Introduction to Web programming

Project – HTML5 game

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Software Engineering

Introduction to Web programming

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How the game works

The game is a basic jumping game, where the player (represented by a ladybug) can move left, right and up on dirt platforms to collect stars and hearts while running away from a hedgehog which is approaching from the bottom of the screen. Stars are worth 1 point and hearts are worth 10 points. The player must also dodge bombs (thrown by the hedgehog), which spawn in proportion to the number of points they are getting. The player can destroy platforms and bombs by clicking on them. The game will end when the player is hit by a bomb or is eaten by the hedgehog by falling to the bottom of the map.

The game starts with a preload scene (preScene) which has instructions on how to play the game. By clicking the screen, the game starts along with the primary scene (mainScene).

The character can jump and move left and right by using the arrow keys. Music plays during the game and there are sound effects for collecting items, dying, and destroying platforms. Some platform fall when the player lands on them. The player's score can be seen at the top of the screen.

When the character gets hit by a bomb, a jingle plays, the character turns red and a "game over" text appears. By clicking the screen with a mouse, the scene will change into the ending scene (endScene). In the end scene, the game thanks the user for playing and shows their score. The player can start everything again by clicking the screen.

How the game was made

The structure of the game was learned from the week 7 lecture video of the course. The game is built on top of the example given in the course. The game was programmed in the Visual Studio Code IDE. The assets used were downloaded for free from open-source sites such as:

- https://opengameart.org/
- https://www.pngwing.com/
- https://pixabay.com/
  and
- https://pxhere.com/en/photo/33640

Most of the heavy-lifting in the code is done by the aptly named "addStuff"-function, which adds platforms, collectibles, and moves the hedgehog, while other functions (such as "death", "createBomb" and "collectStar") take care of the game's other features.

In the process of creating the game I followed the suggestions provided by the project work document quite closely, but I didn't manage to implement all of the suggested features. I found adding a scoreboard and text input particularly difficult.

Once the features were implemented, I decided on the premise of the game, and decided to honor Erno's pet hedgehog Pikseli by giving him a cameo.

Some tutorials/guides were used to help with programming, such as the falling platforms and destroyable bombs. They are credited in the code.

The game is quite simple and may have some small bugs or errors, but it feels clean to play and provides a reasonably enjoyable experience.

Justification of points

Features of the game and their points for the project are presented in the two tables below. Each feature of the game has justifications in the description.

Basic features of the project and the game are listed below.

Feature	Max points
Well written PDF report	3
Application is responsive and can be used on both desktop and mobile environment	4
Application works on Firefox, Safari, Edge and Chrome	3
Application has clear directory structure, and everything is organized well	2
"You are the national insect of Finland and a cute hedgehog is trying to eat you"	1 (I think I deserve 1 point for making the player smile)

Features of the game and their descriptions are listed in the table below.

Feature	Max points	Description
There is a clear plot in the game. It has a start and end.	3	You are a ladybug escaping a hedgehog in a forest. Game starts by clicking the introduction screen and ends by getting killed by a bomb or falling into the clutches of the hedgehog. Game has start and end views.
There are different (more than 1) objects to collect	2	The player can collect stars worth 1 point and hearts worth 10 points.
There are moving parts in the game area (other than the player and enemies, so e.g. some floors fall apart)	3	There are 2 types of platforms, static ones, and ones that fall when you step on them.
There are enemies that can hurt the player	3	Bombs can kill the player, causing the game to end.
Game uses physics engine, so that there are falling parts / enemies / players	2	The game has falling platforms and bombs, and the player can jump/fall
Gamer needs to use both keyboard and mouse to meaningfully control the player character	3	Keyboard arrows are used to navigate the character, mouse is used to destroy bombs and platforms.
There is music and sound effects when player shoots/jumps or anything like that	3	A sound effect plays when the player collects an item, dies, or destroys a bomb/platform when clicking on it. There is also music.