# Deliverable E: Project Plan & Cost Estimate

GNG 1103 Group 2.2

# Contents

# 1. Introduction

The Virtual Reality Design project is a project assigned to our GNG 1103 group this year by the client Hanan Anis. The Goal is to design a virtual reality game that can make the user be in someone else's shoes. The goal is to allow the user to empathize with the person getting discriminated against and see how it would be a different situation if they were in that person's place. This virtual reality game is expected to be made using the Unity engine made by Unity technologies. The Unity engine is specifically made to create real-time 3D projects for games, animation and much more.

In the last deliverable, our team came up with many conceptual designs for the subsystems and the final product. The designs were then put into categories and benchmarked. In this week's deliverable, our team will create the plan which we will follow during the product's development, including prototypes, tools, and our final design.

## 2. Plan & Schedule

Table 1. Task list

| Task # | Task | Duration (H) | Owner |
|---|---|---|---|
| 1 | Project cost Spreadsheet | 0.75-1.5 | Sabine |
| 2 | Plan and Schedule | 1-1.5 | Omar |
| 3 | Detailed design and drawings | 2-4 | Claire |
| 4 | Risk Outline | 1-1.5 | Claire |
| 5 | Prototyping Plan | 2 | Ernest |
| 6 | List of Needed Equipment | 1.5-2 | Ernest |
| 7 | Prototype plan | 1.5-2.5 | All |
| 8 | Prototype 1 | 2 | all |
| 9 | Testing prototype 1 | 2 | All |
| 10 | Prototype 2 | 1.5 | All |
| 11 | Testing prototype 2 | 1.75 | All |
| 12 | Building prototype 3 | 5 | All |
| 13 | Deliverable H | 5-8 | All |
| 14 | Deliverable I | 5-8 | All |
| 15 | Deliverable J | 5-8 | All |
| 16 | Deliverable K | 5-8 | All |

# 3. Bill of Materials

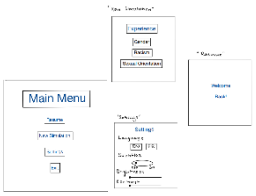
Table 2: Bill of Materials

| | Item | Cost | Link |
|---|---|---|---|
| Asset | Elevator | $5 USD + tax/VAT | Elevator Asset |
| | Person 1<br>Female award winner | $12 USD +tax/VAT | Person 1 Asset |
| | Person 2<br>Male award ceremony guest | $8.95 USD +tax/VAT | Person 2 Asset |
| Software | Unity | Free | |
| Hardware | VR headset | Free (use maker space headsets) | |
| | | Total:<br>$25.95 USD +tax/VAT<br>$38.21 CAD +tax/VAT | |

