Software Engineering Project Proposal

Project Title: Computer Game – VIRUS SURVIVOR (VS game)

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Project Category/Topic: Software Engineering

Project Aim:

- The design behind this game ‘VIRUS SURVIVOR’ is motivated by all-time favourite and popular videogames like "MARIO", "DANGEROUS DAVE" and "LOST".
- This game is 2D-Java oriented and is an entertainment project which has missions that provide animation features for movements and eliminate virus-infected monsters, to reach the destination safely.
- My aim is to utilise a concept of computer graphics such as Graphical User Interface (GUI), accumulate knowledge and experience that would help me execute video game projects, as well as develop my skills.

Related work:

- Steve Rabin explained how video games had changed the era of technology. His book named "Introduction to Game Development” has a brief knowledge and research pertaining to computer games, programming languages, designs, networking and many more. The author mentioned that computer games are not only required in the Computer Science domain but are also essential in other fields that might enable the growth of the gaming industry. The author explained that while working on creating video games, it is essential to understand aspects such as the perception of games, programming languages, creation of art and marketing strategies (Business and management). [1]

- In his book known for "2D Graphics Programming for Games", John Pile Jr revealed his brief thoughts about computer graphics and gaming-related programming languages. This book is suitable for software and hardware developers who need a start-up career in the gaming field. It contains exercises and practices that accommodate learning programme functions and practical methods to execute derived video game projects. [2]

- Frank Klawonn described the principles of computer graphics with a combination of applications of gaming and examples. He introduced brief techniques and methods of Java programming in 2D and 3D basis. In this book "Introduction to Computer Graphics", the author explained how to build video games with the subsequent

steps and 2D/3D graphics with Java functions & classes. The author presented practical knowledge regarding how to draw geometrical shapes/angles, graphics with animation, audio-colour-motion fluctuation etc. [3]

- Lastly, an article by Sergii Shepelenko mentioned "Creating a 2D platform" and demonstrated how video games could be played as an entertainment purpose. The author mentioned the present, especially that the ‘tech generation’ has made people discover the gaming platform to play games online, which further went on to becoming a trend. The author depicts some information about gaming techniques such as GUI libraries with input events to enhance real-time animation and execute character's movements with proper controls/buttons. This article is vital to recognise scenarios, rules, simulations, the presentation of computer games and some tricks of game-related programming languages to get an output. [4]

Project Objectives/Deliverables:

- Pathway 1- Software Development:

1. My aim is to understand the concept of computer gaming from relevant gaming and programming books/articles, as well as to execute the project efficiently. Time management is essential while doing this project for the first time, from scratch.
2. The initial objective is what requirements are suitable for the project. Requirements like Java Framework (NetBeans), software/hardware tools, GUI libraries, files are necessary to build game.
3. The second objective will be game presentation. It is a classic game so it contains background image, maps, assets to construct what game architecture will be.
4. The third objective is implementation. Java Programming is easy to use for creating games. It has an advanced classes in GUI concept and derived options for commands to run the project.
5. The forth objective is animation and controls. Animation with controls can be done when character kills enemies by pressing buttons and complete the level after defeating them. It can be done using Java programming with GUI input events.
6. The fifth objective is testing. It is necessary that all requirements should be met and implementation process should be error free.
7. The final objective is evaluation. After compiling project, it displays splash screen to start the game to play.

Methodology:

1. The use of Waterfall Methodology in this project would be the best, as it follows a step by step approach and is easy to understand.
2. A waterfall methodology reduces the risk of moving onto the next phase and helps in developing an approachable, as well as a convenient model. [5]

Project plan:

1. I chose the concept of ‘Gaming’ as I intend to work in the gaming industry in the long run. This project is a pathway to accomplish my goal. My experience in

programming will help me develop confidence to discover something new and enhance my programming skills.
2. My first plan is to read books/articles and watch videos of programming in gaming to study gaming procedures.
3. The framework of the game ‘MARIO’ would be the most appropriate example to build on my project as an initial step and understand the process.
4. Secondly, I will work on developing a rough model of my project implementation on a particular IDEA software (NetBeans).
5. This would help me understand the functioning and get me well-versed with the domain.

Risks and contingency plan:

- I may face problems such as technical design issues and social glitches (poor key layout and navigation, tedious graphics glitches). [6]
- Another issue could be the running process, it may run slowly (taking a long time for implementation) because of high usage of the graphics card. This can cause the memory to be affected.
- To solve this, I must ensure appropriate maintenance of the device, for realistic & smooth performance and to make the platform as user-friendly.

Hardware/Software Resources:

- Functional requirements such as;

1. GUI libraries.
2. Java Programming concept and framework (IDEA NetBeans).
3. Graphics design (features like audio, animation, manage control/buttons).
4. Graphics card & RAM compatibility.

