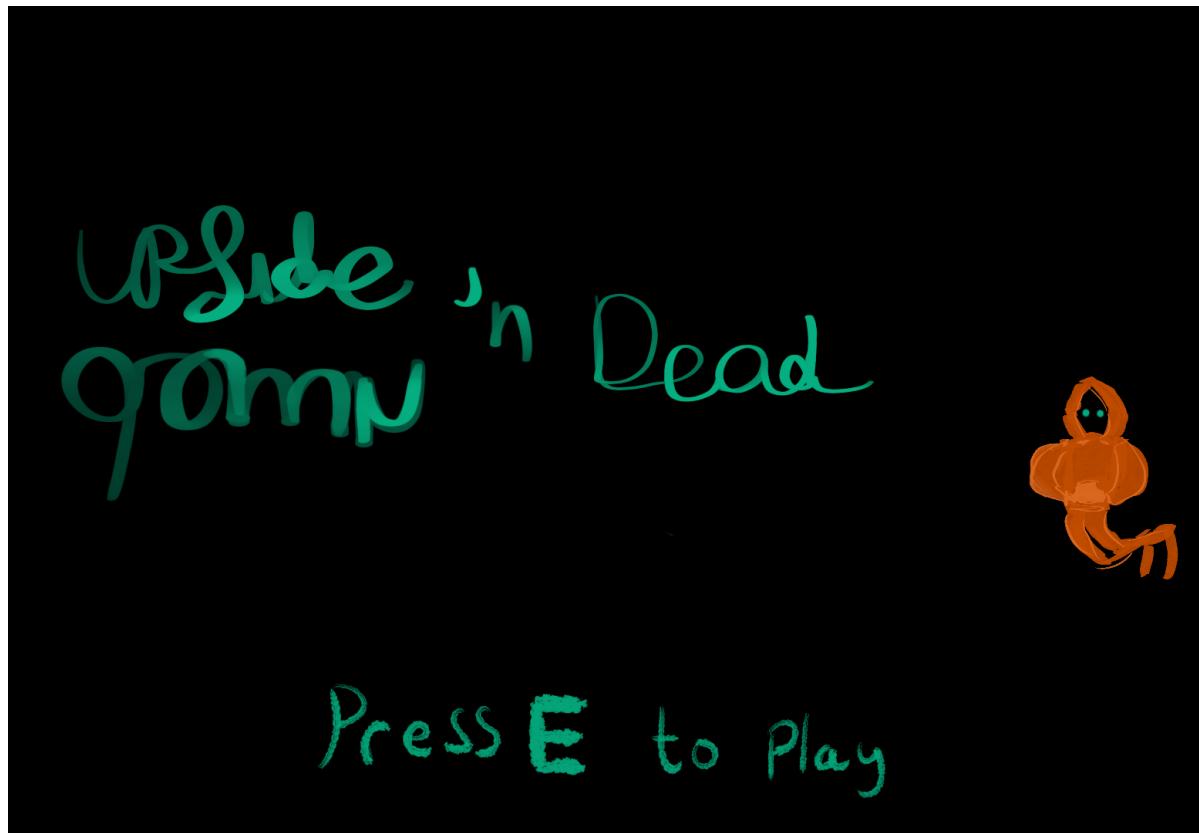


Requirements and Analysis Document for Upside Down & Dead

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1 Introduction

Upside Down & Dead is a puzzle game and an application for desktop users. The game starts with a title screen, and the user gets to choose a name. As the game proceeds, the user finds out that they are dead and that the world is upside down - hence the name. The user's goal is to flip the world back to normal by solving puzzles in every room, where each room can have multiple puzzles.

The game aims to entertain those who play it. With puzzles, NPC's, traps and vibrant graphics the game supplies many features that can entertain the user.

1.1 Definitions, acronyms, and abbreviations

- NPC: Non player character. A character that players do not control, but can often interact with.
- Puzzle: Tasks for the player to do to complete a level, for example open the door with a key or cut down a bush with some scissors.
- Item: Items are things that exist in the game that the player can use to solve the puzzles, for example a key that can open the door to the next level or some scissors that can cut down a bush.
- Level: The game is divided into different levels that each are completed when all the puzzles in the level are completed and the door is opened to the next level.
- Trap: A trap is something that deceives the player into using it and makes the room more challenging for the player or slows the player down in their quest to complete the level.
- Arrow keys: The arrow keys are the buttons on the keyboard that are either programmed or designated to move the cursor in a specific direction. They are typically marked with arrows.
- Lightbox: Lightbox is a popup that appears on top of the page's content while dimming out the rest of the web page. This makes sure that the user focuses on the popup rather than the rest of the screen.