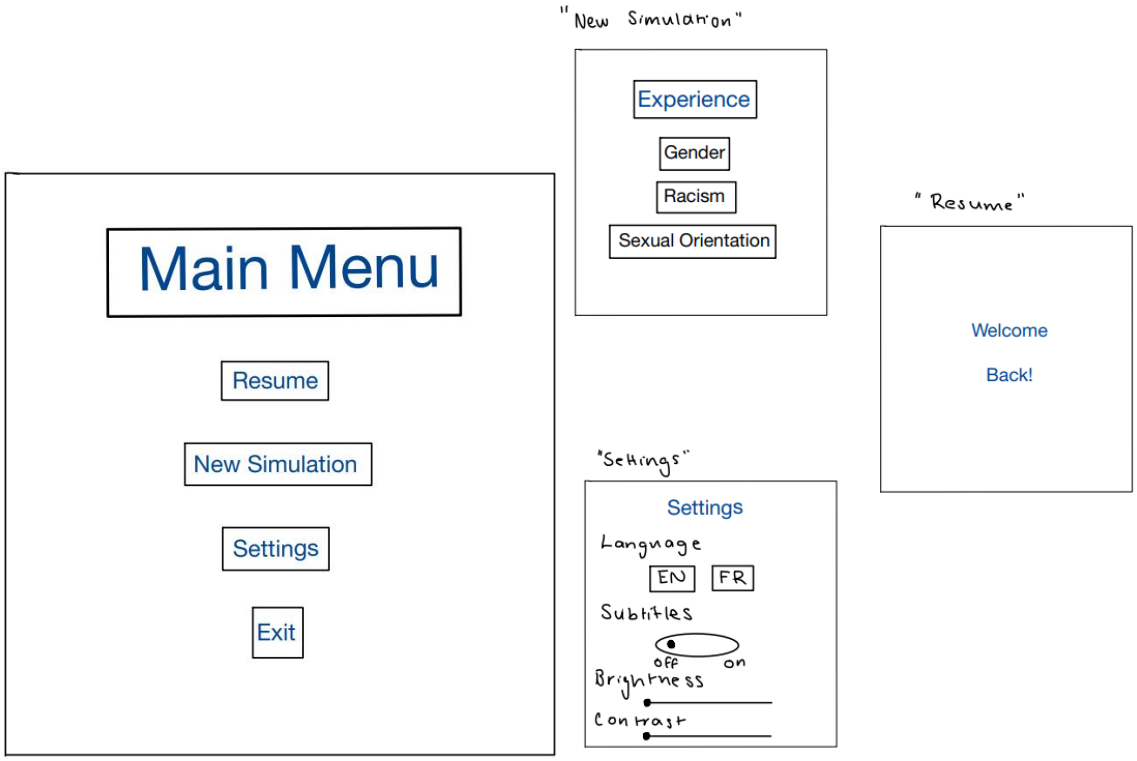
The above project cost spreadsheet outlines the materials that the design team will be using to create the VR experience. The materials are primarily composed of assets from the Unity asset store, as well as the Unity software itself. The total budget for the project is 50 CAD, and our proposed bill comes out to $38.21 CAD before tax/VAT which will be calculated at checkout.

# 4. Final Design*

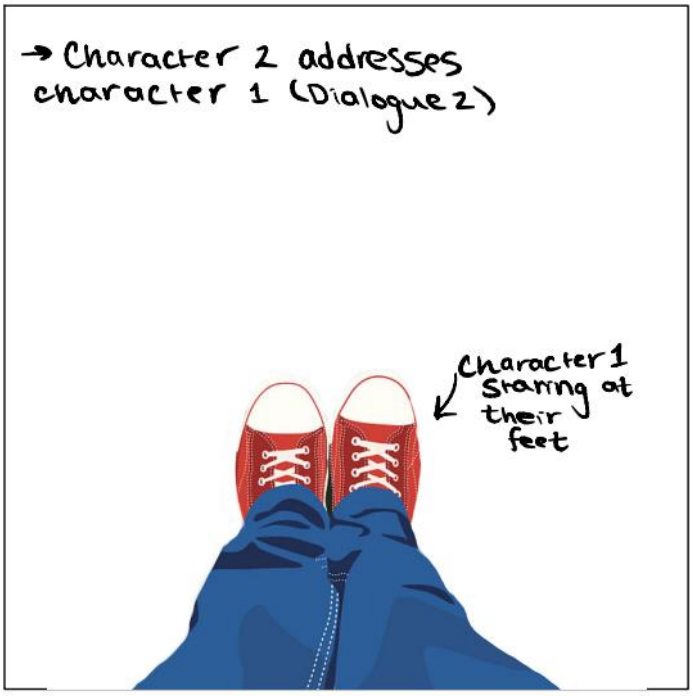
Table 3. Final Design Catalog

| Subsystem | Visual |
|---|---|
| 1: Main Menu |   |
| 2: POV Character 1 |  |
| 3: Choices 3A, 3B |   |
| 4A: Outcome of Choice 3A |  |
| 4B: Outcome of Choice 3B |  |
| 5: POV Character 2 |  |
| 6: Choices 6A, 6B |   |
| 7A: Outcome of Choice 6A |  |
| 7B: Outcome of Choice 6B |  |

