above your crosshair after ‘scanning’

Goal: Users learn the different classes of stars and astronomical phenomenon

Database

Game Saves

- User name
- Stars discovered by user
- Experience System
    - Better telescope
    - Detect smaller items
    - Auto-detecting the color, size, distance
    - Quicker scanning

Cache

- Music settings
- Resolution setting
- Graphics setting

Interface/Storyboard

1) Opens file
2) Resolution / settings / graphics
3) Splash screen is seen then pans to menu (blackmail claim)
4) Menu

Section 1

Topic

Astronomy - The identification and classification of stars and other astronomical objects

Define the Problem

Identifying the problem

The premise behind our solution is that users will be able to view the night sky through a virtual telescope in 3D. The users will be challenged with correctly classifying astronomical phenomena with an 'information book' as help. The virtual telescope can be progressively upgraded in order to allow the user to classify more unique stars and classify stars faster. Upgrades will be unlocked through correctly classifying these objects.

Functionality Requirements

The Software solutions needs to:

- Provide a representation of constellations, planets and other astronomical objects
- Motivate the user to continue using the program/High interactivity
- Teach users of certain features of stars, planets and other objects
- Provide 'experience' points and achievements for correctly identifying objects

In order for these requirements to be achieved, the software solution has to allow the user to 'point' at virtual objects. This will be done through receiving mouse input of the user and as the cursor/crosshair comes into contact with the object information about that specific virtual object will be displayed on-screen.

Through allowing the user the freedom to 'scan' whichever astronomical objects they choose within the program, they're motivated to learn more about each object. When a certain number of objects are discovered, users have the ability to receive achievement badges depending on how far they've progressed. This creates a feeling of progress and motivates the user to continue using the software solution and increases user interactivity with the software solution.

Compatibility issues

Through utilising 'Unity 3D' as our game development environment, our software solution can be exported to multiple OS, such as Windows, Mac, Linux, Mobile, Browser and some consoles. However we're planning to build to Mac OS X initially and in future we may export to other OS. The advantages of using Unity3D is it's well supported compatibility with a variety of hardware devices. Due to Unity3D using C# and Javascript in compiling, accessibility of users is majorly increased as these two programming languages are one of the most popularly used programming languages in software solutions; especially in video games. Our solution is also an offline solution which means that the game does not require an internet connection to run, this allows the solution to be much more widely compatible with user who: a) do not have an internet connection or b) users who have an internet connection but they cannot connect to the internet when trying to run the solution. Also, if our solution needed to be connected to the internet, more issues would arise due to the varying download speeds of each user which would affect the performance of the solution.

We must allow the program to be configurable by the user in order to suit their needs. For example, adjusting the screen resolution, graphics settings/quality, font size, colour and other aspects of the software solution to provide accessibility to individual users. The labels and design elements we use on the graphical interface [gui] will be anchored which means that the screen design elements will also remain in the same x,y, ratio regardless of the size of the x or y screen resolution.

Performance issues

Testing is extremely important for the software solution to work on multiple devices. We could provide early versions of our program to users for testing on multiple devices that use different hardware. If any problems arise we must look for fixes that allow the software to work on multiple devices and differing OS to increase a larger market for distribution after the development of the solution.

By receiving evaluations of our software, if a screen becomes unresponsive, or there are poor response times; it is imperative that we must optimise the program in order for the software solution to run smoothly for all users. This can be done by using lower resolution texture on any 3D objects, or using 3D objects in our solution with low polycounts which allow them to be rendered quickly.

Individual users will have access to different devices when running our software solution. Due to this combination of users using a variety of graphics cards, processors and amounts of RAM (as well as other hardware elements) would allow users to run the program at varying performance levels. In order to cater to the needs of a wider audience we can reduce the number of stars and entities to decrease the number of computations needed to be made by the ALU (a component of the CPU/Central Processing Unit). Reducing the number of entities will increase the performance of our software solution as each entity is required to be computed upon; our solution may use a formula to determine the classification of the star which will use the processor when running the formula. Hence, decreasing performance of the solution. The reduction of stars will allow users to run the program at a an appropriate framerate (i.e ~60 frames per second). Framerates under 30 frames per second often look choppy and laggy, therefore it is essential for our solution to be optimised to run at above at least 30 frames per second.

Boundaries of the problem

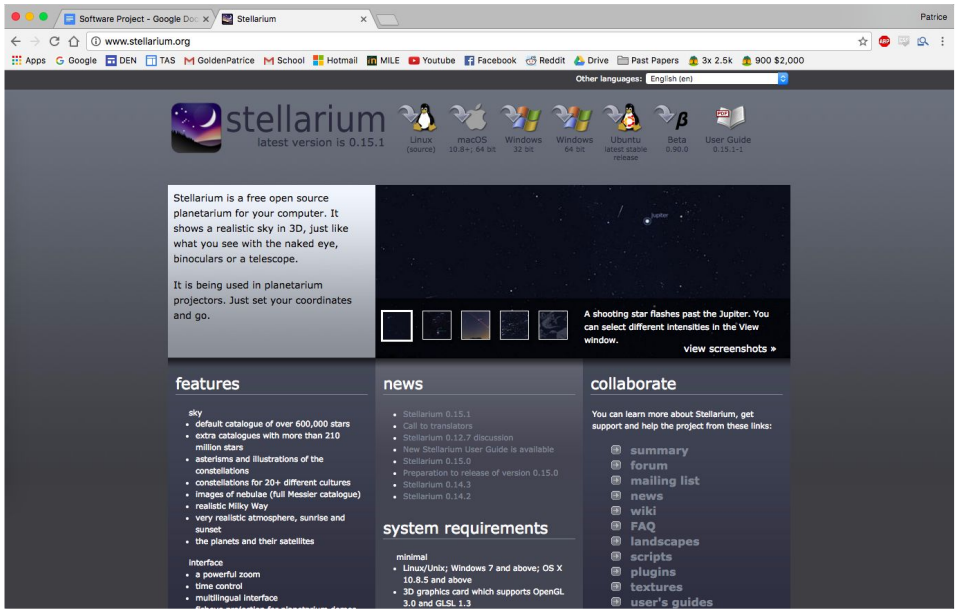
User controls in the solution game is out of our control and completely relies on their ability to use either a mouse or trackpad in manipulating the interface. If the user is unable to use these input devices, it can become detrimental to the experience of the software solution. If a user is lacking the ability to correctly use our solution, the instructions menu on our home screen as well as additional tips throughout our solution will allow these users to properly interact and use our solution. The implementation of online help and instructions menu also increase user functionality and interactivity and enhance the user experience when using our solution.

The way the user views the display of the software solution is through the interface on the monitor. Without a correctly calibrated monitor it can be difficult for users to identify virtual objects within the bounds of the program. Since we are representing space, the virtual environment could be very dark as it'd be 'night' within our program. We need to ensure there is enough light for users to be able to view elements within the program. This issue may be resolved by adding a "brightness gamma" setting in our setting where users can change the brightness of the solution to alter the brightness of the program to suit their environment that they are using the solution.

Existing Solution

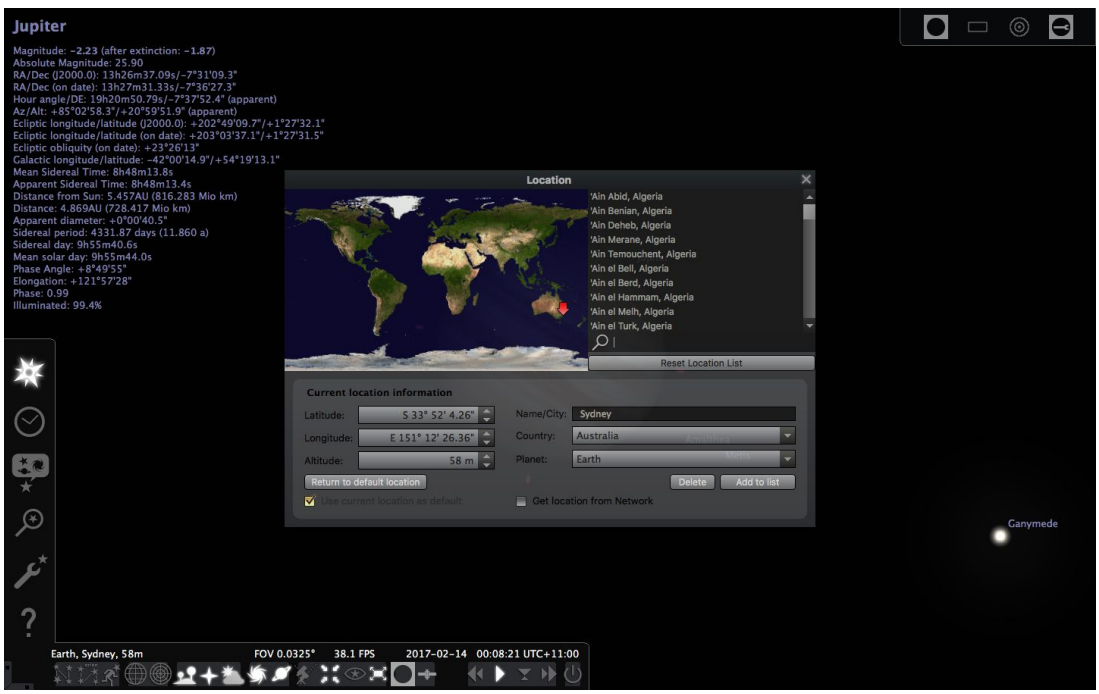
Compare and Contrast with our solution

(1) **Stellarium:** *https://www.youtube.com/watch?v=4wV8UUHT5IA&feature=youtu.be*

