<Drawing App and Reference>

Project Documentation

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<Date Submitted>

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# Background

A drawing game that uses music and movement to create a flowing experience with a sense of depth. The drawing is in 3D space and it moves slowing into the distance as you draw.

You would select the music track you wish to draw to The line style of your drawing and the visual ambience would reflect the choice of music. For example, a gentle and soft slightly melancholic piano piece might have a moody blue background and a flowing, simple and smooth white drawing style similar to the one in the video. A liver tune would have more vibrant colours and an animated bouncy line style. When the music ends you can choose to save the drawing, pay the music again and add to the drawing. Start again with a blank canvas or go back to the main menu and select another track. The program is currently being developed for PC. However, it could be developed for a tablet and mobile phones in the future.

# Project Definition

## Project Purpose

The overall purpose of this project is to develop a drawing app that can help its users to relax and express their feelings, through the medium of art and music that will suit the mood of the user. The hope is to eventually have this as therapy tool for depression and anxiety and possibly a sensory tool for people with autism.

The client has already attempted to develop a prototype but as he has a very limited amount of programming knowledge, has found it difficult to be able to execute this in the most successful way. He has given us a choice to continue on what he has already developed or start developing the application from scratch.

As a team we hope to be able to produce the app with out any bugs within the code so that it will work efficiently. We would most likely be starting the project from scratch but look into what he has already done to get a correct feel for the project and keep it as close to what he would like without all the same issues he currently has. With our help, our client will be able to bring this project from being a bit of a stand and get his idea closer to being ready for going on the market.

Explain the reasons for the project. What do you want to be different, what situation do you hope to improve, how will the organisation be enhanced or enabled, why does it need to be done? The purpose will be realised after the project. Take care that this is the reason why, not the solution.

## Project Scope & Objectives

To ensure the project can reach the specifications of the client and where they want to have this app. Objectives of this application would be as follows :-

* Gain a better understanding of the current work the client has already completed
  + Reading over the code he has tried to develop and see what could have been done to improve that situation.
* Develop an operational menu system
  + Developing a main menu and an in-game menu system that would allow the users to pause, save, load, restart or quit the game.
* Develop a level of the app, that would suit music
  + Creating level where the paintbrush style that would suit atmosphere of the music
* Create a save option
  + Allowing the users to save the level the have been drawing.
* Develop a load option
  + The ability to allow the users to load a previous drawing, with the option of viewing it or adding to the drawing
* Find appropriate music to suit the applications needs within the client’s brief.
* Different visual styles, paint brush style and looping system
  + Allowing the users to choose if that the end of the song if they would like to continue and draw over what has already been done.
  + Letting the users choose the styles of the paintbrushes being used.

This is what must be done within the project to achieve the purpose. It is expressed in active terms, for example, ‘To establish…’ or ‘To ensure…’ or ‘To implement….’

Anything stated in the objectives must be achievable within the project, and under the control of the project manager.

## Constraints

Within this project the constraints of the team are learning a whole new programming language to ensure that the application can be coded. Understanding how to use unity for the development of the game. These would impact the time it would take to get the application completed due to no one in the team having much experience with it. It will take around a month to enable the team to be able to use the application successfully

One of the team members is unable to get a microphone, this will impact the ways of communication. Sometimes having to wait a few days for a response from that team member. This will also have an impact on the time management within this project. Making it sometimes more difficult to try and not go to far ahead without all the members knowing what is to be done next or responding to the fact tasks may be completed or not.

The team working remotely due it being made up of people from different campuses within the UHI will impact the way of ensuring the project is executed efficiently due to the team normally used to working with people from just the same campus. This is a new method of each member so finding the best way to manage time get the files for the project to each other and generally work well together took time. Finding the best way to communicate without it costing any money took a little bit of time to figure out as well.

The health of some of the team members will also have a big impact on the team. Some of the meetings maybe missed by team members. It can take time but the team will need to try an accommodate the best they cant without letting t take away to much time from the project and the people that are unwell will do what they can to catch up.

Keeping the client informed and able to work on parts of his application that we are not working on. Teaching the client how to use GitHub or Gitkraken, to keep up with version control, ensuring everyone is working off the same files. This will take some time due to the client not having a lot of programming knowledge and time restrictions. Ensuring that he also will have access to this to keep the costs down to zero.