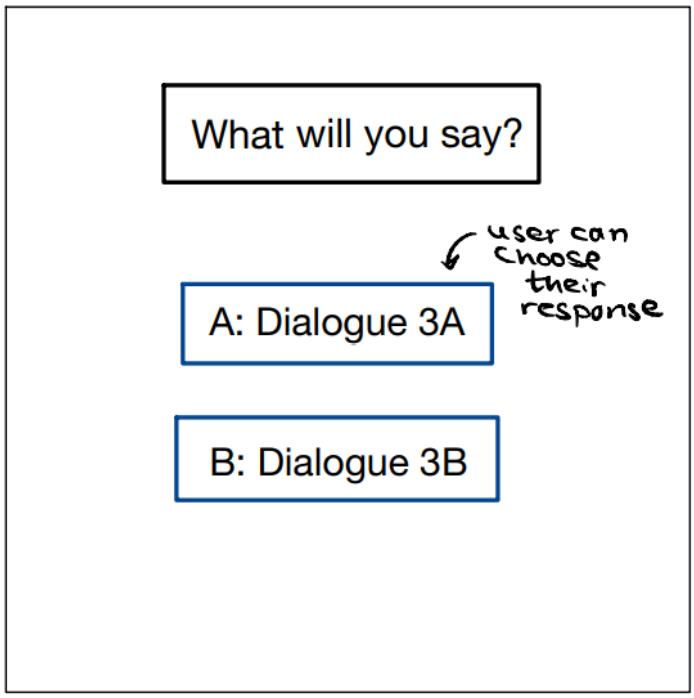
### 4.1 - Subsystem 1: Menu



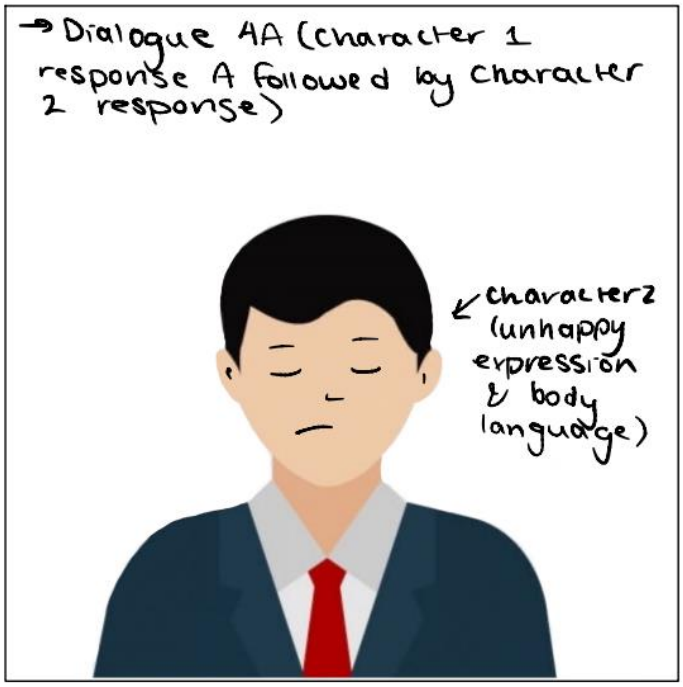

### 4.2 - Subsystem 2: POV Character 1



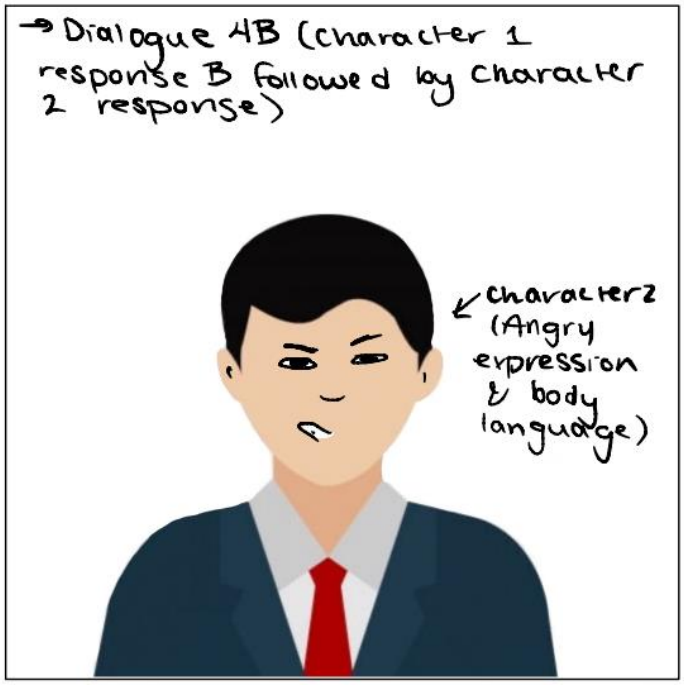
