

~~~Describe your overall approach to implementing the game

Our approach started by first looking at our plan we had created in the planning and design phase. We then began designing assets and looking at various tutorials for methods of implementing a game in java before deciding on how to implement our game. As a team we watched the tutorials and the next day began to write the code. We started by implementing a bare frame of our game which we slowly made additions to until we had added the various features we had planned too. We implemented it by taking turns working on a piece of the project at a time and when working at the same time instead working in pairs in order to help each other. Our approach was to combine both pair coding and single person coding in order to work within our schedules. We also had several meetings as a group to discuss the implementation of our game and various decisions.

~~~State and justify the adjustments and modifications to the initial design of the project

Initially we were planning on using multiple menus and having a separate level selection screen however we liked the idea of the player actually walking into a door to pick the level they wanted to play better. We thought that this would be a better idea as it didn't feel like the player was completely taken out of the experience in level selection. We also slightly changed how we did the game over screen as well as how we did the victory or end game screen in the scenario a player beat the game. Another thing we changed was how the hot bar was done. We also changed how the scoring system was calculated as well as where exactly it would be placed.

~~~Explain the management process of this phase and the division of roles and responsibilities

The management process was mostly done by us meeting when we were all available and we would discuss what our next steps would be from whatever place we were at at the time. Typically we would break off into doing various tasks such as one person would be told to work on art assets, sound design, to create levels, or implement some functions within the game. Each person worked on a variety of things as well as worked together, however they also had to do larger tasks as well. Adam worked on implementing the feature which allows the player to move between levels. Max was given the responsibility of creating and theming the art assets for the game and level design. Aman was tasked with creating the game loop and the game panel. Parm worked to implement proper collision detection for all of the items, enemies and players.

~~~List external libraries you used, for instance for the GUI and briefly justify the reason(s) for choosing the libraries

Some of the libraries we used were swing, imageio, io, and awt, sound. We used swing in order to implement our game as we found it to be the best place to start from. We used imageio, in combination with our other libraries so that we could create the game screen, level selection, and various levels. We also required these libraries to create our items, enemies and player class. Some of our team members had had previous experience with using swing and we figured that it would be easier to build upon this knowledge as opposed to using a new library. We used java.awt which helped us in making our GUI look what we wanted. It provided us with the classes for creating our UI for the images and graphics used in the game.

Java.awt.color helped us make our game panel, where we used certain graphic elements of the UI for our main screen. We also used Graphics2D for our tile creation, where the main purpose was to make a blueprint for our worldMap, which is our main playing area. We also used java.awt.Image class which helped us give images to our character, it allowed us to modify the character when moved up, down, right and left.

~~~Describe the measures you took to enhance the quality of your code

We took several measures to ensure that the quality of our code was up to our standards. We put a fair bit of effort into ensuring that the quality of the code was right. Even though at times it was slightly slower to do so we worked in pairs in order to reduce the number of bugs. Even when not coding in pairs, if something was completed we would go back and check to see if there was a better way of doing something. For instance Adam when looking at collision detection found a way which allowed us to replace what was once several lines of code with essentially with significantly fewer lines of code. We maintained a consistent style while writing the code. Part of this was by working together so we could all be on the same page and style. For example, we followed the convention for naming variables, functions, classes and the format of the code. Our code does as described in the comments and variables are named relevant things as opposed to just x or y. It follows a consistent style, is easy to understand, and has been well documented and tested. We continued to have constant back and forth communication and dividing up tasks helped us maintain the quality of code. Maintaining the quality of code was everyone's responsibility, which we maintained throughout the project.

~~~Discuss the biggest challenges you faced during this phase

The biggest challenge we faced was working with github and trying to manage our version control. There were several issues due to this where our file management caused problems, at one point a push leaving the game in a state which wasn't able to be run. This was fine though as we were able to resolve the issue and move forward with it. Since then we keep a lot more careful control over when someone is pushing their code. Working much more closely as a group and planning stuff out helped a lot with this. We eventually got the hang of it although it was initially quite frustrating at first to deal with. We also had challenges initially on finding and organizing time which as a group we could meet and work on the project, since everyone had multiple commitments already. That said, when it came time to work on the project the group was able to collaborate and work efficiently and effectively together, and everyone showed up to the meetings. Most other challenges which we had as a group were rather minor and through teamwork we were able to resolve them with minimal frustration, leveraging each individual's skills in order to complete our game.