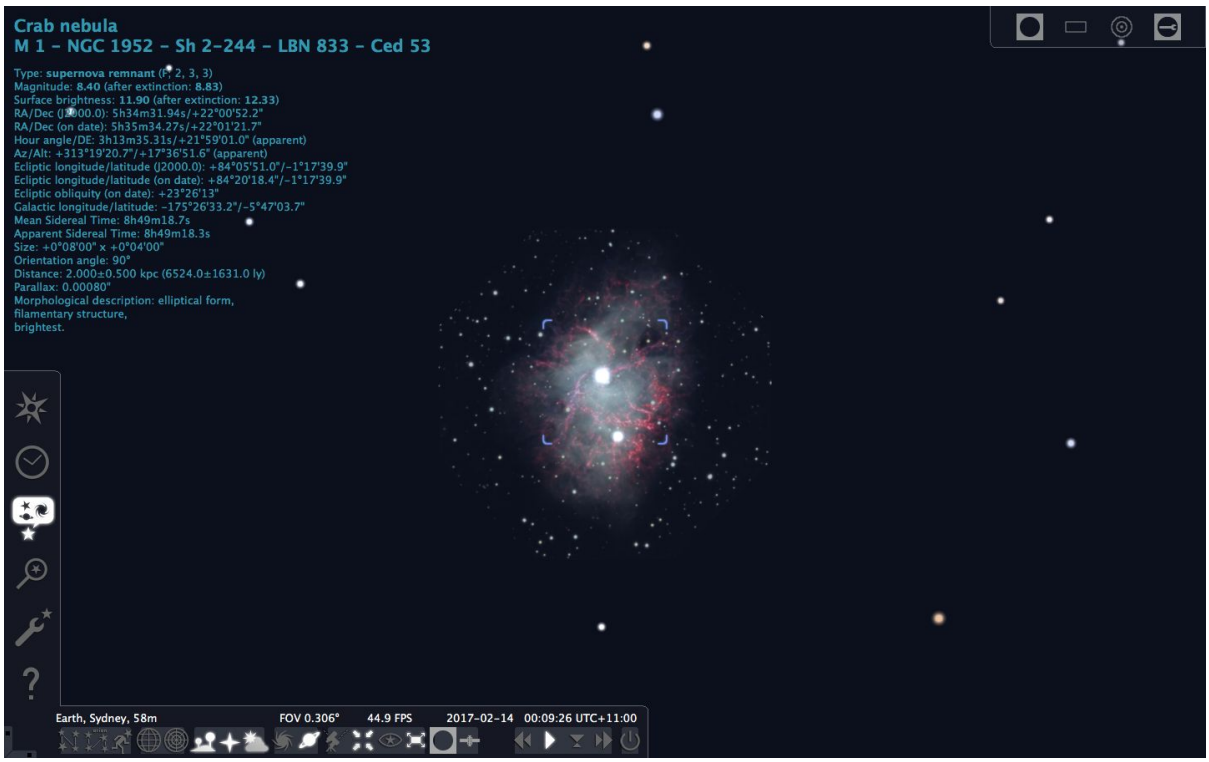


Information:

Stellarium is a free planetarium software designed to assist astronomers on finding objects in the night sky. The program is available on a variety of operating system such as: Linux, MacOS, Windows and Ubuntu. Stellarium is downloadable from their website seen here, the download for the MacOS operating system is approximately 167 megabytes.. Stellarium allows users to input their geographical location on Earth by either inputting their coordinates or using the search feature to approximate their altitude and latitude in relation to the nearest cities of the user.

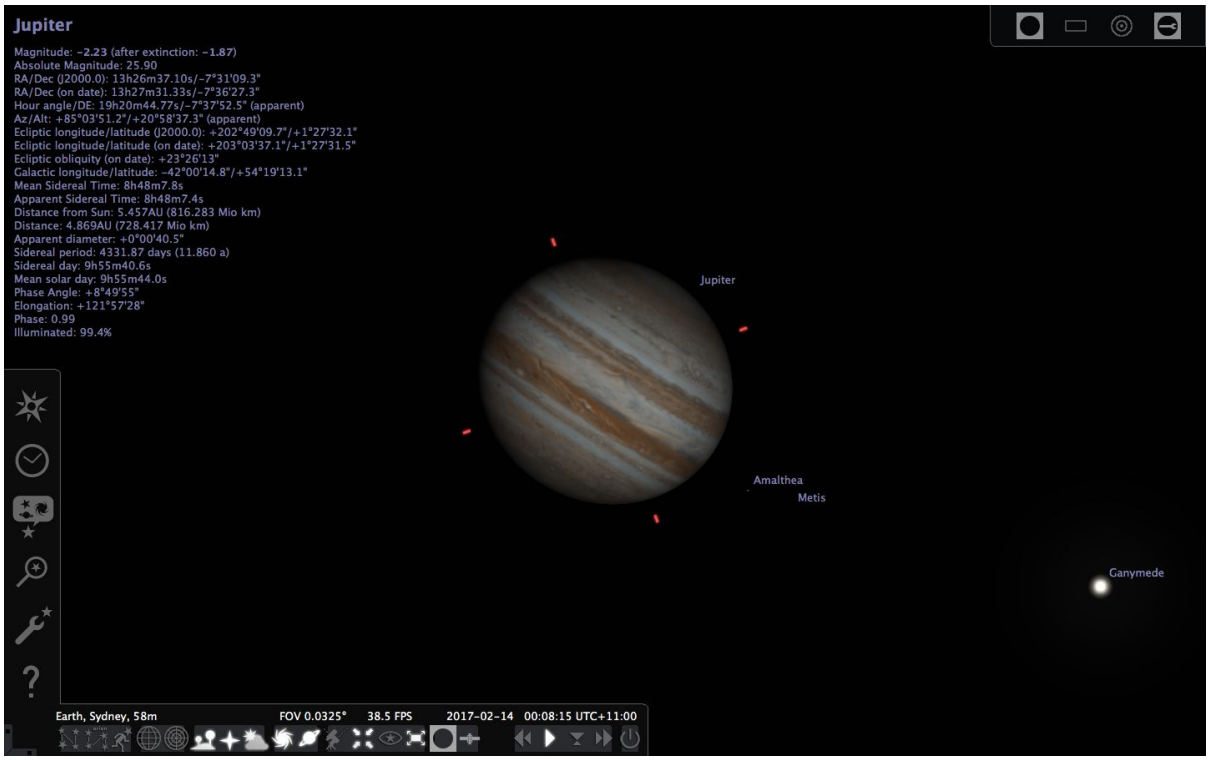


How the users use the application:
Users use either their arrow keys or the mouse to navigate the night sky also using their mouse scroll wheel to zoom in and out into the night sky essentially increasing magnification of their view and reducing their field of view. Tools on the toolbar allow users to toggle grids and celestial objects which may assist users in finding objects in the night sky. Users also use the spacebar to centre their view on the object to obtain a better view.



Comparison:
In comparison to our solution, Stellarium allows users to be educated on real-time constellations and astronomical objects in the night sky. This is similar to our solution as our solution promotes an understanding of the classifications of stars seen in the universe. The magnification and character input is similar in both solutions and users must use the arrow keys to change their view of the night sky using a scroll wheel to improve their view of the object by magnifying their view into the night sky.

Our solution is also marketable to the same target audience of Stellarium as an astronomy based solution will entice these users as astronomy is their interest and possibly their career option. However as Stellarium is a Planetarium software rather than a game it's focus is on accurately representing real world constellations and planets, whilst our software solution focuses on interactivity for the user with achievements and interesting graphics/UI, as well as possibly a soundtrack.



Compare and Contrast:
The main difference between our solution and Stellarium is the purpose of solutions creation. Our solution is a partially educational game which teaches users about the various classifications of stars and possibly other astronomical objects. Whereas, Stellarium is simply a planetarium simulator which assists astronomers in finding objects in the night sky.

