Group 6: Phase 4 Report

1. The Game

Zombie Dash is a 2D arcade-style game created using Java. The game transpires within the fictional universe of a zombie apocalypse in which the player must collect food items along their path and reach the safest village nearby for shelter without dying from zombies or falling into traps.

Zombie Dash takes heavy inspiration from the popular and acclaimed *Pokémon* game series in its graphics and background music to paint a more mellow and cheery interpretation of what a zombie apocalypse might look like, rather than the gloomy, daunting mood from horror-esque zombie games. This was a change spurred during the development process, as Zombie Dash's original design had a comparatively "scarier" appearance in place of the current lush grass, appetizing food, and overall aesthetically cute sprites scattered across the map. These design changes were justified to create an intriguing disparity between the setting of traditionally scary zombie games paired with cuter graphics for a more family-friendly, accessible, and memorable experience unique only to Zombie Dash.

The vision we originally had during the planning and design phase was extensively changed once we reached the development stages. Most notably, the UML class diagrams we drew in Phase 1 to depict the class structure of Zombie Dash was heavily altered as we learned during the coding process that creating a game requires many more classes than just the entities (Enemy, Reward, Punishment, etc.), the environment, and handling key inputs from the users as we previously thought. Many aspects of our implementation were changed; new classes to handle audio files, user interfaces, and game screens for each of the start and end outcomes—among many others—were justified to keep the code organized and easy to follow, while providing all of the required functionality of a 2D Java game. Additionally, the refactoring phase spurred even more changes—namely turning all of the separate entity classes (Enemy, Reward, Punishment, etc.) into an overarching GameObject class instead. This major update was warranted to avoid the repetition and duplicated code of each entity calling separate functions to set their position and check for nearby entities when their underlying principles were fundamentally the same.

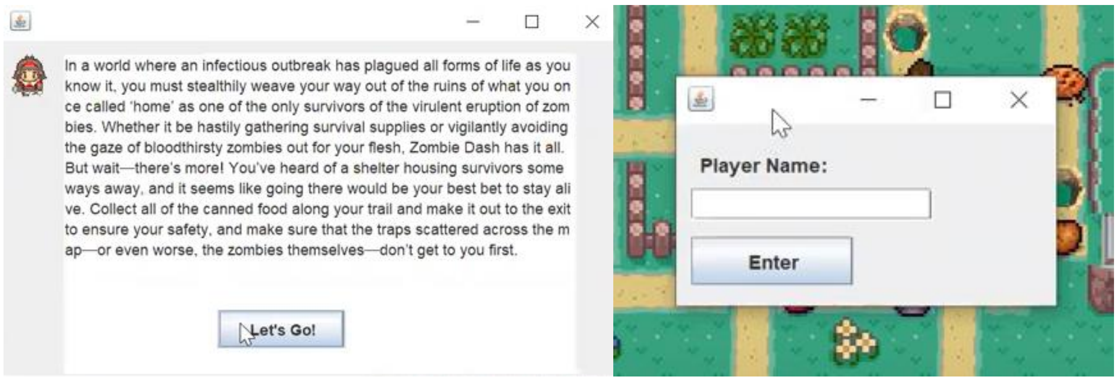
The most important lessons we learned pertain to both the hard and soft skills we acquired or honed during the phases of this project. We learned about the importance of the software development lifecycles and their applications to developing a game, alongside how to use Git for version control, structuring Apache Maven to run our game, and the Java programming language itself as our group was entirely new to Java. We had also grown closer as a team and became comfortable enough with one another during the coding phases to openly voice our opinions and crack a few jokes along the way, which is why the valuable soft skills of communication and teamwork were also inevitable, but very welcome lessons to be learned. Coding an entire game was not easy by any means, but it was a rewarding process knowing that we could support each other and play to our strengths throughout the creation of Zombie Dash. Thus, the most important lessons to us stemmed from the incremental phases of the project and the late nights we spent coding—time management was also an essential lesson to be learned in the project!