**4.3 - Subsystem 3: Choices 3A, 3B**



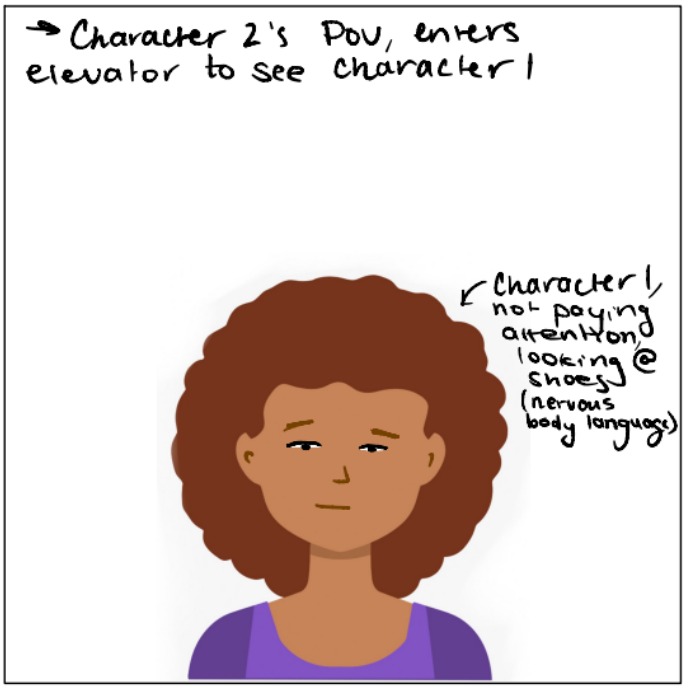

**4.4 - Subsystem 4A: Outcome of Choice 3A**



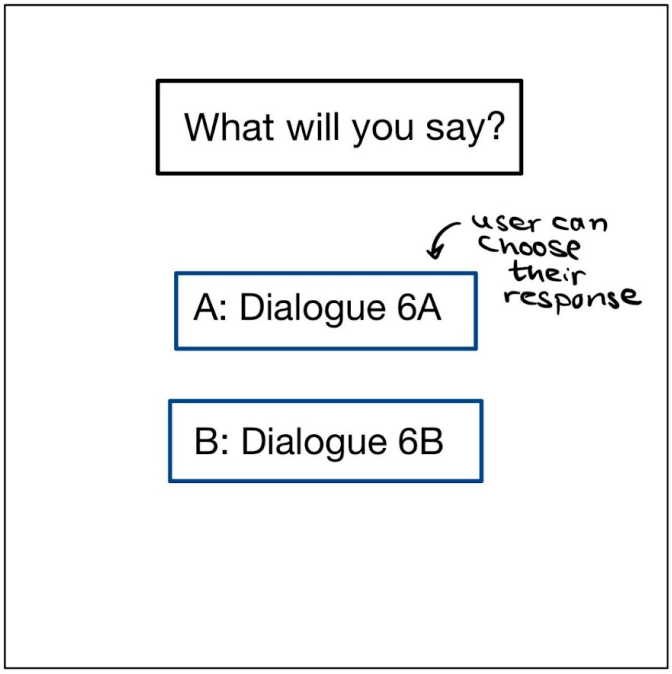
**4.5 - Subsystem 4B: Outcome of Choice 3B**