Similarities	**Differences**
The view of the telescope in our solution is similar to the user's perspective in Stellarium.	Our solution allows a user to progress and gain experience whilst using the program whereas Stellarium is simply a Planetarium software which is purely used as an educational tool to educate users about the night sky and it's features. This means that the user will feel much happier and engaged whilst using our program compared to Stellarium as the users will feel a sense of progression and gain accomplishment after leveling their character.
Stellarium and our solution both educate the user about different attributes and properties of stars and astronomical phenomena.	Our solution includes a menu/splash screen whereas Stellarium does not. Also, there is no instructions menu in Stellarium although there are keyboard shortcuts displayed in the labels of the buttons on the toolbar.
Our solution and Stellarium share the same Market Audience. This audience is people who are interested into Astronomy and who wish to seek new wonders in the night sky.	Our solution will offer a background music track as well as a variety of sound effects whereas Stellarium is a soundless program.
The user input in both solutions are similar. In Stellarium, the user uses keyboard shortcuts to toggle a variety of setting such as the atmosphere, constellation lines, ect. The user can also use the mouse to drag across the night sky changing the direction of their camera. This is replicated in our solution as the user uses the keyboard arrow keys [W, A, S, D] as well as the mouse to navigate the night sky.	Our solution is about problem solving in Astronomy whereas Stellarium is an application about learning a variety of celestial phenomenon.

(2) Papers, Please:

Trailer: https://www.youtube.com/watch?v=_QP5X6fcukM

Information:

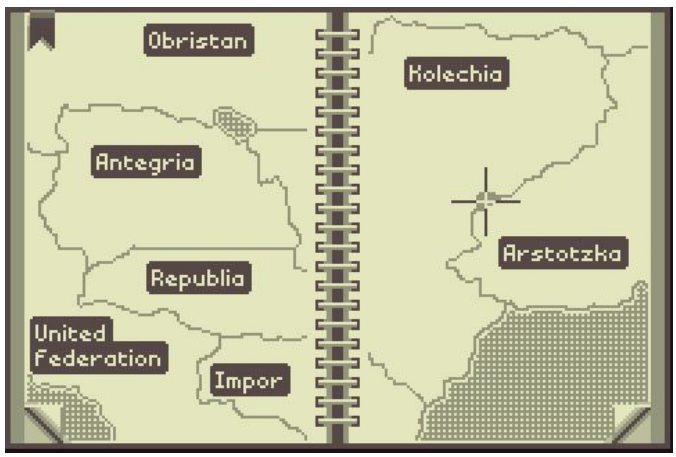
Papers, Please is an video puzzle game set in the dystopian 1960's 'Cold War' Era which sees common threats such as illegal migration, spying and rebellion and created by a indie game developer named Lucas Pope. In the game, the user is assigned the role as 'Immigration Officer' which either allows or denies entry of a migrating person to Arstotzka.

Goal of the game:

The purpose of the game is for the user to identify if the migrator is licenced with a valid passport and other valid credentials. To verify the immigrants documents, the user must use a variety of tools to examine information specified on the immigrants documents. For example: The user is given the "Arstotzka Rules and Regulations Book" which can be dragged and dropped by the user onto a table in the UI. Users then must navigate through the book to the relevant section and compare the information given by the immigrant and cross-check this information with the valid information in the Rules and Regulations Book.

Pages include:

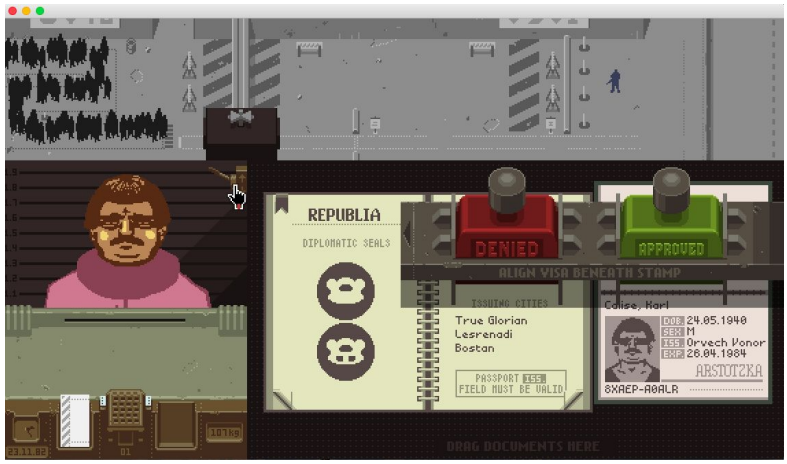
Rules: The rules at which the immigration officer must comply to whilst allowing or denying entry to immigrants. Examples: "Entrant must have a passport" and "Arstotzkan Citizens only".

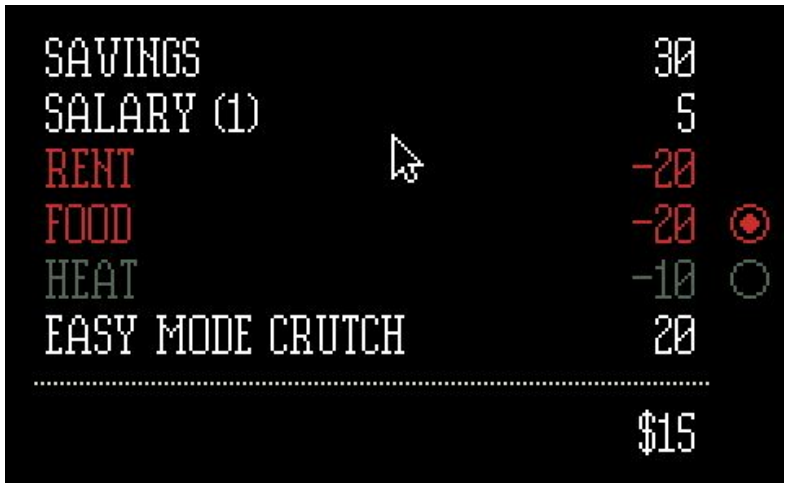


Map: Allows the user to see the surrounding countries and quickly navigate to their page by clicking on the label name

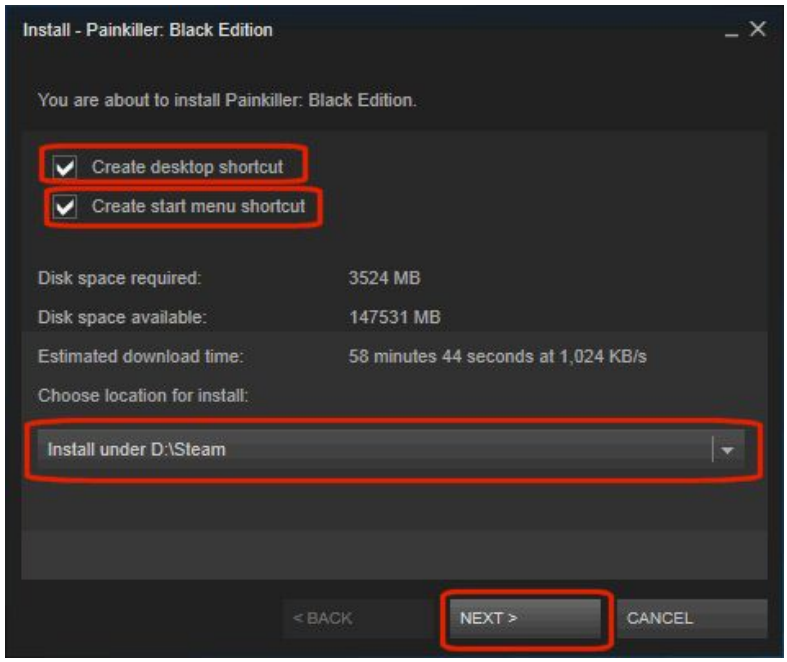
Information on every country surrounding Arstotzka: Two Seals which are valid on the passport from that region. Issuing Cities which supply passports and are valid.

Approving / Denying an immigrant's papers:
Once the user determined the validity of the immigrant, the user imprints a stamp on the passport; being either Approved or Denied. After this, the passport and other remaining documents are handed back to the immigrant and hence the encounter is finished. At the end of the day, the user receives a salary and is penalised on allowing illegal immigrants through the checkpoint. This money system forces users to prioritize necessities for characters family. Items such as Heat, Food, Medicine, etc.





Installation:
The game Papers, Please is available for download from the Steam Store for $9.99 USD seen here and is targeted to gamers who enjoy puzzle games, also the game can market to gamers who enjoy the Cold War Era. Games also set in the Cold War era include: Fallout 4 and Metal Gear Solid V (which are both popular in mainstream gaming). The game is installed by clicking the install button in the Steam Library window then following the various steps to install the game such as specifying the games installation location, creating keyboard and start menu shortcuts. Papers, Please is available for Windows, Linux, iOS, PlayStation Vita, and also MacOS operating systems. In comparison our solution can additionally build into: Blackberry, Web Player, Tizen as well as all consoles, and previously mentioned operating systems.



Source for the image to the right:https://support.bundlestars.com/hc/en-us/article_attachments/203632169/Steam_Install_Game5.png

Compare and Contrast:
The concept of a cheat sheet or guide is common in both our solution and Papers, Please as users in both applications observe an entity and using surrounding information, categorise the entity into a category. In our solution, the entity being stars and the category being the star's class.

The main difference between Papers, Please and our solution is theme and concept of both solutions. In Papers, Please you are classifying and identifying people whereas in our solution you are identifying stars and classifying the class. Also, our solution is a 3-dimensional game with a semi-realistic art style in contrast to Papers, Please is a 2-dimensional game with a pixel art style.