2. Video

As per the video competition, a tutorial and "advertisement" for Zombie Dash can be found here, highlighting its various features and overall gameplay: https://www.youtube.com/watch?v=_uVIVFhByXI.

3. Tutorial

In addition to the WASD movement, enemies, punishments, rewards, bonuses, and winning/losing conditions introduced in the aforementioned video, Zombie Dash also includes other features such as an interactive text box asking for the player's name alongside the introduction of the game, and a scoreboard upon winning or losing as in Figure 1.



In a world where an infectious outbreak has plagued all forms of life as you
know it, you must stealthily weave your way out of the ruins of what you on
ce called 'home' as one of the only survivors of the virulent eruption of zom
bies. Whether it be hastily gathering survival supplies or vigilantly avoiding
the gaze of bloodthirsty zombies out for your flesh, Zombie Dash has it all.
But wait—there's more! You've heard of a shelter housing survivors some
ways away, and it seems like going there would be your best bet to stay ali
ve. Collect all of the canned food along your trail and make it out to the exit
to ensure your safety, and make sure that the traps scattered across the m
ap—or even worse, the zombies themselves—don't get to you first.

Figure 1. Pop-up screens are displayed after starting the game, but prior to the player and enemy being able to move.

After the starting screen, the player name window subsequently appears. Players are required to enter in their name (or any combination of letters, for that matter) for the scoreboard. Next, a new window is created containing the written synopsis of Zombie Dash's story. Players are prompted to press "Let's Go!" once they're ready to start the game, and it is only then that the timers and moving enemies spring into action.

Note that only the terrain with beige paths is walkable by the player, and that grass areas are not actually traversable despite their appearance. The grass functions more similarly to obstacles such as the surrounding barriers (fences, plants, etc.) in limiting the possible movements that a player can take.

If the player successfully collects all of the food items (regular rewards) along the various trails and reaches the village shelter (target location), then they have won the game. If a player's score either drops below zero or a trap is encountered, then they have lost the game. Regardless of the scenario described, pop-up windows displaying whether the player has won or lost, as well as a final scoreboard with all previous attempts, are shown on the screen as per Figure 2.

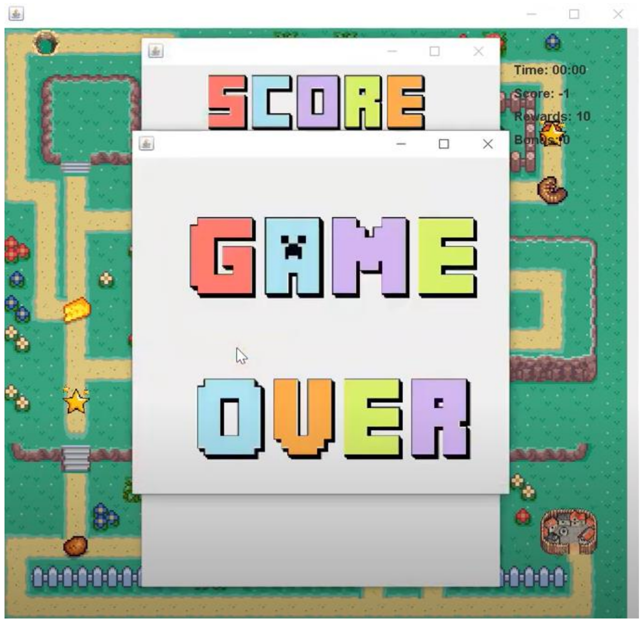


Figure 2. Pop-up screens are displayed at the end of Zombie Dash, detailing the outcome of the game ("You Win" or "Game Over") as well as a scoreboard beneath.

Alternatively, another video demonstration of Zombie Dash can be found here to further explain the above features: https://www.youtube.com/watch?v=RZXqzzRwK5Q, but please note that this video was used for demoing purposes during the Phase 4 presentation and ***not*** meant to be submitted for the competition. For clarification, the correct video for the competition is under the "Video" header.

The artifacts can be found in the path **ZombieGame/out/artifacts/ZombieGame_jar**, within a file called **ZombieGame.jar**.