2 Early development



Figure 1: A first sketch of the game

The first sketch of the game shows an open space for the player to walk around, a road and a small NPC to talk to. Here we had an idea for how the game would handle interactions with NPC's, see the rightmost part of the picture.

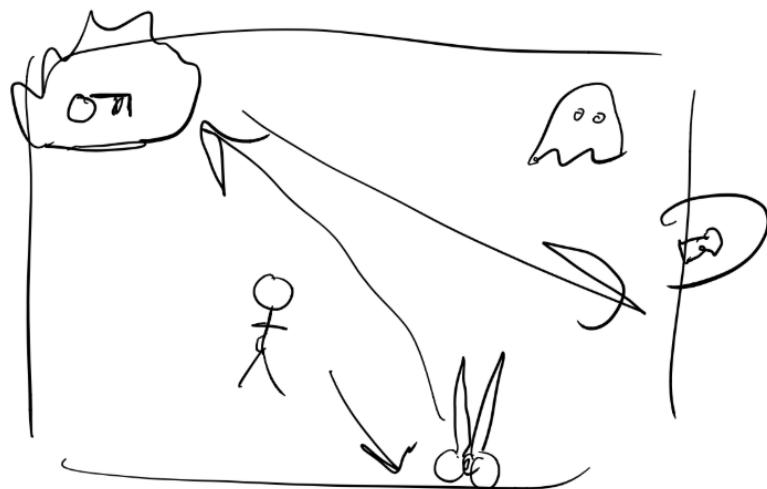


Figure 2: An early sketch of the game

When it had been decided that this was the project we were going to work on the sketch became more detailed. The player was in a room and had to solve a puzzle to get through the door. The arrows indicate the process of solving the puzzle. The NPC from the first sketch remains.



Figure 3: The sketch that will be the basis of the game

The final sketch is even more detailed, this is what the game will be based on. We have a more detailed player as well as a new NPC. The room is more detailed, with an arrow to the side showing how the upside down world will flip back to normal. In the room there are also small squares that represent traps, these will give the player a bit more of a challenge when solving puzzles. Also seen on the bottom of the picture is an alternate room idea.

3 Requirements

3.1 User Stories

3.1.1 Finished User Stories

Story ID: 1 - Start the game

As a user I want to instantly understand how to start the game to get a good first impression

Confirmation

- Functional
 - Is it possible to press a key to start the game?
 - Does the game start from the beginning when the key is pressed?
- Non-functional
 - Is it possible to see the text prompt on the screen?
 - Is it possible to see that the key has been pressed?
 - Is the menu possible to find?
 - Is it understandable that the key needs to be pressed to start the game?
 - Do I instantly understand which key that needs to be pressed?

Story ID: 2 - Game Arena

As a user I want to be able to see the arena where the game will be played to able to play the game

Confirmation

- Functional
 - Does the game arena exist?
 - Is the game arena shown on the screen?
- Non-functional
 - Is the game arena immersive and graphically follows the theme of the game?

Story ID: 3 - Player in the game

As a user I want see a character in the game, which I can control, to be able to play the game

Confirmation

- Functional

- Does the character exist?
- Non-functional
 - I can see the character on the screen?
 - Is it clear that the character is for the player to control?

Story ID: 4 - Move the character

As a player I want to be able to walk around the game arena to explore it

Confirmation

- Functional
 - Can I walk around using the arrow keys?
 - Can I move diagonally when I press two keys at the same time?
 - Does the player stand still when I press two keys that usually mean the opposite direction?
- Non-functional
 - Does the character move on the screen when the right buttons are being pressed?
 - Is it clear how you should move the character?

Story ID: 5 - Find items

As a player I want to be able to find items in the game to understand that they can be used to succeed in the game.

Confirmation

- Functional
 - Do items exist in the game?
- Non-functional
 - Do the items appear on the screen?
 - Is it clear how the objects work and why you should try to find them?

Story ID: 6 - Hold the items

As a player I want to be able to hold an item to move it with me and further my cause to succeed in the game.

Confirmation

- Functional
 - Can the character pick up the items?

- Can the character hold items?
- Can the character move the item with it?
- Non-functional
 - Can I see that the item has been picked up?

Story ID: 7 - Interact with the items

As a player I want to be able to use items to solve puzzles to further my cause to succeed in the game.

Confirmation

- Functional
 - Can the character use the items to solve puzzles?
- Non-functional
 - Can I use the object to get through the level?

Story ID: 8 - Feedback when using an item

As a player I want to get feedback for when I use an item to understand that my action have happened

Confirmation

- Functional
 - Not applicable
- Non-functional
 - Can I see on the screen that the item has been used?
 - Do I understand that the action have furthered my cause?