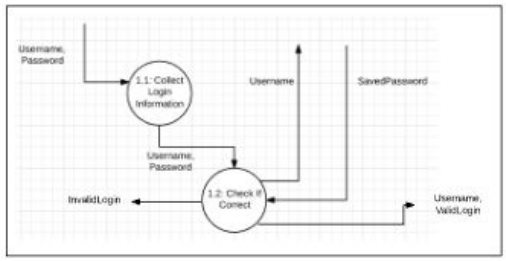
Similarities	**Differences**
Both solutions offer the user a levelling system which makes the game easier for the player through progression and helps made the player feel like he/she is progressing and keep them engaged wanting to interact with the solution more.	Our game is 3D whereas Papers Please is a 2-dimensional game. This means that our solution will be much more demanding on the graphics processing unit compared to Papers Please as more textures and polygons need to be rendered compared to the low-polygon simplistic art style of Papers Please.
The process of validating an entities integrity is similar in both games. A handguide is used in both games to give the user access and information about given entities and therefore made an educated guess at the classification of an entity. [Star's Classification or an immigrant's passport details]	In Papers Please, the player is classifying people as having valid entry or invalid entry whereas in our solution the player is determining the classification of the stars they discover.
Both solutions are games which challenge the user and engage them.	The art style is different in Papers Please compared to our solution.
Both solutions are marketed to an audience which enjoy problem-solving games.	Our solution is free whereas Papers Please can be bought of the Steam marketplace for $9.99 USD.
	Our solution will be much more demanding on the hardware components of a user's device as our solution is 3D, is of a realistic art style and will be needing to compute a variety of formulas to properly classify the stars in the night sky.

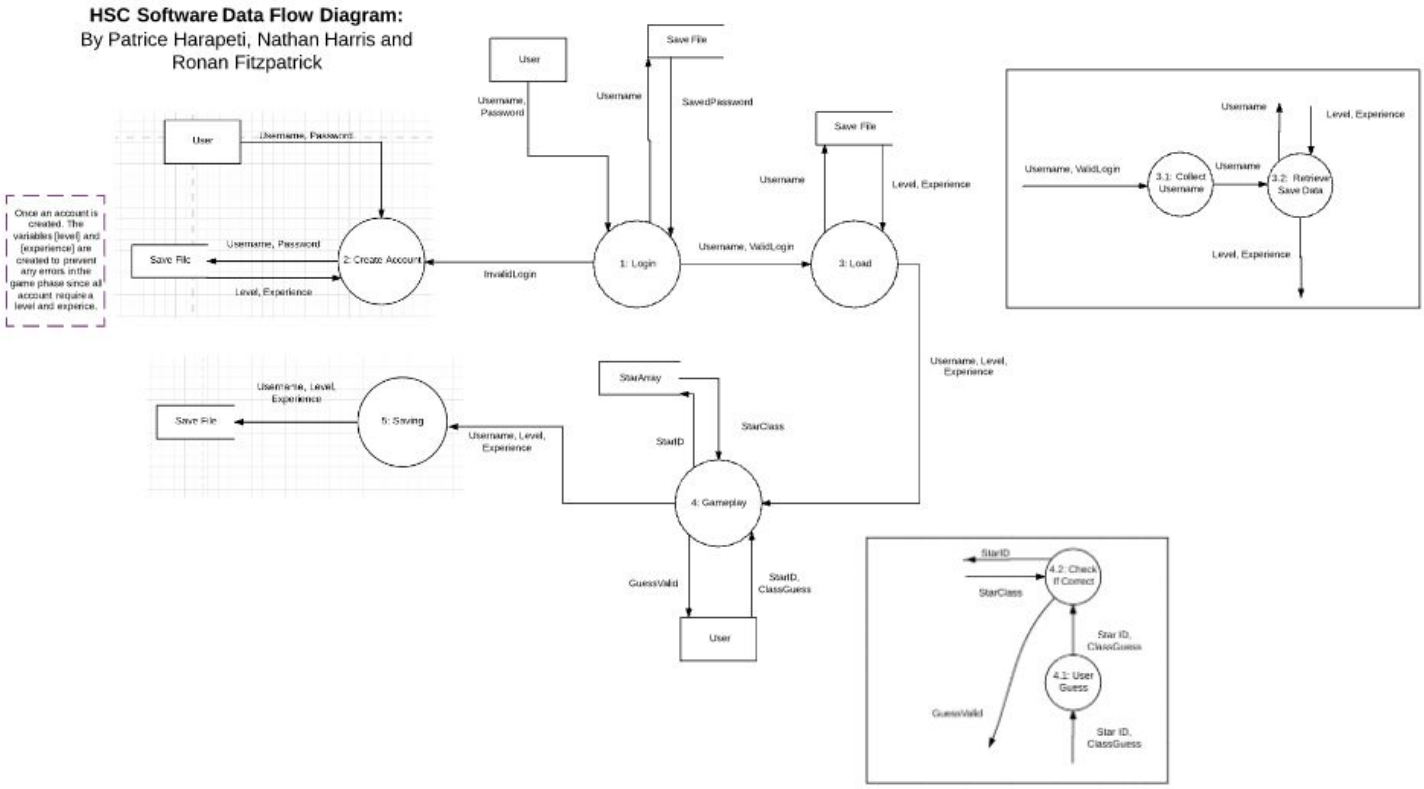
IPO Chart

Input	Process	Output
User runs application	Load program from code	Display splash screen
Save Button clicked	Collect data from system	Write Save Data to file
Load Button clicked	Collect data from save file	Load data into system
Login button clicked	Retrieve user details Check if details are correct	Display gameplay screen 'Incorrect details'
Create User button clicked	Save Username and corresponding password to hard drive Load gameplay screen Load Heads-Up-Display	User created Display gameplay screen
Play button clicked	Load Login screen	Display Login screen
Star Classification (radio button)	Check if correct	Display results screen Add 'experience'
Press 'TAB' key	Load/Close Handguide	Display Handguide on bottom of screen
Cursor moved over Celestial object	Check object type Load corresponding object details Wait allotted time (dependent on user level)	Display object details on Heads-Up-Display
Classify Star button pressed (on handguide)	Load Star Classification screen with radio buttons	Display Star Classification screen with radio buttons
Settings button clicked	Load settings screen	Display settings screen
Mute checkbox clicked	Check if checked/unchecked	Mute or Unmute
Volume Slider moved	Check what increment slider was moved to	Change volume to corresponding increment
Menu button clicked	Load menu screen	Display menu screen
Quit button clicked	Load 'Are you sure?' prompt Check answer	Quit or Return to menu

Data flow diagram

This is just a preview. Please click here to view the Data Flow Diagram



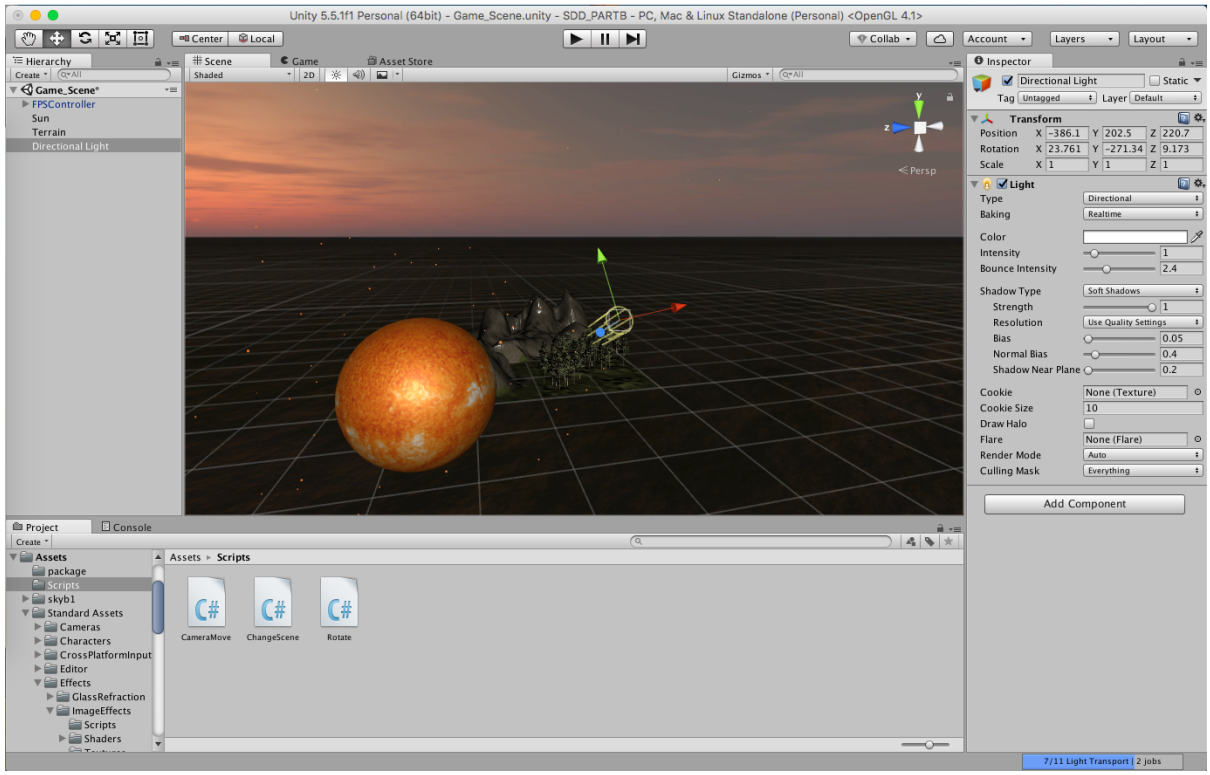


Program Development environment -

Determine which program development environment programming language you are going to use to complete your final project. Explain why this environment language suits the purpose of the project you are going to develop

For our software solution we are going to use the Unity 3D program development environment. The Unity software package allows users to use various languages within the platform. The main two programming languages, C# and Javascript, can be edited and debugged by Unity's software package program called MonoDevelop. This program offers language autocompletion whilst writing code which predicts the next line of code the user will write. This process reduces the time a programmer needs in producing a script as many variables and language specific keywords are available for autocompletion.