Give details of any restrictions on time, resources, funding, impacts or ways of executing the project, and/or the eventual outcome.

## Outline Project Products

* Research Benefits between unity and unreal engine
* Develop an operational menu system
  + Developing a main menu and an in-game menu system that would allow the users to pause, save, load, restart or quit the game.
* Develop a level of the app, that would suit music
  + Creating level where the paintbrush style that would suit atmosphere of the music
* Create a save option
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* Find appropriate music to suit the applications needs within the client’s brief.
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  + Letting the users choose the styles of the paintbrushes being used.

List the components that must be produced or acquired by the project to meet the objectives.

The products are standalone, quantifiable and identifiable ‘things. The products may include less tangible things such as ‘Trained users’ or ‘People using…’. For all the products listed, it must be possible to:

* Tell if you’ve got them
* Be able to evaluate them
* Identify them in the plan

## Risks

* Performance Risks
  + There is a possibility that we may not produce the results consistent with the project specifications
  + The possibility that the project has an area that fails, can lead to the schedule being compromised and changing when tasks could be completed, extending the project to a different date.
* Technical Risks
  + Due to the team requiring too learn a new programming language, this could potentially lead to errors in the programming
  + It could also lead to the testing quality to be poor due to the lack of knowledge, just because it works does not mean that all the errors or bugs in the code has been found and corrected
  + The client has little knowledge of programming and use of software such as GitHub. This could cause confusion when he is trying to see the latest file updates.
* Interpersonal Risks
  + Communication issues may arise if one of the team members is unable to obtain a microphone for meetings
  + Keeping the team motivated while also completing other modules course work could cause some issue’s further down the line

A summary of the main risks identified at this early stage from the risk log. Include any likely or possible actions.

# AnALYSIS & DESIGN

## Project Planning

The client most important aspect is to be kept informed and able to see what we are achieving while trying to implement his projects design. Another quality the client is interested in is ensuring that the application functions properly, getting the brushes to work as he envisioned. He has offered us to start from the beginning but that we are to use his current work as a guide to how the whole application is to look and feel. He has the design of the application already set so with the approach to creating the drawing application we would stick to the same styles as he has.

The chosen planning methodology we have opted to use is agile methodology. This is because of it will allow us as a team to go from meetings to short cycles of works that allows for rapid production and have the ability for constant revision that can be backed up by “Agile focuses on rapid and frequent delivery of partial solutions developed in an iterative and incremental manner.” (O’Regan, 2018). With the time frame being a huge factor for the client, we opted for agile methodology, it means that as a team we can have meetings then program in short quick cycles, that would allow the team to show the client what has been done. This would allow the client to make small changes or have a say on what is happening and when.

To be able to keep to a plan and time scale their will be a project Gantt chart and timeline that the team can follow to ensure that the project is completed on time in the most efficient manner.

Describe the quality issues that are most important to the client. For instance, is timeliness of delivery more important than richness of functionality or long-term maintainability? The quality issues listed here will influence the approach.

Reference must be made here to your chosen methodology and the justification of this use. The use of academic references is encouraged in this section of the report.

You must identify an appropriate test strategy and use of client/other testing groups. All minutes/Gantt charts/diaries referenced must be included in Appendix A

## Analysis

The client has come to a stand still one what he can successfully attempt to develop for this app. He has asked for our help to bring his “idea to life”. He has specified that this app can be started as new, and use his current work as a guide. As he has done the design himself, we will try to keep it as similar as possible, so when he takes it back over there is not much different and wont be required to learn to much new and keep it as simple as possible.

The current application that has been developed. Even though the app kind of works it is full of bugs and doesn’t run as smoothly as the client would want it to.

Describe and evaluate the components of the project with reference to any techniques used to produce an effective model/specification. Results of these techniques (i.e. normalisation, modelling using UML etc should be included in the appendix. This section should identify the major components of the application which are to be logically/physically designed. This section should include evaluative statements supporting your subsequent design. The use of academic references is encouraged in this section of the report. All diagrams produced and referenced must be included in Appendix B

## Design

The final design solution should be included here with reference to previous versions/prototypes which should all be included in the relevant appendix.

Previous versions/prototypes and referenced materials (code) must be included in Appendix C.

## Implementation & testing

The chosen test strategy should be evaluated against the original products with evidence of all levels of testing where appropriate. Any client feedback should be incorporated into the overall evaluative statement.

