Prison Break Coding Report
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Project Overview and Domain
Prison Break is a puzzle game where the player, who is a prisoner at a local prison, breaks out of their cell during a blackout. The goal is for the player to use items, overcome obstacles, and avoid NPCs in order to break out of the prison and escape. There is no particular material being tested with the creation of the Prison Break game that needs its value or correctness evaluated accordingly.

Relationship to Other Documents
The main document that was utilized in the creation of Prison Break was the design plan created by Saikrishna Yadavalli, Hassam Hussein, Tommy Castino and Joshua Peterson.

Naming Conventions and Definitions
In order to clarify the usage of some terms that have been used throughout the documentation, the team noted certain conventions. Some of these terms are "entities" that is used to refer to the objects in the game that possess unique characteristics like the player, items, and guards; and "obstacle" that is used to refer to anything that may either restrict the player's movement and be removed from the room by the player if the player has an item that is able to remove it.

Releases
For the first release on October 6th, 2023, it was primarily focused on the basic functionality of movement and the generation of maps from text files. None of the sprites are the current sprites that the game has, and they are static images that have no animations. For the second release on November 4th, 2023, the main focus was to cross-navigate across the map as well as the usage of items by the player. The sprites and maps in this version are ones that have been created by hand by the development team with animations during their usage to highlight the item-obstacle achievement. For the third release on November 21, 2023, Prison Break now had enemy NPCs in the form of guards, with an implementation for the escape route able to be achieved. The game now has obstacles that the player will have to use the various items scattered across the map to get around, whether it is using a knife to kill guards, or a screwdriver on a vent.

Comparison with Original Design Document
With the original design document created by the previous team, the current version of Prison Break retains much of the basic functionality that was outlined, such as cross map navigation, the original story that kicks off the basis of the game, and the events and items that occur in game that are highlighted in the document as possible scenarios that can occur in the game. However, the multiplayer structure and randomization of the maps highlighted in the documentation has not been achieved, but with the current structure of the implementation, will not be difficult to add later.

Test Specifications and Results

Due to the nature of the game, the methods of testing were not traditional and were tested when the game was started to test a specific feature. The results of these testings were mostly to see if features that were implemented worked or did not work according to the expectations of the team and the original idea.

Regression Testing

Due to the nature of the project, the main method of regression testing was implementing a new feature. When testing that new feature, the team monitored other parts of the system and noted if the new implementation broke anything that was previously implemented. This method allowed us to retest every previous implementation and debug issues that arose as a result of new functions or classes being added.

Inspection and Inspection Results

The main items that were inspected were classes, general code, and the dynamic memory allocation, and the procedure executed for inspection was during weekly meetings in order to analyze and review large sections of code and implementations that were written. The results of these inspections on parts of code like main, collision, pausing, and more were ones that improved the functionality and overall quality of the code.

Open Issues and Waiting Room

Some open issues that the game currently has a bit of a stuttering and game-lag issue that occurs after dying to an NPC or winning the game and starting another run through the game. This issue is mostly relevant to section 12a from the development specification. As for features that have not been implemented due to time constraints, the team wanted to implement the multiplayer and random map aspects as outlined in the original design document.

Solution Ideas

Solutions that are related to how the game should be implemented were presented with the usage of the SDL libraries that are open-source and available for usage on Github. This allowed for the game to be worked on across the different devices of the development team without complications that may arise with the differences in devices and IDEs.

Retrospective

Over the course of the development process, what went well was the frequent meetings that the development team had in order to discuss, improve, and work on the implementation of the game. However, things that could have been improved on was the consistency of the sprites and the main organization of the list of sprites and entities to create to make it easier to keep track of and create needed elements.