For the graphical style of our game, a 3D game environment suits our program. It allows us to create a 3D representation of the sky, and allows users to view stars from multiple angles which is necessary for creating a semi-realistic astronomy game.



Above is the main screen of Unity3D. On the left is the hierarchy menu where the current entities + objects of the scene are listed. On the bottom is the file explorer where you can import and export files as well as create documents and folders. On the right is the inspector where you can change the settings of entities as well as add controllers, components and attach scripts to the entity. Centre screen shows the world where you are developing. On the top there are a variety of buttons which change the location, size, angle and scale of the selected entity. Also, there are start, pause and skip buttons to allow the developer to run their solution.

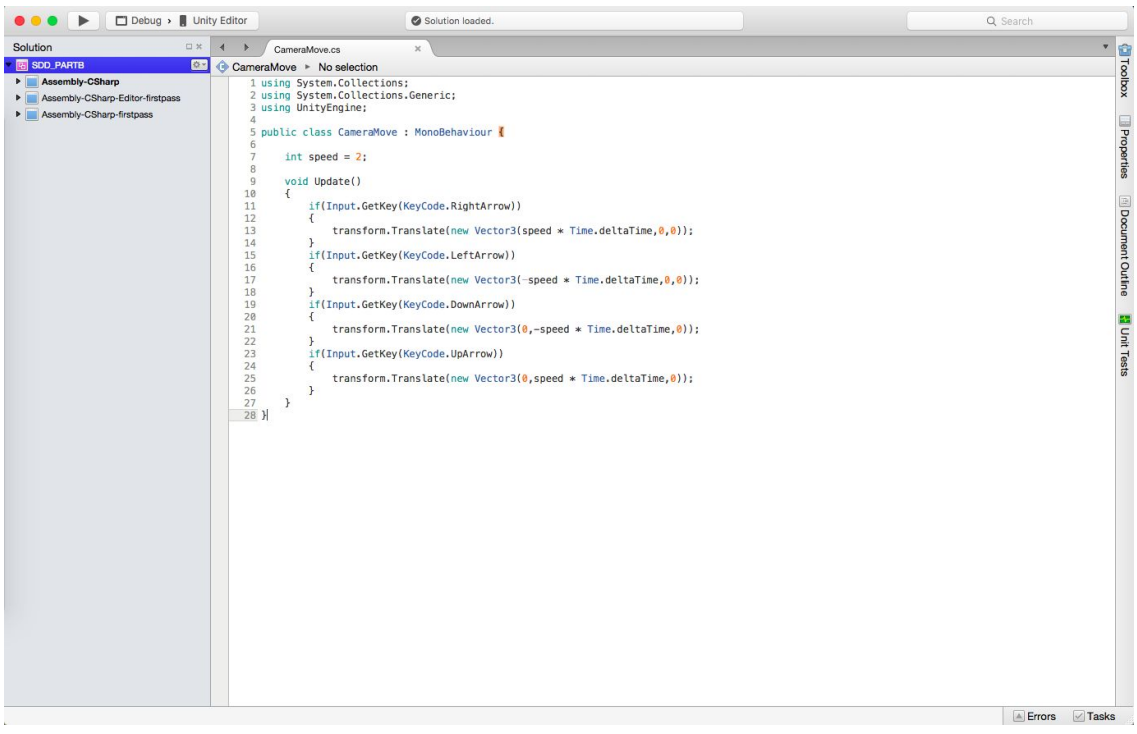
There is also a numerous amount of documentation associated with using Unity, as well as the knowledge our group members already have of Unity it's very easy for us to adapt the program to our needs.

Firstly, C# is an object-based expansive programming language which can offer programmers a large variety of functions and abilities in terms of coding. C# can be used in many different ways as it is such a large and feasible language. Due to this, many programmers claim the language is difficult to learn and master due to the sheer volume of keywords, structures and language syntax. In our solution, we will not need to dive deep into difficult programming structures but merely use simple code to perform the functions we desire.

C# is a cross-platform language which can build into a variety of operating systems such as the Windows operating system, Linux and any other open source .NET framework system. This therefore increasing the range and diversity of our potential distribution as developers and distributors of our game. Another advantage of using C# is due to the language's modern usage in most AAA game titles such as Kerbal Space Program, Flight Simulator, Dust, Terraria and finally Assassin's Creed: Unity. Modern usage of C# further validates our decision on using C# to develop our solution.

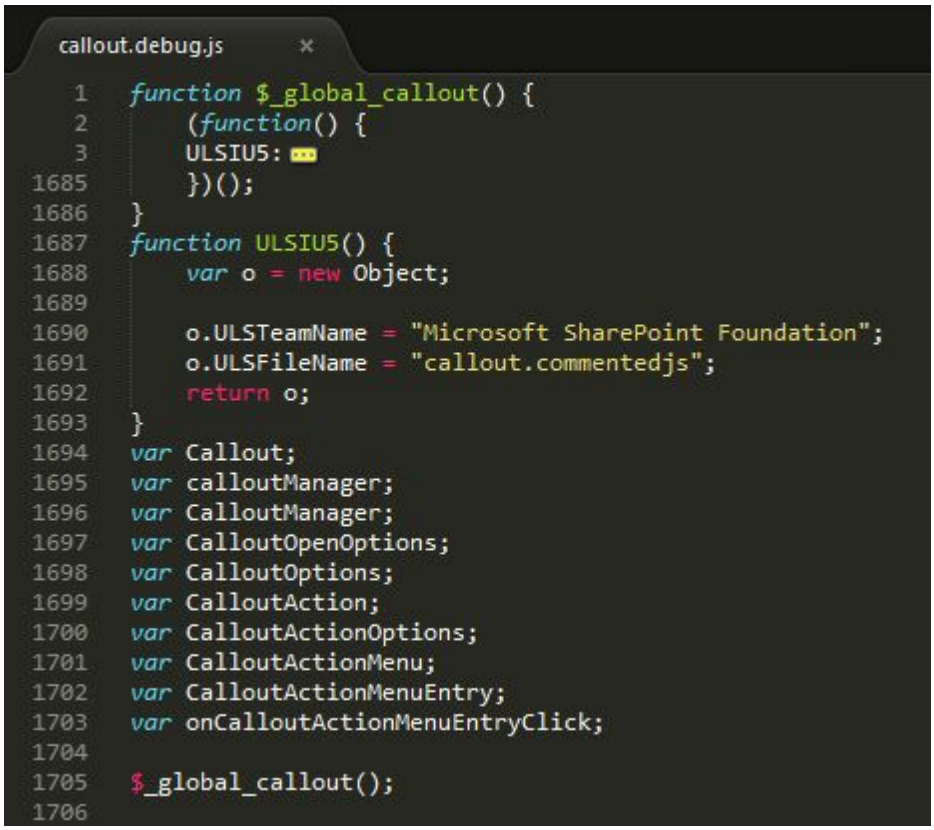
Another feature of C# is that it is run on the server side, this means that the programming language functions and runs on the server side which is then transmitting or sourcing the output to the client. This processing method functions by managing all processes received from the user then returning any data back to the user. Therefore, due to C#'s nature as a server-side programming language; many processes and computation is handled by the Unity package rather than the user's device. This reduces CPU load on the user's device hence increasing computer performance while running the application.

Below is a screenshot of the program MonoDevelop which is an integrated development environment where programmers can write and build in C#, Javascript and a variety of other programming languages. This program is included in the Unity3D package upon installation.



