1. **Geeks VS Bugs**
   1. **Introduction**

This chapter contains the process of how the game was built. Everything will be discussed here from the beginning to the plan for the implementation of the game. The process of how the proponents processed every stage will also be tackled within this chapter.

* 1. **System Design Specification**
     1. **Methodology**
        1. **Game Development Lifecycle (GDLC)**

Game Development Lifecycle is a methodology that was derived from SDLC or Software Development Lifecycle. It was constructed specifically for the needs of video game development. Unlike the SDLC with 5 phases, GDLC is composed with 7 succeeding stages.

Geeks VS Bugs is being built under the methodology of GDLC. Starting from the initiation to the planned release version, GDLC will guide the proponents

* + - * 1. **Initiation**

Initiation is the initial development phase for GDLC. This phase consists of the planning and concept development of the game. Decisions such as game mechanics, storyline, characters, dimensions, potential players and etc. are being brainstormed. It is considered as the planning stage of SDLC.

The proponents of Geeks VS Bugs started everything with an idea and vision of producing a game that will also have a goal to buildup player’s academic capacity through different methods.

* + - * 1. **Team building**

Second phase for GDLC is the staffing or team building. This is the phase when developers are being hired for specific tasks. In this phase, assignments must also be distributed properly depending on individual strength and skills. Clarifications about individual goals must also be discussed within this stage.

Though it was discussed here that team building is a second phase for GDLC, the proponents of this study did otherwise built a team before anything else. As students pursuing to finish this study the proponents was first distributed into groups before starting an idea for the project

* + - * 1. **Pre-production**

One of the most important things before jumping directly to coding the game is pre-production. It’s the same as planning and designing the game itself. In this phase, details are broken-down and concepts are developed into mock-ups. Gameplay, art styles, game engine and platform must also be defined here.

In this stage, the proponents broke every possible task into smaller chunks that could be done independently so that, as a student, they will still be able to maximize their capacity without being hindered by the requirement of working together most of the time.

* + - * 1. **Production**

Fourth phase is the most exhausting and time consuming part of development for most cases. Most coding is done in this stage. Assets such as graphics and sounds are developed in this part.

The production of the game is processed by the guidance of the previous documented decisions. Assets are the first priority to be produced while other team members are conceptualizing the functionalities. After putting every crucial part, the proponents will then move on and release the Alpha version.

* + - * 1. **Alpha version**

Alpha version is the phase where the game itself is playable, but incomplete. For example, if the game has some playable level, it has already reach alpha version. Most of the core gameplay must be already included in the alpha version game. Testing by fellow developers within the team and bug fixing mostly contain this phase.

Alpha version will be release after every major components of the game has been put together. This version will be released to people who will be assigned to conduct the quality testing.

* + - * 1. **Beta version**

Beta version is the phase where all the game is all set. It means beta version game is already a full game. This also the time when third party testers will get hold of the developed game. Though the game could be played as a whole, it is still subjected to major changes depending on the results of beta testing. Feedback from testers must also be collected in this phase. This is also used to expose glitches, bugs and exploits.

Beta version will be release to the senior high school students and tertiary in STI Ortigas Cainta to conduct the testing. Their review will be compiled together the major and minor bugs that will still be addressed be the programmers.

* + - * 1. **Release version**

This is the phase where the game is launched or shipped. It could be uploaded in Internet or any storage device for distribution. This phase also handles the patching and maintenance. Though the game was already considered as fully developed, updates must also be done from time-to-time.

The games goal is to be released in public after all major bugs and issues are resolved. The proponents’ vision, aside from releasing it to market, is to introduce it to incoming students in IT programs.

* + 1. **System Requirements**
       1. **Mobile Operating System**

Android Version 4.3

Recommended Operating System: Android Version 5.0 or higher

* + - 1. **Hardware**

Not lower mobile devices with screen resolution of 1280x720

* 1. **Summary**

This chapter discussed how the flow of development moves successively with regards to the stage of the study. The proponents refer to this methodology whether to step forward or backward within phases it the development process requires.