Story ID: 9 - Find NPC

As a player I want to find NPC's in the game because it adds to the experience to have different elements in the game.

Confirmation

- Functional
 - Do NPCs exist in the game?
- Non-functional
 - Is it possible to see the NPCs?
 - Is it possible to understand that they are NPC and that you cannot control them?

Story ID: 10 - Interact with NPC

As a player I want to talk to NPC's so that I can get information about different things or just have a nice conversation.

Confirmation

- Functional
 - Is it possible to interact when the character is close enough to the NPC?
 - Does the NPC become active when a chosen button is pressed to interact?
- Non-functional
 - Can I press a key to speak with the NPCs?
 - Is it visually clear that I can interact with NPCs/objects? Does a text show me that?
 - Does the speech bubble show up on the screen?
 - Does the screen display interaction options if the character get close enough to the NPC?

Story ID: 11 - Finish a level/room

As a user I want to be able to finish a level/room so that I can continue with the game.

Confirmation

- Functional
 - Can I finish the puzzles in the room?
 - Can I go to the door and "open it"?
- Non-functional
 - Does the screen change when the level is completed?
 - Is it clear that the level is completed?

Story ID: 12 - Pause the game

As a user I want to be able to pause the game so I can take a break in the middle of the game

Confirmation

- Functional
 - Is it possible to pause the game?
 - Is it possible to start the game again, once it has been paused?
- Non-functional

- Is it clear that the game has been paused?
- Is the page that appears when the game is paused visually pleasing and do not interrupt the feeling of the game?

Story ID: 13 - Name the character

As a user I want to be able to choose my name to make the game more personal

Confirmation

- Functional
 - Is it possible to insert a name?
 - Is it possible to write letters and then remove them again and choose a different name?
- Non-functional
 - Is it clear that I can insert a name?

3.1.2 Incomplete User Stories

Story ID: 14 - Save the game (not implemented yet)

As someone with a life outside the game I want to be able to save my progress when I go back to my life outside the game.

Confirmation

- Functional
 - Is it clear to me that I saved it when I pressed the button?
 - Does the game start at the point I saved it when I take up the game the next time?
- Non-functional
 - Can I find the save-button?

Story ID: 15 - Show the time (not implemented yet)

As a speedrunner I want to be able to see how long my play-through takes.

Confirmation

- Functional
 - Can I see how long time has passed since I started the game?
 - Can I find and compare earlier play-throughs?
 - Can I turn the showing the time off so I don't feel stressed about time?

- Non-functional
 - Does the time show up on the screen?

Story ID: 16 - Show the story in a clear way (not implemented yet)

As a user I want the world to clearly show that a level/room is completed to make the game more immersive.

Confirmation

- Functional
 - Not applicable
- Non-functional
 - Is the background flipped back upside down?
 - Is there a text prompt on the screen clearly stating that the user can move on to the next level?

3.2 Definition of Done

When the user story has been thoroughly tested by members in the group, through JUnit as well as visual tests, and all tasks of the story are implemented, the user story will be defined as done.

3.3 User interface

The backstory of the game is that the player has died and ended up in the afterlife, where the whole world is turned upside-down. The player then learns that they must solve the puzzles to get through the afterlife to the other side.

The character was chosen to fit into the theme of the game, that is the afterlife. The player is therefore a ghost. It was also chosen to minimize the animation that had to be done and because it fits into the theme to have a ghost that floats across the screen.



Figure 4: The player's character

When the game starts, the user is first met by the start menu. This page is an invitation into the game and is designed to set the theme and create a feeling of the game. This is also when the character that the player will be using is first introduced. A prompt to "Press E to play" is also clearly displayed. When the user presses the key "E" the screen changes to the next view.

The next view is a page that gives the user the chance to insert their name and make the game more personal. When the user presses "Enter" the screen switches to the next view.

The screen now shows the first level, where the game starts. The background was chosen to further immerse the user into the theme and story of the game.



Figure 5: Level 1

In this view the user is able to move the player around around and play the game. If the user presses "esc" while in one of the levels then the screen changes to the pause menu-view.

