COSC 345

"Small is Beautiful"
Assignment 1: Written Report

Group: CodeBound
Project Title: Dirth

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What are you going to build

We are building a text-based, multiple choice sci-fi adventure game.
The game can be split into two essential parts. The **design of the program** itself and the **story** we want to present through the program.

Program Design

We will use C to program this game. Will use no more than 1,000 lines of code. Must run on MacOS. We will be using a simple GUI to display the game.

To start with, the GUI will be extremely simple, displaying only a text description of the scenario occurring and the possible choices. Game begins with a character creator (decide the hero's name, gender and other distinguishing features?). Also need to link the hero's selected name and gender with placeholders in the story text file. Once we have a working release, we can then add more graphics features, such as pixel art representations of the characters. It would be useful to provide the player with an inventory to show what items they currently have.

Multiple choice vs. parser. We will use multiple choice due to LOC restriction and because it is much easier to code. The way this works is the game will describe the scenario to the player and present several choices, they must select one of these choices to progress the game. The choices they pick will determine the different paths the story may take. By keeping this part simple, we can work more on implementing a good story and other elements we may decide to add.
This is a text-heavy program; therefore, we need to have a way of importing the specific text needed at certain points of the game.

Other options such as 'go back', 'chapter select', 'journal', etc. We do want to implement a feature where the player can choose to go back to a previous choice. This is useful in the case they don't like the outcome of the choice they made and wanted to try a different path. The journal is provided to help keep track of story.

A save and load state feature. This is essential for ensuring that the players progress won't be lost.

We also want to work on elements if we don't run out of code or time. This includes:
- Graphics - player character, other characters, background, map, VFX
- Music - background music and SFX

Story

This is a fundamental part of our game. A good story is essential for keeping the player interested.

We decided to make the story a science fiction adventure.
The main **themes** include self-discovery, moral gray areas, survival, and revolution.
The story will be split into two or three main parts (we'll call them acts). This makes it easier to split the story design into conceivable milestones.

The overarching story (so far):
On a remote, alien planet filled with an abundance of deadly wildlife we have a ruined city. Past events have led most city-dwellers to work in a factory controlled by the government/higher powers. The factory produces weapons and munitions. Native wildlife is held back by chemical-heavy smog produced from the factory (either evenly dispersed or ventilated towards the outer edges of the city).

There are three main groups the player encounters during the story:
- Vagabonds, a group of outcasts looking to overthrow the overlords and take over the factory. They are a prominent faction in the first act.
- Overlords, a higher power that receives the weapons produced at the factory. Very little is known about them.
- Bioforms, organisms native to the planet. Evolve rapidly and are extremely aggressive.

The player character has a latent power that enables them to survive outside the city. Many different events can unfold how the player chooses to interact with each group/individual.

Who is going to build the program & how we will build it

Resource Requirements
- Development time 'Man-months'
- Ensure that we stick to schedule
- Labs available for programming
- Build the game in C using **XCode** (available on lab computers)

People and Roles
Roles are assigned as below:

- Grace   Writer, Code Beta
                   Has experience with fictional writing (mostly sci-fi), also done a
                   fair amount of coding in C, so she can help overlook the code.

- Marcus   Algorithm Programmer, Worldbuilder
                   Experience with C and has done COSC360 so he has a good idea
                   on how to develop games. Has a keen interest in the sci-fi genre
                   and is decisive, making him useful for bouncing story ideas off.

- Joey   GUI Programmer, Writer Beta
                   Has programming experience, learning C will also help in later
                   papers during his DipGrad.
                   Assigned to Writer Beta as he is good at editing, making him a fine
                   candidate for reviewing, dismantling and destroying Grace's
                   writing - helps to improve the story as a whole.

- Surayo   Manager
                   We need a manager to direct the project and ensure we meet
                   milestones as planned.

- Team roles   Character creator, plot design
                   Everyone will be involved in this throughout the year. The story is
                   central to the application we are developing. Creative writing also
                   goes faster when you have others to bounce ideas off of and help to
                   create a complete sci-fi fantasy world.

