

1. Introduction

This section serves as a small introduction to our project, which is video-game called “Dragon Boat Racing” as specified by our dear client Mr. Javier Cámara. Dragon Boat Racing is a 2D, single-player game that will be developed for the PC platform using the Java programming language.

For the gameplay aspects, Dragon Boat Racing is an adventure game where the player will experience the rush of competition, the excitement of power-ups, the satisfaction of overcoming obstacles and most importantly glory after winning a race. It will consist of different levels, each one with increased difficulty and having a unique scenery. Players will have the ability to customize their boat’s appearance, and choose from boats with different stats to match their play-style.

Every race is an adrenaline-fueled test of skill and strategy as it takes great skill for a player to control their boat in the lane and defeat their opponents. The game’s mechanics are basic but yet very exciting. Leaving the lane penalizes you making it harder for you to win the race and colliding with obstacles eventually results in the sinking of your boat. It is here that the game will give less skilled players a chance to play a simple “Simon-says” mini-game to repair and revive their boat. The different power-ups make the experience more exciting, enjoyable and dynamic.

1.2 Software Tools

Every project and team needs different tools. Some tools are more suitable for the job than others. Here we will list the tools that we have chosen for our Dragon Boat Racing project after carefully looking at all the options, consulting with different team members and of course making sure that they are the best tools for the job.

1.2.1 Communication software

This section outlines the tools we utilize for seamless communication within the team. Effective communication software is crucial for real-time collaboration, swift issue resolution, and maintaining a cohesive team environment. These tools facilitate instant messaging, and videoconferencing ensuring that team members stay connected regardless of geographical locations.

- **Discord** will serve as our main communication platform. The app is great for videoconferencing between our team members, has a modern interface and mobile applications to make sure our team is always connected.
- **Whatsapp** will serve as another communication platform mainly for its convenience, and its instant messaging capabilities as anything critical can be discussed via Whatsapp between our team members for instant response.

1.2.2 Project planning and productivity

This section enumerates the tools we employ for project planning, task management, and enhancing overall productivity. These tools are essential for organizing workflows, setting project milestones, allocating resources, tracking progress, and managing timelines efficiently. By utilizing such tools, we ensure

transparency, accountability, and alignment with project objectives, ultimately optimizing team performance and project outcomes.

- **Trello** will be used exclusively as it is very well known in the industry and of course preferred by our project managers. It will make it easy for us to assign tasks and distribute work between our members thanks to its excellent, simple yet powerful web interface.

1.2.3 Development related

This section delineates the software tools integral to the development process, including integrated development environments (IDEs), and version control systems. These tools facilitate code creation, debugging, version tracking, and testing. By leveraging these tools, we enhance code quality, accelerate development cycles, and foster collaboration among our team's programmers.

- **IntelliJ IDEA** is an IDE very well known in the java development space. It is modern, simple, powerful and above all our team of developers is very comfortable using it. It has support for different build tools like *maven* which we will use for our Dragon Boat Racing game.
- **Git** is an excellent version control system and is an industry leader. It is fully free and open source, and will give us access to powerful version controlling. As for a git server, we will use **Github** simply because it doesn't require us self-hosting our git server, is easy to use and also provides an excellent desktop client for us to use.

1.2.4 Design

This section highlights the tools utilized for graphical design, prototyping, and user interface (UI) development. These tools enable our graphic designers to conceptualize, iterate, and refine design elements, ensuring intuitive user experiences and visually appealing interfaces. From wireframing and mockup creation to asset management and prototyping, these tools play a pivotal role in translating design concepts into tangible product features, aligning with our client Mr Cámara's expectations.

- **Visual Paradigm** is versatile tool for UML diagramming and requirements definition. It offers a user-friendly interface and a wide range of features for creating diagrams like use case, class, and sequence diagrams. Facilitating collaborative design and analysis, it ensures efficient communication and alignment of design concepts between us and our client, Mr Cámara. It is simply put ideal in our case of agile development.
- **Canva** is an excellent modern graphic design tool which serves for creating simple mock-ups as well as different marketing and mock-up material when working in our team.
- **Adobe Creative Cloud** is a comprehensive suite of creative tools for graphic design, photo editing, video production, and web development. Adobe Creative Cloud includes industry-standard software such as **Photoshop** and **Illustrator** which will be used by our professional graphic designers to design different graphical elements of the game be it the simple game menu or complex boat designs.

1.2.5 Documentation purposes

This section identifies the tools employed for documenting project requirements, specifications, codebase, and user documentation. Effective documentation tools facilitate knowledge sharing, maintain project transparency, and serve as invaluable references for our team and are important for our client Mr. Cámara.

- **Google Docs** is a a cloud-based document collaboration platform offering real-time editing and sharing capabilities. Google Docs enables our team members to work concurrently on documents, facilitating seamless collaboration regardless of geographical locations.
- **Microsoft Office** is a suite of productivity tools including Word, Excel, and PowerPoint, providing robust capabilities for document creation, data analysis, and presentation. Microsoft Office offers a familiar interface to our team members and is an industry standard.

2.Planning

- **(March 8 - March 13):** Dedicated to discussions regarding the video-game implementation, creating a list of questions to present to the client on March 13.
These questions cover aspects such as boat movements, obstacle generation, boat skins, and levels.
Additionally, communication channels through Discord were established, along with task management using Trello and GitHub integration.
- **(March 13 - March 22):** With a more refined concept, we implemented the requirement diagram, risk management, role assignment, and future planning. Several meetings were conducted via Discord to oversee the progress of these tasks and their respective reviews.
- **(March 23 - April 1):** Break for Holy week.
- **(April 2 - April 7):** Devoted to meetings between programmers and testers, consulting the proposed Java library and necessary documentation, as well as defining and developing initial programs and functions.
Graphic designers convened to sketch and specify the number of boat, obstacle, and level skins.
A general meeting was also held to consolidate ideas and review progress across the different sectors.
- **(April 7 - April 21):** Beta versions of the game were archived, featuring boat movement, obstacles, and basic skins for boats, obstacles, and levels
- **(April 22 - May 6):** Improved versions of the game incorporating physics collisions with obstacles and boats, diverse attributes for boats such as handling or speed, even the increase of difficulty across levels, random object appearances, and mini-games.
Graphic developers expanded the repertoire of boat and level skins.

- **(May 6 - May 13):** Final versions from developers with the latest implementations and improvements, potentially including the integration of power-ups during gameplay or enhanced developer-friendly controls.

Graphic designers introduced a degraded version of boats to depict damage accumulation, upgrading previous iterations as necessary.

- **(May 13 - May 31):** Dedicated to testing the final game, with testers assuming responsibility for this phase. Programmers focused on bug fixes in the code, without introducing additional mechanics. Delivering the project to the client and ask for their feedback.