References:

[1] Rabin, S. (2009). *Introduction to Game Development, Second Edition*. Course Technology PTR.

[2] Pile, J. (2013). *2D graphics programming for games*. Boca Raton: CRC Press, Taylor & Francis Group.

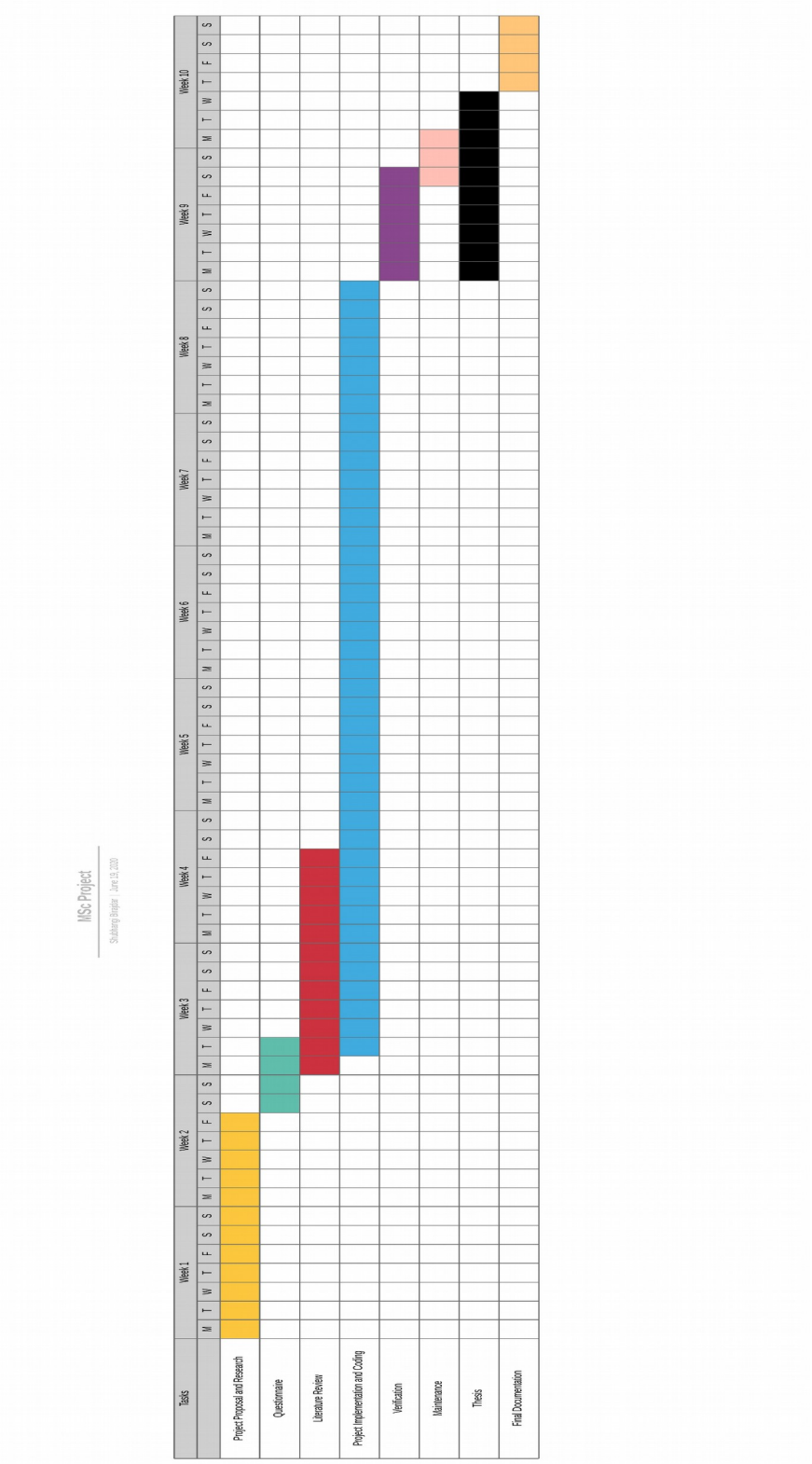
[3] Klawonn, F. (2008). *Introduction to computer graphics: Using Java 2D and 3D*. London: Springer.

[4] Shepelenko S. Creating a 2D Platform Game.

[5] Aalto, O. (2015). Mobile Game Product Development Models.

[6] Rozali WA, Ab Hamid SH, Sabri MI. (2007). Video games: Issues and problems. ITI 5th International Conference on Information and Communications Technology 2007 Dec 16 (pp. 217-222). IEEE.

Gantt Chart:


MSc Project
Shubhang Bhatpar June 15, 2020
Tasks
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
M T W T F S S
Project Proposal and Research
Questionnaire
Literature Review
Project Implementation and Coding
Verification
Maintenance
Thesis
Final Documentation