**4.6 - Subsystem 5: POV Character 2**



**4.7 - Subsystem 6: Choices 6A, 6B**




**4.8 - Subsystem 7A: Outcome of Choice 6A**

**4.9 - Subsystem 7B: Outcome of Choice 6B**


**Final design dialogue is attached as an Excel file*

# 5. Risks Outline

Table 4. Risk Outline

| Risk | Risk Level | Cost | Benefits | Contingency Plan |
|---|---|---|---|---|
| Avatar selection failing | Medium | $20.95 USD +tax/VAT<br><br>($26.72 CAD+tax/VAT) | Avatars are a vital part of the interaction needed to convey empathy development | • Study user reviews on avatar package to ensure it is viable<br>• Research ways to implement avatars in game effectively |
| Elevator setting failing | Low | $5 USD +tax/VAT<br><br>($6.38 CAD +tax/VAT) | Setting is vital to user experience and will convey a realistic situation | • Study user reviews on elevator package to ensure it is viable |
| Menu subsystem is too difficult to implement | High | Time, user experience | Accessibility for users, simplify user interface, elevate user experience | • Implement menu subsystem once the rest of the subsystems are complete if there is time |
| Avatar expression and body language is too difficult to implement | Medium | Time, user experience | Non-verbal communication is part of the interaction needed to convey empathy development | • Research how to correctly implement avatar expression through Unity software<br>• Bypass moving expressions for stable expressions if not possible |
| User choice options are not selectable | Low | Time, user experience | Users are able to interact with the game to further their empathy development | • Research how to correctly implement choice selection through Unity software<br>• If choice selection is not possible, play scenes automatically for each selection (bypass user selection, show user every scene) |

# 6. List of Equipment

For these various prototypes, VR equipment and other technological tools would be needed to fully carry out the following test. The equipment includes:

- VR headset
- Computer
- Video camera
- Cardboards
- Markers
- Phones

# 7. Prototyping Plan Test

### 7.1 - Prototype 1

The goal of prototype 1 is to test the degrees of empathy obtained by some subsystems individually to ensure that they can be felt by users, as well as to make any necessary adjustments after obtaining client feedback.

Subsystem 2 must provide users:

- with the initial interaction taking place
- the initial point of view chosen from person 1
- A scenario that would lead them to make a choice

Subsystem 3 must provide users:

- with two different choices of scenarios
- the ability to choose between one of them
- A high degree of empathy during the different scenario
- The ability to display the next choice after the one chosen
- A layout to show the different between the two choices

Subsystem 4 must provide users:

- The ability to switch points of view from the initial interaction
- the initial interaction taking place
- the initial point of view from person 2
- A dialogue that would lead them to make a choice

Subsystem 5 must provide the users:

- With two different choices of scenarios
- the ability to choose between one of them
- A high degree of empathy during both scenarios
- the ability to display the next choice after the first one
- A layout to show the different between the two choices

The various tests that would be carried out during prototyping would focus on how information and graphics from each subsystem are displayed to the users and the way each scenario provides empathy. Many of the subsystems share common characteristics, so they would just be tested once.