Any supporting test documents must be included in Appendix D. The raw test data, physical code, screen dumps, authenticated test logs should all be included in the appendix.

## User Manual and Other System Documentation

A copy of the complete user guide should be included here to assist the testing of the application/system (where appropriate). If videos have been included or any other online help/user guide then links to the source should be included.

Technical aids or maintenance documentations should also be included.

# Evaluation

## Critique

This includes high-level acceptance criteria for major products and shows how they successfully or unsuccessfully satisfied the project’s objectives.

Within this section the project should be evaluated against the major objectives discussing any relevant reasons why they were not fulfilled or why they were surpassed. The critique should critically evaluate the product and the process.

The use of academic references is encouraged in this section of the report.

## Lessons Learnt

**Ross Harvey** - Throughout the development of the project, I gained a large amount of information and learned a lot. In particular, I learned about how to work with a client such as managing and organising meetings, negotiating terms and requirements and maintaining expectations. These skills helped to gain a better understanding of what a team is capable of and what is feasible for a team in the timeframe given.

My software development skills have improved since starting this project as games development is an area that I was not familiar with. Having to learn these new skills has allowed me to improve my problem solving skills and critical thinking because developing games with software such as Unity requires a different approach than what I’m used to with web and software development.

This project has also provided me with a valuable opportunity to familiarise myself with the C# programming language, allowing me to broaden my skillset.

I have also gained an understanding of how to work with a team and the communication required to ensure the team is able to work together effectively. Each team member’s communication skills have proven to play an essential role in the outcome of the project. Early on in the project, it was clear that the team was struggling to properly maintain contact with all its members. We tried to address this issue as best we could, making sure that any uncommunicative members were always included in discussions, particularly group chats which could be read later. Unfortunately, this is an issue that requires complete cooperation by all members of the team and cannot be properly achieved without it.

This section should contain a brief description of what was learned as a result of the project. Any effect (positive or negative) particular events had on the project, causes/triggers (and whether there had been early warning indicators) and recommendations for these lessons should be supported by referenced materials.

## Future Improvements

Not all intended features could be implemented into the project, partly due to time constraints. The team intended to implement a saving and loading feature to allow the user to properly save their drawings. The ability to then load these saved drawings was also planned but also could not be achieved in time. Both these features were planned to be integrated into the user interface.

The game currently supports playing music while the user draws. The team had plans to improve this feature by including additional music tracks with the option to choose which track to play before starting a drawing.

The ability to create drawings that fade into the background has been successfully implemented but plans were also in place to edit the brush settings. These included changing the colour, thickness and style of the brush.

This section should contain a brief description of what improvements or enhancements which would have been included in the submission given time. These improvements must be supported by referenced materials which support the likelihood of this improvement.

# Bibliography

The bibliography should conform to the recognised UHI standard of referencing which can be found at [www.uhi.ac.uk/home/libraries/how-to/cite-references/?searchterm=cite-references](http://www.uhi.ac.uk/home/libraries/how-to/cite-references/?searchterm=cite-references).

# appendix a (supporting materials project planning)

This will include all supporting documentation including, Gantt charts, weekly progress sheets, individual diaries, email correspondence with the client. Also include any other relevant documents you feel enables the marker to gain a better understanding of the work submitted.

# appendix b (supporting materials analysis)

This will include all work relating to data analysis (E-R models, appropriate UML diagrams, normalised data structures with original documentation etc. Work relating to the analysis of the process such as appropriate UML diagrams, HIPO charts etc must be included. Email correspondence with the client relating to this area should also be included. Also include any other relevant documents you feel enables the marker to gain a better understanding of the work submitted.

# appendix c (supporting materials design)

All storyboards, proposed site maps, emails with clients including feedback, data dictionaries/entity descriptions, process definitions. Also include any other relevant documents you feel enables the marker to gain a better understanding of the work submitted.

# appendix D (supporting materials implementation & testing)

All test logs, test data appropriate source code. Also include any other relevant documents you feel enables the marker to gain a better understanding of the work submitted.

# appendix E (inDIVIDUal student work- to include research topic report)

Each member of the team must submit materials which they have produced as individuals. This work must be referenced in sections three, four and five where appropriate.

Also include any other relevant documents you feel enables the marker to gain a better understanding of the work submitted.