**Project management method** [SCRUM - Agile Methodology]

Our team proposes to conform to the agile methodology of project management, ‘SCRUM’; whereby we intend to monitor project progress from a real-time perspective, from monitoring, development is targeted to occur in short sprints over the duration of three consecutive weeks. The sprints will take place on a daily basis, and will provide focus on each team member’s contribution to the project files and accompanying documentation (deliverables). We have one goal, to deliver the software within the time allocated.

For this project ‘Tank War’, our team will demonstrate various practical working methods, that of self-organisation, regular interactions socially as well within physical presence and also the ability to work with peers in a pair and group formation; all of which proposes to help overcome problems, to initialise ideas and to also enhance the forecast work rate. The considerations made into establishing realistic goals for each sprint will enable these methods.

**Roles and responsibilities**

**Product Owner (team leader):** Adam Hubble (P17175774)

* Adam, is responsible for prioritising the order in development of the project, through which needs to be communicated well to the remaining members of the team, alongside communication, Adam is the decision maker also. Adam’s focus is primarily upon the documentation aspect of the project, specifically for the project management and report documents, from this Adam is also responsible for record keeping. Such requires Adam to obtain a clarified understanding of the finalised program, and the efforts (sprints) throughout the development process, used to reach the deliverable state of the project.

**SCRUM Master (spokesman):** Josh Howitt (P17175621)

* Josh, is responsible for acknowledging any problems that may be encountered during the development process of the project, and to also resolve and communicate the problems and resolutions to the remaining members of the team. Josh is required to be organised in the attempt of resolving problems that may be intervened with, and be able to consult problems with clarity to Adam, for documentation purposes and to also reach the deliverable state of the project. To note, Josh must have contribution to the report documentation.

**Team Member (programmer):** Alfie Horton (P17175393)

* Alfie, is responsible for completing the sprint targets relevant to the development process of the project, which will accumulate to the finalised version of the Tank War program. Alfie is primarily required to code (program) but is also expected to test the program additionally to Joe; as a deliverer of the finalised software, Alfie must accept equal responsibility for the program’s functionality alike Joe. In which Alfie will function as a pair, with team member Joe, to enable collaborative efforts in the rate of sprint completion and further software delivery.

**Team Member (tester):** Joseph (Joe) Hill (P17174751)

* Joe, is responsible for completing the sprint targets relevant to the development process of the project, which will accumulate to the finalised version of the Tank War program. Joe is expected to have contribution to the program code but primarily is required to test the program progressively; as a deliverer of the finalised software, Joe must also accept equal responsibility for the program’s functionality alike Alfie. In which Joe will function as a pair, with team member Alfie, to enable collaborative efforts in the rate of sprint completion and further software delivery.

Acknowledging the efforts due to be made by all members of the team, all members of the team are responsible for the delivery of this project; therefore, no single person holds accountability for the project’s outcome.

**Communication**

Relative to the upkeep of communication throughout our project, as confirmed by all members of the team, social media platform ‘Discord’ will be the primary source of communication. Discord provides the ability to form group conversations and enables file sharing that of project files and images in the context of this assignment. This further composes the ability to monitor progress, and also arrange the physical meeting times and locations to work within pairs or as a team. Moreover, problem resolution can be more instantaneous, compared to allocated meeting periods, as a result development can be quickened.

Regarding the frequency of meetings, team scaled meetings are proposed to be conducted on a daily basis over the three-week duration of development; whereas pair scaled meetings will function on the basis of communication between the two corresponding Team Members, or between the Product Owner and SCRUM Master. To note, all meetings will be hosted on campus as a point of convenience and will also be recorded as attendance (see progression of completion).

**Progression of completion**

Providing insight into the governance of project files, most specifically the Tank War repository, all project files are concurrently and will continue to exist as a GitHub repository. Whereby all members of the team share equal access permissions to the repository as ‘collaborators'. Using GitHub enables all members of the team to upload and create files; relative to uploading, members are able to ‘commit’ revised versions of the project for all members to see and obtain simply. Also, the integrated ‘comment’ system when creating commits to the repository, highlights the alterations made per commit, and overall provides a sense of convenience to use.

For identification purposes, a series of charts and tables will be utilised to display the progression throughout the project, completion will refer to the number of milestones accomplished (or sprints), relative to the number of milestones remaining (or sprints). More so, the working hours of all members of the team will also be recorded (as previously mentioned) on a weekly basis, in addition to the basic attendance to meetings daily. All recordings will be captured within a series of tables in a Microsoft Excel document, see document ‘ProgressionAndTime’ to view such.

**Code integration**

In focus of the coursework specification, our group proposes to create “additional classes” related to the ‘DumbTank’ class as provided, this is due to not being able to make any alterations to “the existing functionality in any way”. The classes we create will predominantly purpose to provide functionality to the bot tank, which aims to exhibit the behaviours of an opposing player. Moreover, relating to pathing techniques, our group further proposes to be able to use two query techniques; A\* search (a form of best-first search) and also Depth-first Search (DFS). A\* search query situates as our primary technique, it was chosen due to its usage of a heuristic function; such function enhances path finding, through which is carried out by the ranking of branches at every branch step. Ranking works to find the shortest path from the starting node to the goal node, which we had collectively thought of this technique to be the most suitable for the game presented. However, if the group is able, we propose to further implement the Breadth-first search (BFS) query technique, as an additional path finding method; this would be implemented as a comparison technique to both A\*search and Depth-first Search methods.

**Milestones (aims)** [Deliverables]

Concluding the development process of the project, our group aims to provide the Tank War project game with the inclusion of two path finding techniques at a minimum. From which, the opposing tank should exhibit oppositional behaviour, and therefore provide a challenge to the player. Whereby, the behaviours should exemplify sensual awareness to the map, and therefore the tank will move around player bases; the tank should otherwise acknowledge the player bases and player tank as objectives, to which extent are destructed when within its field-of-view (FOV). Accompanying the Tank War program will be a report outlining the design, implementation and testing principles of the project, as well as data recording documents and this very project management document. These are our project deliverables.

Meanwhile, our group has outlined several targets and or milestones to be achieved throughout the lifecycle of development of our Tank War project and proceeding into its post-production process. Here are our project milestones (relative to order):

* GitHub repository setup (group collaboration)
* Create report documentation (progressively)
* Incorporate A\* search query technique
* Incorporate Depth-first search query technique
* Incorporate Breadth-first search (BFS) query technique (additional)
* Testing implemented and thorough (improve upon errors)
* Project program finalised by Team Members
* Accompanying report finalised by Project Owner
* Presentation preparation complete (materials)
* Presentation complete (deliverable)
* All deliverables complete, and ready for submission

For this project, we estimate to invest a minimum cumulative total of two-hundred hours (200) of real-time, across all members of the group; this is a model for the time required to present and submit all the project deliverables to a satisfactory level (at minimum). This will be recorded within the ‘ProjectAndTime’ Excel document.