Table 5: Prototype 1 Objectives

| Test (ID) | Test Objective (Why) | Description of Prototype used and of Basic Test Method (What) | Description of Results to be Recorded and how these results will be used (How) | Estimated duration and planned start date (When) |
|---|---|---|---|---|
| 1 | Verify that the subsystem sufficient information to the users and guide the through the dialogue | A comprehensive/ physical prototype will be built for this test, some members of the team would carry out the test via iPhone camera and cardboard and provide their feedback on whether the subsystems can be implemented into the final design. | The result will permit us to determine if the information provide for the interaction can be understood by everyone | Test duration: 2 hours<br><br>Planned start date: February 22nd |
| 2 | Evaluate the level of empathy derived from each scenario and ability for the user to make a choice | A more comprehensive prototype would be used for this test, and would be carried out by all the team member as we would be searching for a particular scenario that would derive the high level of empathy | Level of empathy derived, and these results will permit us to know if the feelings introduce in the scenario can be felt by another users | Test duration: 2 hours<br><br>Planned start date: February 22nd |

### 7.2 - Prototype 2

The objective of the second prototype is to make sure the main menu is feasible. The main menu would be on the homepage of the program, which would serve as a panel to move from one subsystem to another, including but not limited to changing the configuration and display of the program, adding features, and providing feedback. We, as the project team, have to make sure that each button in the main menu works correctly and ensure that modifications made by the users are changed in real time as well as permit the user to interact properly with them.

Table 6: Prototype 2 Objectives

| Test (ID) | Test Objective (Why) | Description of Prototype used and of Basic Test Method (What) | Description of Results to be Recorded and how these results will be used (How) | Desired Results (What counts as success) | Estimated duration and planned start date (When) |
|---|---|---|---|---|---|
| 1 | The objective is to check for feasibility and any uncertainties associated with the function of the main menu on the home page. | This prototype would be a comprehensive prototype, so a responsiveness test would be carried out by the team to calculate the rate at which the home page responds to different user inputs. | The rate of success and the time taken for the programme to respond to changes will be recorded.<br><br>These results would provide us with the degree of responsiveness of the programme and identify any bugs. | User modifications are observed within 1-3 seconds | Test duration: 1.5 hours<br><br>Planned start dates: March 1st |
| 2 | Verify the function of each tabs used to navigate in the program and in between the subsystem | A more comprehensive prototype would be used to test the switching mechanism of the tabs<br><br>We would be calculating the speed at which the switch from one subsystem to another | The good functioning of different tabs, and a smooth and pleasant switching mechanism<br><br>Time taken for different users to switch from one subsystem to another | The ability to switch from one subsystem to the next within 1-5 seconds | Test Duration: 1.5 hours<br><br>Planned start dates: March 1st |

# 8. Conclusion

In conclusion the aim of this deliverable is to breakdown our costs and plans for the project. The project itself is to put the user into someone else's shoes and have them empathize with a situation that may be foreign to them. In the deliverable we have a table that breaks down everyone's task and how long it would take for them to finish it. A final design table and a table that explains some of the risks of our ideas/project. We also explained how long each of the other deliverables would take us.

# 9. Citations

*Easy elevator model: 3D props*. Unity Asset Store. (n.d.). Retrieved February 20, 2022, from https://assetstore.unity.com/packages/3d/props/easy-elevator-model-25144

"Cindy - Human Female | Characters." *Unity Asset Store*, 26 July 2016,

assetstore.unity.com/packages/3d/characters/humanoids/humans/cindy-human-female-62695.

"Eric - Male Human: 3D." *Unity Asset Store*, https://assetstore.unity.com/packages/3d/eric-male-human-50760.

MchlSkhrv, et al. "Looking down at Feet Stock Illustrations." *IStock*, https://www.istockphoto.com/illustrations/looking-down-at-feet.

Baranessku, Antonio. "Sketch Selfie Feet Boots Shoes Tight Stock Vector (Royalty Free) 1676559088." *Shutterstock*, https://www.shutterstock.com/image-vector/sketch-selfie-feet-boots-shoes-tight-1676559088.

Park, Graphic. "Avatar PNG Images: Vector and PSD Files: Free Download on Pngtree." *Pngtree*, https://pngtree.com/so/avatar.