Project Plan for "Combat"

OUTLINE OF THE PROJECT

The project will be based on a game called 'Combat' which was developed by Atari back in 1977. Our goal is to successfully revamp the old game so it is simple but entertaining enough for eight year old boys. The graphics and features of the game will be altered to ideally go par with other games in the current generation. The game will include multiplayer (PVP) over the internet which allows players to challenge against their friends. Players can also play in AI single-player mode with different difficulties options.

BACKGROUND OF DEVELOPERS:

1. *Name:* Seung Bin Choi (Jack)

Specialisation:

Computer Systems Engineering Part III - Student

Programming Experiences:

In 2011, I was introduced to Java (Net Beans) and Scratch programming as part of my computer class at school where I first encountered higher level programming. In 2014, I have used MATLAB and C language to complete my first year projects which included image processing and challenging algorithm requiring programs. In 2015, I have used C++ (OOP) to furthermore complete my projects for my COMPSYS 202 paper. I have used C language once again in 2015 for my ELECTENG 209 team projects for the wireless data transmission system.

Other relevant Experiences:

I was introduced to Picaxe (low level programming) back in 2010 where I was to build a simple program for the robot to perform basic movements. I also learnt VHDL (low level programming) in 2015 which was a large part of 2nd year, learning how to program FPGA and DE2 board to create calculators and display circuits.

2. *Name:* Wan Chung Tong (Benjamin)

Specialisation:

Electrical and Electronic Engineering Part III - Student

Programming Experiences:

In 2014, I was introduced to MATLAB and C languages for image processing and solving complex algorithms and logics. I had finished my MATLAB and C projects which were about creating a Mosaic by using given tiles, and solving challenging algorithms and data storage management. In 2015 I was introduced to C++ for object-oriented program design to simulate realistic scenarios such as customers queuing by the counters in a cinema, as well as programming experience on C language again to detect current, voltage and calculate power over an electrical device by using Atmega328P micro-controller.

Other relevant Experiences:

In Hong Kong secondary school I had learnt HTML coding to create a simple website. In 2013 in NZ high school I had learnt in depth using HTML coding with CSS features to enhance the visual effects and simplify design changes on website development. In 2015 I was introduced to VHDL and learnt how to read data from the micro-controller to display them on the 4-digits seven segments display.

Expectation of our product:

A welcome screen should be displayed after the application has been opened, with a background of two tanks in a combat arena, which are controlled by AI, are moving and try to shoot each other. There are options to choose between multiplayer and versing an AI. The AI option will allow the player to choose the difficulty of the AI and also choose the colour of their tank. In the game, the tanks will be able to move in all directions, shoot bullets at a certain maximum shooting rate. Power-ups will be spawning every 10 seconds randomly on the map which gives special features for a certain timeframe for the player who gets it. Each game will last 2 minutes. The exit screen will show the winner's name on the screen. A pause/resume function will be infused into the game to optimize comfortability for certain cases. During the gameplay, SFX sounds will be heard as the player shoots an enemy or the bullet hits an enemy.

Week to week Schedule:

Week #	Milestones
Week 1	Looking for Partner / Learn Java
Week 2	Project plan / Learn Java and BitBucket / Java assignment
Week 3	Finishing off Java assignment / Start on GUI
Week 4	Work on GUI and start implementing game logic
Week 5	Continue working on game logic and AI implementation
Week 6	AI and multiplayer implementations / Extra features / Graphics
Week 7	4 page Report / Phase 1 interview preparation / Finalising 'combat' game
Break	Learning Python during the break
Week 8	Learn Python / Finish off the Python Assignment
Week 9	Working on class protocols, cooperating with classmates
Week 10	Implementation of in-game communication system
Week 11	Implementation of Web interfaces
Week 12	Additional features including databases or efficiency of P2P
Week 13	Preparation of phase 2 individual interview / 8 page report

Challenges / Risks and mitigation:

Risk / Challenge	Description of the risk / challenge	Mitigation / Solution
Time Management	There will be possible hardship due to having projects from other courses e.g. ENGGEN 303 (SYSTEMS).	To prevent losing control of our time management, completing assignments as soon as it comes out and starting on projects asap will greatly help.
New Language	Learning Java and Python for the first time within the strict timeframe could be challenging.	Going through the tutorials online during our own time will help us learn new languanges a lot faster. Referring back to the lecture slides will also be useful.
Partner Cooperation	Difference in specialisation of our team members could have timetable differences, causing hard to meet up.	Having each other timetable and working around it would be the only option here. Meeting up in the evenings/night after all classes would be preferable.
Ideas (features/design)	Coming up with unique but innovative ideas will be quite challenging, especially none of us play games often.	Any brainstorm ideas can drop down on paper while thinking about new features and designs. Playing games could also help us get that "Eureka" moment.
Programming level	The level of programming could differ between us as our backgrounds are different.	To overcome one person 'carrying' the other person, we can learn and discuss about the language, also motivate each other to finish the project together.
Lack of Computers	Sometimes, there are no free computers used for this we might not have a place to work on the project.	In these cases, working on our own laptops could really come in handy. Bringing our laptops everyday would be essential to not be affected by such situation.