FIT3077: Software Engineering: Architecture and design

Semester 1, 2024

Team Documentation

Group No: MA_Wednesday_04pm_Team690

Prepared by:

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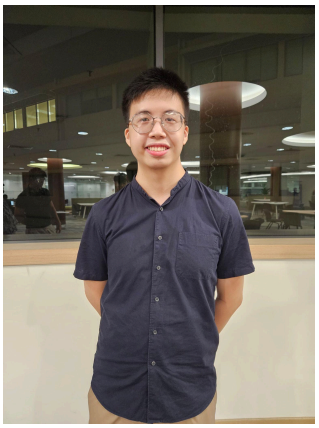
Content

Team name

Arcane Studios

Team photo

Team membership



Name: Tong Jet Kit
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I am an expert in python and Java Programming. I also have great team-working and time management skills and I always ensure that all the tasks given to me are done within the deadline without fail. Moreover, I have some experience in creating software applications such as a mobile app and website. A fun fact about me is that I like pasta so much that I can eat it 3 times a day and 7 times a week.

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I am a third year undergraduate Computer Science student specializing in Advanced Computer Science. I am able to code in both Java and Python, and I have an existing level of familiarity with concepts related to this project, such as object oriented design principles and Agile methodology.

Name: Mandhiren Singh Gurdev Singh
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I am an avid coder and love building software. Some of the technologies I have used are Dart and Flutter for building mobile applications, as well as Android Studio. I am also well-versed with both Python and Java, along with using JavaFX and jfoenix for GUI-based Java applications. A fun fact about me is that I can solve the Rubik's cube in under a minute but I don't know how to solve it algorithmically with code (I should probably code that up soon).

Team Schedule

Meeting Schedule

To be able to complete all the tasks in this unit, our team decided to hold regular weekly meetings on Saturday or Sunday night. The chosen schedule is determined by our individual availability so that everyone can participate in the meeting to update all the current task's progress, obtain feedback, and discuss any problems that will hinder progress and future goals. Our form of communication that we have agreed on is through Discord and Whatsapp. These 2 communication platforms are the most common form of communication that our team uses. Moreover, Discord offers a voice channel feature, enabling seamless communication regardless of physical distance. Furthermore, it empowers users to share their screens, facilitating effective presentations and demonstrations.

Work Schedule

Our team has agreed to adhere to the work schedule that we have discussed upon which is to finish all tasks given to us before the deadline that we have set on during the meeting. We are all expected to complete the tasks given to us using our personal time outside of meetings. Flexibility will be given to all the team members to accommodate their schedules and other commitments outside this unit. This is to ensure that all team members are able to complete their tasks with ample time and perfectly without any stress as rushing to complete tasks may accrue debts which then need to be resolved in the future.

Workload Schedule

All tasks within the team will be distributed equitably among team members for each assignment and deliverable. The tasks will then be completed in our own free time as we are still students and still need to attend to other units as well. To manage it, we will be utilizing a Jira. Jira is a cloud-based project management tool to help manage any Agile-based project. It includes features like Issue Tracking, Product Backlog and a Gantt chart to help us to manage our project so they can be finished in time. Our team will be using the Jira Board to help present all the user stories and to keep track of all the user stories for the current sprint. The Jira Board consists of columns that represent the status of each user story. The columns are in-progress, work to be done and completed. By using the Jira Board, we can guarantee that all the user stories for the sprint can be completed efficiently and also ensure no work is overlooked.

Technology Stack and Justification

Programming Language

Programming Language	Discussion
Java	Verbose syntax - Java's syntax tends to be longer and more wordy than Python Inherently Object-Oriented - Java was designed to be purely OO, which falls in line with project specifications Static typing - Helps to catch errors at compile time, making functional code more reliable and maintainable
Python	Simplicity/Readability - Python syntax is simpler and more readable Dynamic typing - Easier to use, more flexible - More runtime errors - Testing needs to be more thorough/comprehensive Libraries - Python has a more extensive selection of libraries

Given the project specifications, Java is our team's preferred choice. Java's inherent object-oriented design and strong typing align well with the emphasis on object-oriented design (OOD) and object-oriented programming (OOP). Java's support for interface-based design, encapsulation and information hiding, and polymorphic features allows for well-structured and modular code, which promotes code reusability, maintainability, and scalability and is more in-line with our vision for our Fiery Dragons replica. While Python offers simplicity and rapid prototyping advantages, Java's inherently object-oriented design, strong typing, and support for essential object-oriented programming principles such as interface-based design, encapsulation, and polymorphism make it the optimal choice for developing a robust and scalable solution for our Fiery Dragons replica.

UI Design

API/Library	Discussion
JavaFX	Modern look - JavaFX's user interfaces are more visually appealing than Swing's - UI aesthetics not as important as having a functional product Supports complex UI design - Allows for better performance with complex UI design, not necessary for the project Uses FXML for UI design - Team members unfamiliar with FXML, but are confident in picking it up Supports CSS styling for UI components - All team members familiar with CSS styling Limited documentation - JavaFX is newer and less established compared to Swing Performance overhead - JavaFX uses a scene graph in rendering which can incur higher resource requirements Larger available range of built-in UI controls
Java Swing	Older technology - As a well-established GUI toolkit, Swing has extensive documentation and community support available - UI is outdated and not as visually appealing as JavaFX projects Less flexibility in layout design - Designing complex interfaces can be challenging due to Swing's layout management system - May not be relevant due to simplicity of game No CSS styling available - Swing does not support CSS styling for UI components

JavaFX is our team's preferred choice for UI development. While JavaFX may have a steeper learning curve than Swing, its advantages in both aesthetics and support for FXML and CSS outweigh the potential challenges. Additionally, the available built-in UI controls in JavaFX are of a wider variety and are more in-line with our team's vision for this project.

Compiling Project into an Executable File

Our Java project will be converted into a JAR file, by exporting the project via IntelliJ IDEA's built-in conversion functionality. JAR files can be executed on any platform with the Java Runtime Environment (JRE) installed,

Mapping Technologies to Team's Expertise

All three members have previous experience working with Java and object-oriented programming and design, as Advanced Computer Science specialization students who have completed FIT2099. However, Mandhiren is the only member with previous experience with JavaFX and other complementary libraries. Therefore, while the overall design process will be a collaboration between all three members, Mandhiren will have a focus on UI/UX and frontend work, while Nisha and Jet Kit will have a focus on back-end development.

Technologie(s) requiring assistance from teaching team

Currently, we are not planning to use any technologies which will require teaching team assistance.