FEUP RESCUE

Preliminary Project Report

Computer Games Development class of the Master's in Informatics and Computer Engineering

1. Description

FEUP Rescue is a 2D horizontal side-scrolling game developed in Unity.

The game is set at FEUP, where a group of 5 thieves is stealing computers. The goal is to defeat all the thieves while recovering the stolen computers. During the gameplay, the player will come across various obstacles, some of which might hurt him, and power-ups found at FEUP to help him win.

1.1. Premise

"Oh no! FEUP is being assaulted by thieves. They are taking all the computers! You are the only one who can stop them! Run through FEUP and defeat all the five thieves, while retrieving the stolen computers and avoiding the obstacles you'll find in the way.
But be careful, the thieves have dropped spikes on the floor to hurt you!"
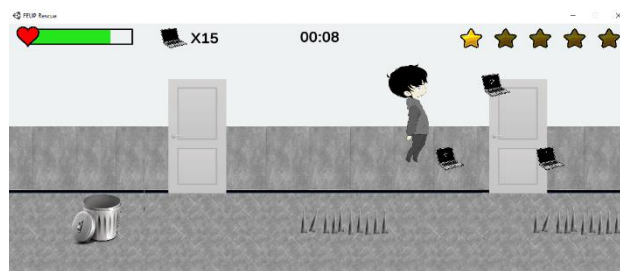
2. Playing Instructions

2.1. Player Movement

The player moves with the arrows in the keyboard or with A and D keys. He can move to the right and to the left, as well as jump using the up arrow or W key. The player can also attack by using the space key.

2.2. Obstacles

The player has to jump over the following obstacles:

The benches and dustbins are objects already available at FEUP, while the spikes are dropped by the thieves in order to hurt the player. If the player collides with spikes, he loses some of his life.
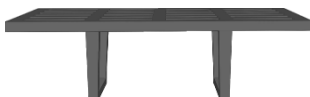
2.3. Collectables and Power-Ups

During the game, the player can collect many objects, simply by colliding with them:

- The **computer** is meant to be collected and contributes to the score of the game.
- The **coffee** makes the player faster, increasing his velocity for 2 seconds.
- The **apple** regenerates the player's life.
- The **orange juice** makes the hero immune to any damage for 2 seconds.
- The **bomb** can be used to defeat a thief. The bomb is thrown to the nearest thief using the B key.

2.4. Enemies

The player has to defeat 5 thieves. The thieves attack the <u>hero</u> with a bat when he comes close.

The player can attack the thief by punching him, using the space key. When the player has a bomb, he can use it on the nearest thief using the key B, which defeats automatically the thief.

2.5. Game Victory

The player wins when he defeats all 5 thieves. Once the player wins, the score is calculated, taking into account the number of computers the player has recovered, whether or not he found the bomb and, on the time that the player needed to win the game.

2.6. Game Over

The player loses if:

- He lets a thief escape without defeating him.
- He loses all his life.
- He gets thrown out of the screen by being dragged by an obstacle or by a thief.

2.7. Pause Menu

The player can pause the game by clicking ESC. To restart the game, the player can either click on ESC again, or use the mouse to click on the Restart button on the Pause Menu.

2.8.   Main Menu and How to Play Menu

3. Key highlights

3.2.   Update Method

Unity allows us to easily use the Update Method, which, on every frame, updates every object. For us, this method is particularly useful since the background is always moving, which means that every single object on the scene moves towards the left. We use this method to move our game elements, always considering the time that passed since the previous update, on every movement.

3.3.   Object Pool

During the game, we have plenty of objects such as collectables, obstacles and thieves, which are constantly entering and leaving the scene. In order to avoid performance issues that would appear from repeatedly creating and destroying objects, we created a pool of objects, which allows us to reuse each object throughout the game.

3.4.   Game Music / Sounds

We included various sound effects for the hero's actions such as to pick up objects, when he's hurt, when he attacks and when he jumps. Furthermore, we also included sound in the thief's attack, bomb explosion and in several events during the game such as game over, victory and also when the hero defeats one thief and gains a star. To fully enjoy the game, turn on the sound!

4. Development Environment and Installation

The game was developed using Unity 2D, with version: 2019.3.2f1
To play the game, simply run the file *"FEUP Rescue.exe"*.

5. Resources

5.2.   Sprites and Images

- Hero/Thief: *https://assetstore.unity.com/packages/2d/characters/2d-character-bolchie-114179*
- Spikes: *https://assetstore.unity.com/packages/2d/environments/2d-death-traps-free-20706*
- Bench: *https://pixabay.com/illustrations/bench-sitting-park-people-woman-2683089/*
- Dustbin: *https://www.needpix.com/photo/31505/garbage-basket-bin-trash-rubbish-waste-metal-can-open*
- Door: *https://pixabay.com/illustrations/moon-the-front-door-visit-entrance-1133854/*
- Juice: *https://freesvg.org/realistic-vector-graphics-of-glass-of-juice*
- Coffee: *https://www.joypixels.com/profiles/emoji/hot-beverage*
- Laptop: *https://giphy.com/stickers/netflix-illustration-dIBTQmeIc30AWsbgRr*
- Explosion: *https://giphy.com/gifs/animation-fire-smoke-d4aVHC1HKnButuXC*
- Bomb: *https://opengameart.org/content/bomb-2d*

5.3.   Music and Sounds

All the sounds of the game were taken from here: *https://www.zapsplat.com/*

5.4.   Menu's Text

All the text components in the menus were made using: *https://textcraft.net/*

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