Other roles that are unassigned (we will decide these when necessary):
- Music
- Artist

Project Breakdown:
- Milestones for 1st Semester:
    - o Act 1 Story due by Alpha
    - o Programming - Generating the correct path in text
    - o Programming - Create the application framework

- Milestones for 2nd Semester:
    - o Act 2 and other Acts finished
    - o Main arc finished
    - o Programming - finished GUI
    - o Programming - Working without bugs

- Identifiable Activities:
    - o Everyone in the group learning the C programming language
    - o Writing different choices and paths for the user to take
    - o Creating different characters to populate the world
   - o Expanding the world

Deliverables:
- Project Plan (this report)   08/04/2019
- Working prototype with GUI and Act 1 loaded   13/05/2019
- Finished alpha with GUI and Act 1 finished   27/05/2019

The standard indentation style we will use is **K&R** style:

```
while (x == y) {
    something();
    somethingelse();
}
```

How long it will take to build the project

We are using Gantt Chart to keep track of when everything should be complete:
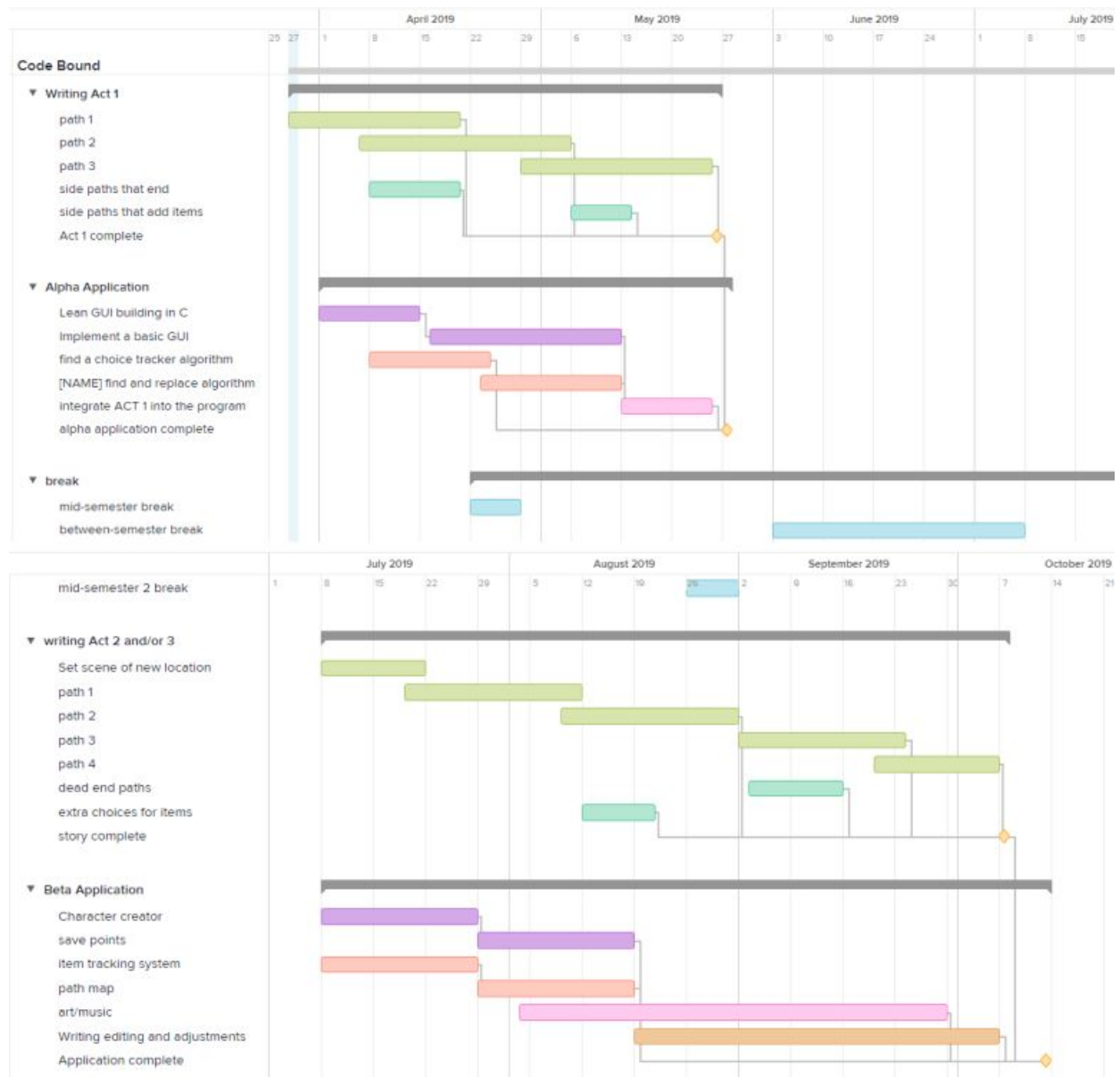
Risk Analysis

There can be several problems we may run into during our project development. By identifying such problems, we can plan around them.