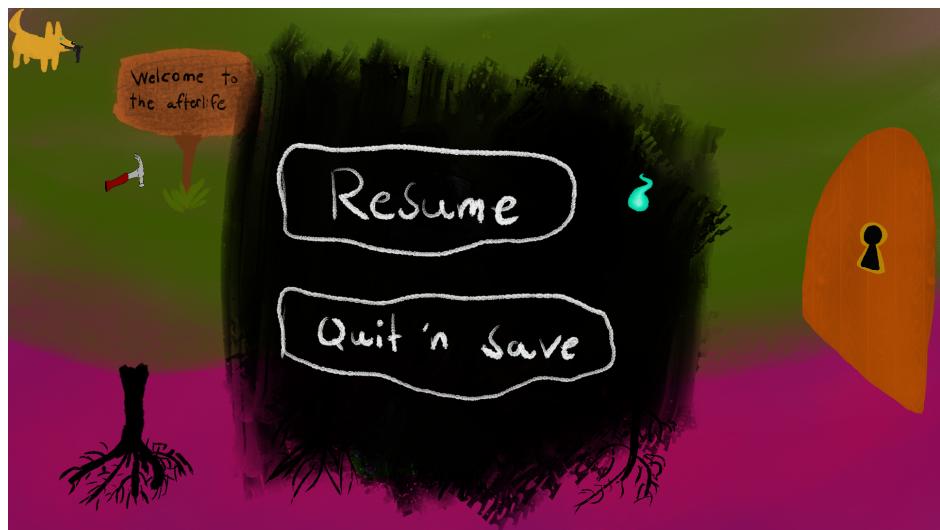


Figure 6: The pause menu

The pause menu-view consists of a lightbox-like menu that is positioned on top of the current level. The user is given two options, either resume or quit and save the game. An indicator shows the user which option that is marked at the moment and it can be controlled by the arrow keys. If "resume" is chosen, the view changes back to the level but the option "quit and save" exits the game to desktop.

4 Domain model

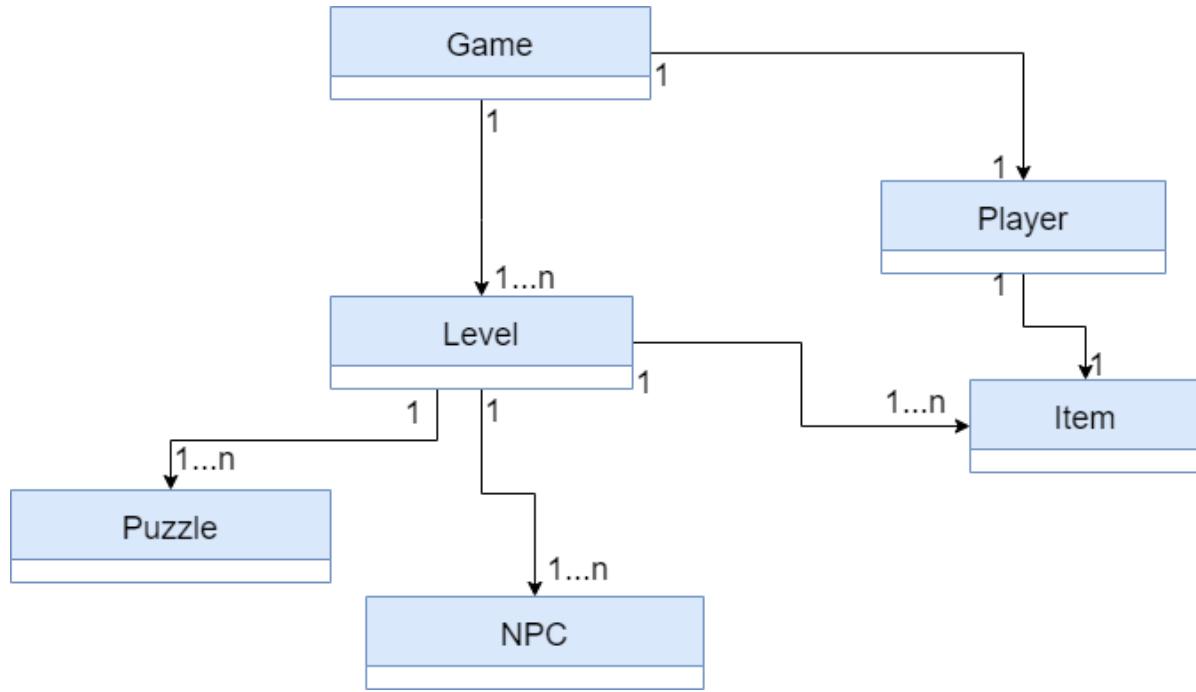


Figure 7: The domain model.

4.1 Class responsibilities

- Game: The class represents an instance of a game
- Item: An abstract class that represents items found in the game
- Level: An abstract class that represents a level in the game
- NPC: An abstract class that represents a character the player cannot control
- Player: Represents the player that the user uses to play the game and can control
- Puzzle: An abstract class for any puzzle in the game