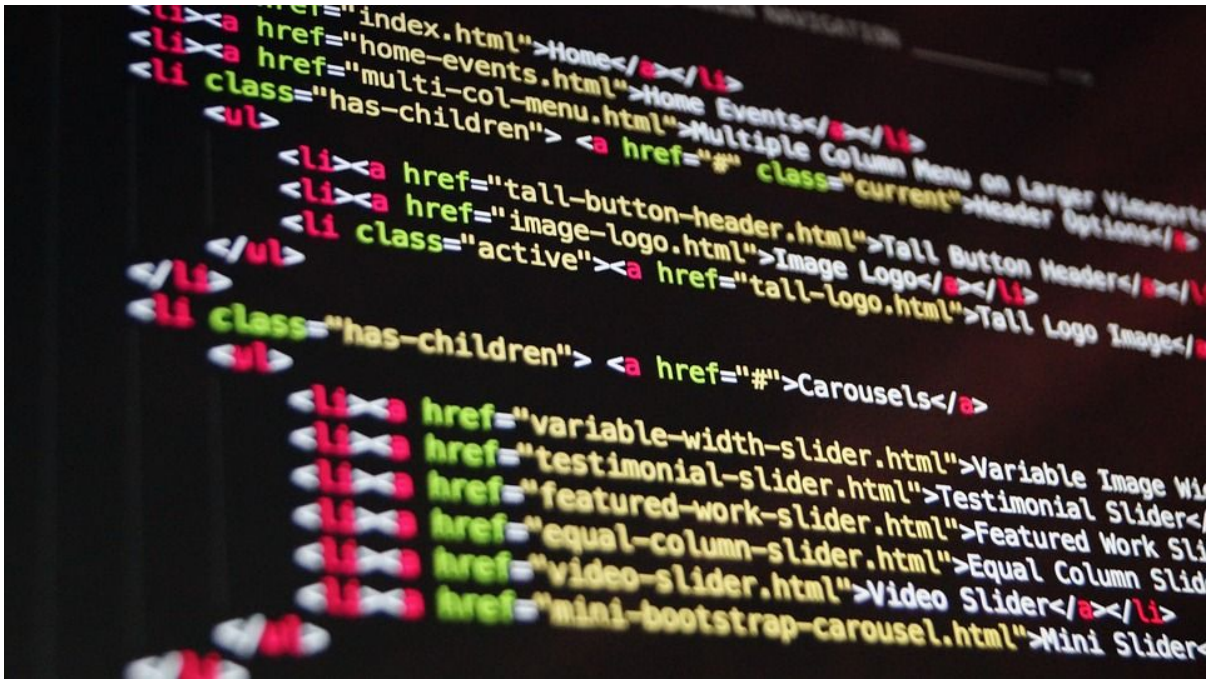
The second programming language natively supported by Unity and Monodevelop is Javascript. Javascript is a fairly simple programming language and Patrice (who is leading the programming), already has a broad understanding of the programming language. It's easy to use and versatile enough to create complex programs which is easy to adapt to our software solution.

The Javascript programming language is an easy language to learn and understand due to the simplicity of it's control structures, language specific keywords and syntax. Javascript is extremely compatible and supported on a variety of hardware devices such as phones, receivers and other physical devices. Javascript does not need to be compiled as it is an interpreted programming language and can be run on a number of operating systems such as MacOSX, Windows, Linux and can be used in combination with HTML and CSS to enhance web browser functionality. Due to the vastness of supported operating systems and platforms Javascript can be run on, we are heavily advantaged in using Javascript for our solution compared to any other programming language as our game can be build and run on many different platforms. This in turn, will allows users who run uncommon and unconventional operating system access to run our game. This will increase revenue and popularity of the game as more people will be using and interacting with our solution.



Source: https://sharepointkunskap.files.wordpress.com/2013/06/mds_002.png
Above is a sample of Javascript code.

Javascript is executed on the client side which majorly improves performance and bandwidth when a user is required to communicate and interact with another client or server. Javascript is known for its extended functionality in web page use. Javascript is commonly used in conjunction with HTML and CSS to better display images, text, videos and other elements on a web page and satisfy a programmer's vision of the solution. Javascript is also easy to debug and test as it is interpreted line by line by using any Integrated Development Environment which benefits us as programmers as our scripts can be run and debugged to remove any bugs before entering the final software package.



Source: https://pixabay.com/p-1076536/?no_redirect

Javascript is also an event-based programming language in contrast to a thread-based programming language which means that segments of the solution run after specific input. For example, a user click a button and line 10-15 of the solution is run. This means that the whole script does not have to be run to perform the line 10-15, therefore this can be referred to be random access compared to sequential access; which requires all parts of a solution to be run before the line you would like to access. The ramifications of an event-based programming language included the reduced load and computing power needed to run the solution which is beneficial to us as performance issues are reduced if the user is running the program on a computer built with hardware and software weaker than the minimum and recommended hardware and software requirements.

In summary, using the Javascript programming language to develop our solution is appropriate as Javascript is fast, effective, easy to learn and widely compatible on many hardware devices and Operating systems.

Section 2
Splash Screen Evaluation
Extensive Evaluation

Created by Nathan

Evaluation:
Written by Patrice:
Theme
The screen design fits the astronomy theme as the telescope in combination with the low angle shot of the night sky promotes an atmosphere of astronomy. Also, the use of the gradient colors of blue links to the night sky which often looks blue during sunset.

Color
The use of color in this screen design is excellent as the colors suit the theme of our game. The intentional use of the gradient of blue introduces a darker tone to the screen which links to the dark night sky. The use of a black foreground splits up the view into 2 main components; the Earth and the sky. The varying contrast between the two grounds make the audience feel as if they are standing on a ridge observing the sky; this view is similar to the view a player sees in the game component of our solution. In the scale of 1 to 5, I would rate the use of color a 5 as I cannot think of any other color combination which would look better than the current color combination.

Logo
The logo used in Nathan's screen design is very engaging and fits the astronomy theme. The telescope refers to the player's view of the night sky; using a telescope to find celestial objects. The black background in combination contrasts with the white border which appears extremely visually pleasing. If you look closely, you will see the starry background of the black logo which replicates an observation of the night sky. This motif of a starry background relates to the astronomy theme hence improving the user experience. In the scale of 1 to 5, I would rate the logo a 5 as the effective use of contrast, theme of astronomy seen in the starry background and well-drawn telescope entice me.

Design
Nathan’s screen design is of a very high quality. The font used for the title and solution version are appropriate and suit the astronomy theme as the font is skinny, futuristic and sharp. The placement of the title is appropriate as it is the first this the user sees when viewing the screen design. The solution version label is also placed appropriately. The label is out of sight and towards the bottom of the design so there is not that much attention drawn to it. This means that if a user may not necessarily see this label unless they are playing close attention or looking for it. The size of the font is also appropriate and is in scale with the other screen design elements of the splash screen. The font is not too large to look silly and over the top as well as not being too small to be unreadable. On a scale of 1 to 5, I would rate Nathan’s splash screen’s design a 5 as the elements seen in the splash screen are scaled and placed appropriately and fit the purpose of the splash screen.

Overall Rating
In summary, I would rate Nathan’s splash screen a 10 out of 10 as all elements of the splash screen are placed appropriately, give meaning to the screen and enhance the quality of the splash screen. There are no additional improvements which I can think of to improve the quality and effectiveness of the splash screen.

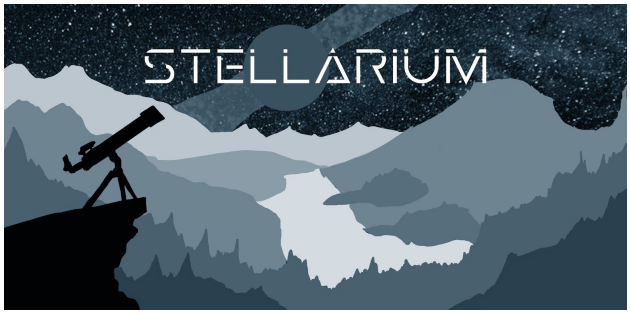
Written by Ronan -

The design is fitting with the theme of Astronomy, due to the stars present and also the image of the telescope is fitting, due to its inherent association to astronomy and space. The use of colour is good, as the blue gradient of the sky is nicely contrasting of the white and black logo in the middle. The only problem with the blue gradient is that, because of the thin font for the title, the title ends up being quite difficult to see. That could be solved by making the font thicker or bolder.

The positioning of everything is quite good, with the trees at the bottom acting as a framing for the image. The title and logo are well centred, with the logo being interesting enough to draw the viewer's eye into the image. As previously stated, the font for the title is too thin and blends in too much, but that can be fixed in the final design.

To conclude, all elements of Nathan’s first splash screen design come together to form a very visually appealing and intriguing screen that should catch the eye of potential users. If I were to rate this splash screen design on a scale of 1 to 10, I would rate this splash screen design a 8/10, because it displays good design principles.

Created by Nathan



Evaluation:
Written by Patrice -
Theme
The theme of Nathan's second screen design is extremely visually appealing. The theme of astronomy is prominent in the screen seen in the starry background, mountain ranges, forest and a telescope. These elements of the screen design will engage the players in playing the game as the splash screen is visually appealing.

Color
The color scheme is identical to the colors used in the first splash screen designed above. The gradients of blue make link to the colors seen in the night sky at sunset. The darker background acts as the sky whereas the lighter blue colors are seen as foreground and background for the image. Overall, the color choice is appropriate for the theme and mood of the splash screen.

Design
The design of this splash screen is of high design quality and displays excellent design skills. The title is well placed and is the salient image in the splash screen. The telescope also contrasts the color of the background which is very visually appealing. The silhouette ridge and telescope offer another dimension in terms of foreground and the background and the sky. The sharp ridges and shapes also offer a crisp texture to the splash screen.