- Not knowing C well enough:
    - Everyone learns C
    - Everyone checks over the source code

- Not knowing how to use XCode:
    - Learn XCode and play around with it
    - Watch YouTube videos to help figure out what to do
    - Talk to people in class

- Large complicated text files and difficult to update:
    - Split files into Acts
    - Split if there is a different path
    - Having a coherent standard layout
    - Small text files which are only one decision long

- Difficulty in updating the text with character creation data:
    - Use a standard layout in the text files so the program can identify easily where to change the text, placeholder variables:
        - [NAME] - Name of the main character
        - [VNAME] - Name of the villain
        - [RNAME] - Name of the rival/counterpart
        - [XE] - He and she
        - [XER] - Her and him
        - [XIS] - his and her
        - [XERS] - hers and his
        - [XSELF] - himself and herself

- Not meeting milestones:
    - Reevaluate roles
    - Move workload around to suit people's abilities
    - Change the milestones
    - Trim the program

- Unforeseeable leave:
  - o Everyone has access to the source code and writing
  - o Everyone learns C and how to use XCode
  - o Everyone understands what the story and program is doing at different stages
  - o The program should have clear comments on what each part is doing

- Keeping code at or under 1000 lines:
  - o Everyone revises the code
  - o The text itself is edited to support the program
  - o Having a simplistic GUI
  - o Having minimal or less add-ons

- Source control:
  - o Public open source Github that each member can edit
  - o Everyone always pushes updates
  - o Manager keeps track of people and stays up-to-date with everyone
  - o Group Discord that everyone can share ideas and talk
  - o Group chat that can be used for quick communication with the group

- Not understanding what the assigned task is:
  - o Biweekly meetings (2 per week)
  - o Manager keeps track of everyone's progress
  - o Updating each other using the channels of communication which are set up

Similar applications and games

There are many text-based games available online or as desktop applications:

- Colossal Cave Adventure
  - Pioneer of the computer adventure game genre
  - Exploring the caves
  - Added fantasy creatures as elves and a troll
  - Simple text commands
  - Escape the cave and earn maximum points offered
  - Death -> start again
  - Lobotomo Adventure 2.1 available for MacOS

- ZORK
  - One of the best known
  - High quality of storytelling and advanced text recognition
  - Collect as much treasure as you can on your adventure
  - Saving and restoring options available
  - Several versions available, not many support MacOS
  - Online game can be played from browser

- The Dreamhold, Spider and Web
  - Low to high difficulty
  - Tutorials available
  - Text input and recognition
  - Yes/no questions
  - Undo available for Spider and Web
  - Investigate the situation and find a way out of the problem
  - Online games

- Night House, Torn, and many other online games available
  - Navigation buttons aside from text input
  - Inventory and what's around list
  - RPG with many active players

- A Face That Isn't Yours (and others similar)
  - Many text-based MacOS games available at
    https://itch.io/games/free/platform-osx/tag-text-based
  - Different GUI and plots
  - Some developed into role-playing games
  - Not text input, but choosing a path from available options
  - All the plot twists can lead to the same ending

- Bard Quest and Homestuck
  - Comic narrative
  - Online website based multiple choice game
  - Has the instructions and adventure map on the website
  - Save, start over, back options

- Black Mirror: Bandersnatch
  - Interactive science fiction film
  - Netflix exclusive

The difference between our game and those mentioned above

The research on the available similar games has shown that there is a huge variety of text-based interactive fiction games available online and a few games available as installable desktop games. Each game is unique in its nature, has different story lines, different forms of user interfaces, different genres and designs. Our game will have some features from the above mentioned games which we find the most useful and some features which we would like to see combined or added in those games.

The game we are creating will be unique in the plot and characters, characters will have a certain degree of customisation with the options to select identity on a basic level. The game will also be multiple choice based to keep it simple. We are also considering other features such as saving the game or a map of pathways previously taken will also be implemented.

The dystopian science fiction genre, similar to those popular books and movies as "Divergent", "The Maze Runner", "The Hunger Games", will be developed but with whole new different universe and characters and in the interactive form.