Overall Rating
In summary, I would rate this splash screen a 10 out of 10 as it is very visually appealing and displays excellent design skills.

Written by Ronan -

Again, the design is quite fitting with the theme of astronomy, due to the presence of stars and also the image of the telescope on the cliff looking upward. is fitting, due to the general association of telescopes to astronomy and space. The use of colour is good, as the blue palette is visually appealing and creates a serene and gentle tone, which reflects the intended feeling of the game.

The only problem with this design that I can see is that maybe it is too cramped, as the title is nearly touching both the mountains and the top of the screen. Also, the colour of the title

matches too closely with the colour of some of the mountains. This could be fixed by changing the colour or reducing the size of the title, or reducing the size of some of the mountains. Other than that, the positioning of screen elements seems to be great, as the telescope at the side really intrigues the eye and draws it into the screen.

To conclude, all of the elements of this splash screen design combine to form a splash screen that is very visually appealing. This screen is probably my favourite splash screen design as it’s positioning and framing, as well as its use of colour shows extensive elements of good screen design principles

Created by Patrice

Evaluation:
Written by Nathan - The font is too cartoony and doesn't reflect the semi-realistic art style we are trying to achieve in our final software solution, it could also be positioned better such as above the mountains as it blends into the mountains at the bottom, as if it's embedded in them. Although there is a strong contrast between the bright white text and the dark brown mountain, the bottom of the screen isn't a good position for text.

The colour scheme is very boring with only 3 flat brown colours, this wouldn't be as bad if the color evoked a theme or a feeling reflective of the game, such as a blue or purple color to represent the coolness of space. The sky is also quite dark in contrast with the bright brown color which is quite annoying as the bright brown hurts my eyes. If the sky was also brighter it'd balance out the bright colour of the mountains.

I have no idea what this game would be about. I could guess it's a game about space due to the name, but the actual design of the interface provides no indication. It could just as easily be a game about rock climbing or driving over mountains rather than a game linked to astronomy.

Written by Ronan - The screen is too plain and simplistic, with little detail in the art style and a boring use of mainly brown shades. The shades of brown do not tell you very much about the game, and indeed there is little on the screen that indicates what the theme of the game is, it could really be about anything. This could possibly be made better by using a different colour palette with more interesting colours, like a palette of purples or blues (as seen in the screen design of Nathan and I)

The font is too big and bold, and also too cartoonish which doesn't suit the theme of the game, which could be made better by changing the font to something more futuristic or sci-fi (such as that seen in Nathan's screen designs). The positioning of the title is not ideal as the bottom of the screen does not draw the eye into the image. This could be made better by changing the position of the title to be central or on the top of the screen, which would better draw a viewer into the screen.

Created by Ronan

Evaluation:
Written by Nathan -
The color palette is designed well, however the background could be blended much better as it stands out. If the transition between colours was more seamless the background wouldn't draw attention to itself and would look more like a background element but currently it stands out.

The logo is quite boring, and doesn't appear to be centered. The singular 'S' gives no indication of its meaning, and whilst it may only be placeholder it could be designed to demonstrate to the viewer some understanding of what the software solution is about, i.e by adding an image of stars, telescope or another item which resembles astronomy. Similarly with Patrice's design I don't have indication of what the game is about. This could easily be fixed by simply adding stars in the background or a logo which symbolises astronomy.

The placement of elements is appropriate, with the logo being placed separate enough from the mountains to be comprehensive and easily understandable for the viewer. The space around the logo makes it an obvious and important element within the interface.

Written by Patrice -

Theme
This splash screen has an extra-terrestrial theme which somewhat matches the astronomy theme. The lack of a telescope or stars in the design leave this splash screen weaker than the previous two splash screens which were definitely astronomy themed.

Color
The color scheme used in Ronan's splash screen is visually appealing and works well but does not suit the astronomy theme and the vision we are imagining for our program. The purple-pink gradient does not necessarily suit the night sky theme which is on the basis of black - blue.

Design
The background and foreground of the design look visually appealing and offer the sense of a new world. This is a motif seen in our solution where the player is set to discover new celestial objects.

Logo
The logo used in this splash screen is simplistic and to the point. Although the logo is appropriately placed and visually appealing. I think that the previous two logos created by Nathan better suit the vision of our solution in comparison to Ronan's logo.

Overall Rating
In summary, this splash screen is of good design skills and looks visually appealing but does not meet the vision of our solution and does not really make as many like to astronomy compared to the previous two screen designs created by Nathan. I would rate this splash screen a 7/10 as it looks visually appealing but does not match the theme of our solution.

Summary of Evaluations
Extensive evaluation of each screen design by each member of the group above.

Brief evaluation completed through a Google Form survey with a series of 5 mandatory questions and 1 optional question for each screen design:

1. ***Does the screen fit the theme? (Astronomy)***
   Yes or No
2. ***Use of colour***
   1 to 5
3. ***Logo/Graphic***
   1 to 5
4. ***Design***
   1 to 5
5. ***Rating***
   1 to 10
6. ***[Optional] What improvements can be made***
   Short Answer response

Question 1 will allow us to determine whether the user will feel engaged when initializing the program as the splash screen is the first screen the users will see upon running the application.

Question 2 will allow us to determine whether the color suits the theme of Astronomy, hence allowing us to determine how engaging the splash screen will be. Also, if the colors we use are too dark or bright, users may experience issues with their monitor or have trouble looking at the screen. If the screen design was too dark, users would have trouble seeing the text and therefore the design of the screen will not be ergonomic. In similarity, if the color we implement are too bright, then users may damage their eyesight; although unlikely, it is always a possibility.

Question 3 will allow us to determine the same information as question 1: "...*will allow us to determine whether the user will feel engaged when initializing the program as the splash screen is the first screen the users will see upon running the application.".*

Question 4 will allows us to determine whether the users think the screen elements are well placed and in proportion. If the user think that the labels are too big and draw too much attention, then this shows poor screen design. Also, if we use a variety of fonts; the user may rate design poorly as the screen is not consistent in design.

Question 5 and question 6 allow the user to make any additional comments which were not expressed through the 5 mandatory questions.

There were 11 responses total in the survey. Whilst the marking criteria states '...not necessarily an SSD student', we thought 11 responses was would not provide enough sample data in order to redesign a splash screen appropriately as a greater number of responses provides diverse range and insight into the positives and negatives in our screen designs.

Survey Evaluations:

Screen 1: Nathan Harris

Fit the theme? - 100%

Use of Colour - Average: 4.7

Logo/Graphic - Average: 4.4

Design - Average: 4.4

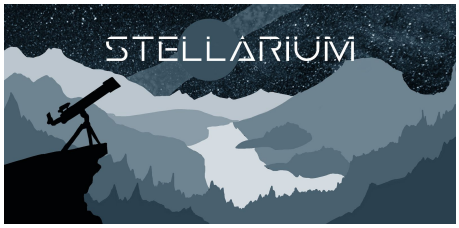
Rating - Average: 8.5

Improvements? - Almost all responses mentioned that the font was too small and thin, making it hard to read, especially in contrast with the thick border on the logo. Some suggestions for fixing this included adding a ‘shadow’ behind the text or simply making it thicker.

Some other improvements include the texture on the logo being too detailed for the rest of the screen. As well as the trees on the bottom being too smooth and under-detailed compared to the detailed background and logo.

If redesigning this scene I would definitely alter the font to make it stand out more as well as including more detail for the tree silhouettes at the bottom of the screen, refined to the level of the logo (to ensure the same level of refinement in all aspects of the screen design).

Screen 2: Nathan Harris



Fit the theme? - 100%

Use of colour - Average: 4.5

Logo/Graphic - Average: 4.6

Design - Average: 4.5

Rating - Average: 8.2

Improvements? - The text of the title could be moved up so it doesn't overlap the 'mountains'. The colour scheme feels dull and there could be more sky to balance out the design, as the mountains make it very 'busy'. There's also no actual logo.

If redesigning this screen I would reduce the height of the mountains so there is more sky in the background, balancing out the image and keeping the text separate from the rest of the image so it doesn't blend into the mountains. Also increasing the saturation of the blue in the mountains to make it more colourful and stand out more. I'd also add more detail to the mountains in order for there to be some depth, texture and more visual interest rather than flat colours. It'd also be possible to add a logo, possibly incorporated with the text of the Program title.

Whilst Screen 1 had higher ratings than Screen 2 (overall and a higher rating), Screen 2 was rated as the better screen design, with 7 votes compared to 4 votes for Screen 1.
For this reason Screen 2 will be redesigned and most likely used in our final software solution.

Screen 3: Patrice

Fit the theme? - 0%

Use of colour - Average: 1.2

Logo/Graphic - Average: 1.2

Design - Average: 1.2

Rating - Average: 1.8

Improvements? - The color scheme is dull and not very appealing, with limited understanding of color. The font is also unprofessional and looks more suited to younger users. There is no theme, or indication of what this design represents.

If redesigning this screen the font would be changed to be more suitable, i.e thinner and more ‘sci-fi’. The color would also be changed, possibly looking up a color palette in order for all elements to match. In order for the design to fit the theme better, the inclusion of a logo could be added to the centre, with the text either above or below the logo, providing users with an indication of what the software solution is about.

Screen 4: Ronan

Fit the theme? - 50%

Use of colour - Average: 3.5

Logo/Graphic - Average: 3.3

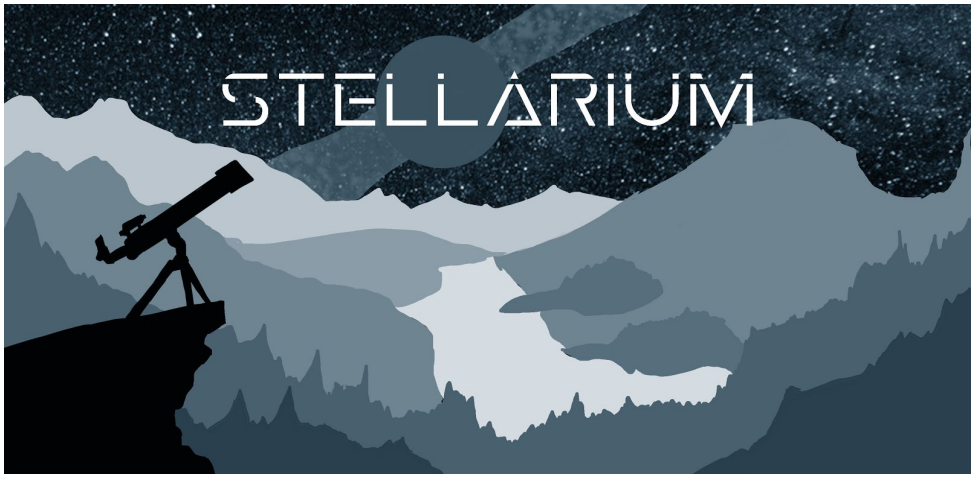
Design - Average: 2.7

Rating - Average: 5.7

Improvements? - Could fit the theme of astronomy better, this could be done through adding stars or imperfections around the logo, as this would provide some visual interest (similar to the second Screen design). The logo also needs to be centred as the design is currently not as professional as some of the other designs, this interface looks more suited to a younger audience.
The gold of the logo is a cooler tone but the background is a warmer tone which clashes with each other. This could be fixed by blending the background more so it doesn't distract from the logo.

If redesigning this screen, there would be an inclusion of stars and imperfections behind the logo, in the background to add an element of texture creating depth. To further 'illuminate' the logo, the background would be blended better and use a slightly more desaturated, cooler tone in order for it too not be as strong. The logo would also be changed to better represent the theme of astronomy within the design.

Redesigned Screen



The re-designed splash screen demonstrates extensive design principles through:

- Use of colour - with a common theme and color palette that matches across the entire design. The blue creates a ‘cool’ feeling reflecting the relaxing and passive gameplay, as well as the coldness of ‘space’ linking the design to the theme of the game.
- The use of value (colour) to guide the eye towards the bright, white text. As the bottom of the screen and foreground is quite dark, the river and lighter elements of the background also help guide the eye to the text. The telescope also acts like an arrow directing the eye back towards the title of the game.
- Use of visual space to create a design that isn’t messy and covered in elements but rather simple and easy to look at. The empty space around the text separates it from the rest of the image and defines it as important.
- The alignment of elements and text allows every element to be visually connected with each other creating an interface that is cohesive and understandable.
- Size of elements make the image easy to be visually read. With font size appropriate, and images unobtrusive to the overall design of the image.
- The texture of the trees and mountains assists in creating a sense of depth and a more interesting interface, rather than simple flat colours.

The name ‘Orion’ also has meaning as it’s the name of a nebula in the Milky Way galaxy, and the name of an astronomical constellation. Linking the name of the game to stars seen in the real night sky, gives the title more meaning as opposed to a game title which has no relation to astronomy.

Explain how you have taken into consideration the results of your evaluations
We have taken into consideration the results of our evaluations through directly addressing the multiple suggestions for improvements made by the responders of our Google Form. As well as the evaluation provided by each other’s evaluation of each form. The improvements have been included in the final redesign of the screen to create a refined, stylized splash screen that is improved on from the initial design.

The suggestion to move the text away from the mountains in the background assists in making the title of the software solution the salient element of the screen, allowing us to draw the user’s attention to a specific part of the design.

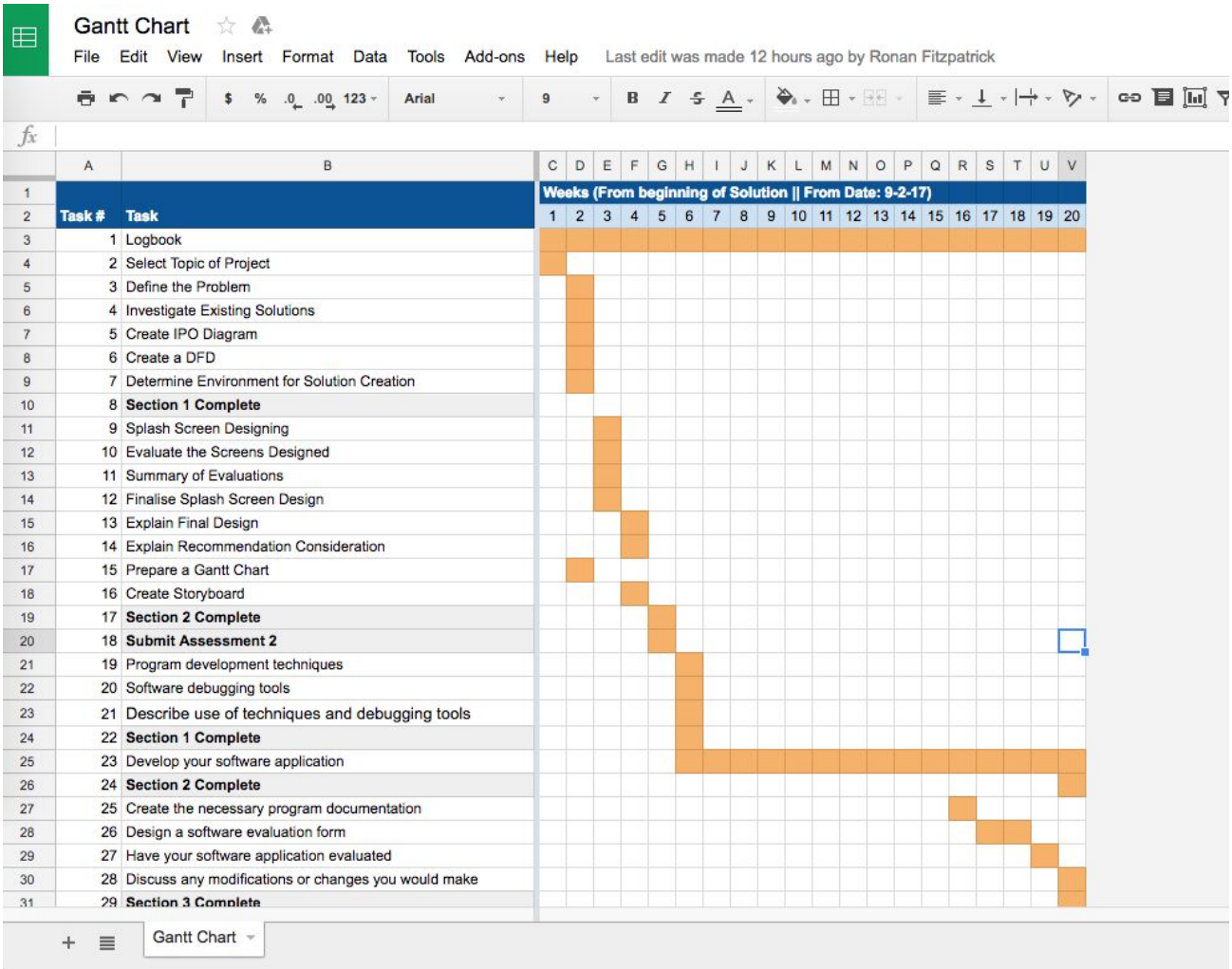
Also by increasing the saturation of the blue colour palette to create a scene that is vibrant, rather than dull. Creating a more interesting and visually appealing screen design, this is supported by the addition of texture on the mountains, the detail of the trees, rocks and river to create visual interest.

Changes made:

- We have separated the text more from the rest of the image through adding more vertical height which made the text appear as if they were further apart and less clustered.
- We have imported more sky textures in the background and reducing the amount of foreground elements (the mountains) to again reduce clutter.
- We have increased the saturation of the screen design to incorporate a more vibrant color scheme and introduce greater diversity in the color palette
- In the new splash screen we have avoided using pure white and black colors in the screen design except for the elements in the foreground and the logo, this reduces the range of the contrast the user will see when running the application. This improves the ergonomic design of our splash screen and enhances the user experience.

Gantt Chart

This is just a preview. To view the Gantt Chart click here.



Storyboard

This is just a preview. To view the storyboard click here.