# Test Project

## Web Technologies

## Module A

Submitted by:

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# Introduction

In today's world of diverse and vibrant front-end games, we aim to develop a fun and engaging casual game called Castle Guard, which will appeal to a wide range of game enthusiasts. This game blends tower-defense and roguelike elements, where players build structures on map cells to defend the central castle against monster attacks.

We have provided media files that you will need to use appropriately to complete the game, ensuring it runs smoothly and with good performance.

# Description of project and tasks

This game has three interfaces: Home Interface, Gaming Interface, and Rank Interface. When switching between these interfaces, please develop visually appealing animation effects.

## The Home Interface:

This interface contains the following elements:

- Game Logo
- A required name input for players to enter their names
- A start button to begin the game

## The Gaming Interface:

This interface contains the following elements:

- Name
    - Displays the player's entered name on the home interface.
- Score Counter
    - Displays the player's total score.
- Energy Counter
    - Displays the player's current Energy.
- Coins Counter
    - Displays the player's current coins.
- Speed Toggle Button
    - Switches the game speed between 1x and 2x.
- Timer
    - Display the current game time.
- Building Toolbox
    - Tools for placing Stone Castle (upgrade tool), Silver Mine, Gold Mine (upgrade tool), Bow Tower, and Longbow Tower (upgrade tool).
- Game Map
    - The game map has at least 500 cells
    - Players place or upgrade buildings on cells using the Building Tool.

Here are descriptions of the buildings:

- Wood Castle

60 health points, generates 5 energy per second. This building is automatically placed in the center of the game map at the start of the game.

- Stone Castle

  120 health points, generates 10 energy per second. Players can upgrade from Wood Castle to this building using the Stone Castle tool, costing 100 energy and 100 coins.
  - Silver Mine

  30 health points, each mine generates 5 coins per second. Players can place this building on an empty cell using the Silver Mine tool, costing 30 energy.
- Gold Mine

  60 health points, each mine generates 10 coins per second. Players can upgrade from Silver Mine to this building using the Gold Mine tool, costing 60 energy and 60 coins.
- Bow Tower

  40 health points, with an attack range of 3 cells centered around the building. When a monster is within range, it fires an arrow every second, dealing 5 damage to the monster. Players can place this building on an empty cell using the Bow Tower tool, costing 30 coins.
  - Longbow Tower

  80 health points, with an attack range of 5 cells centered around the building. When a monster is within range, it fires an arrow every second, dealing 10 damage to the monster. Players can upgrade from a Bow Tower to this building using the Longbow Tower tool, costing 60 energy and 60 coins.

Here is a description of the monster:

Monsters spawn randomly from outside the map, with the goal of destroying the castle located in the center. They have a detection range of three cells centered around them. If a building is detected within this range, they will move towards that building and attack. Otherwise, they will move towards the castle.

Each monster has 30 health points. It has an attack range of only 1 cell, meaning it must be adjacent to a building to attack. It attacks once per second, reducing the building's health points by 10 with each attack.

Here are descriptions of the features:

1. Only one building can be placed on each cell.
2. At the start of the game, there will be a 10-second preparation period. During this time, no monsters will spawn, energy and coins will be generated normally, the timer will run, and players can place by using building tools.
3. Players can place buildings at any time during the game.
4. The number of monsters spawned will increase as the game progresses.
5. Monsters spawn from outside the map and enter the map, but they are not visible on the screen while they are outside the map.
6. When the game speed is set to 2x, the overall game speed, including the timer, will be accelerated.
7. When a building is upgraded, the original building disappears, and its health points are restored.
8. Buildings and monsters will be destroyed when their health points reach 0.
9. Each monster destroyed adds 1 to the score.

10. The Tower's arrows are unable to penetrate multiple enemies.
11. When the castle is destroyed, the game ends, and the Rank interface is displayed.

## The Rank Interface:

This interface contains the following elements:

- Game Logo
- Current Record (Rank, Time, Score)
- Displays all player records
  - Each record includes the rank position, name, time, and score.
  - The rank records is sorted in descending order based on score.
- A play-again button to restart the game.
  - Players do not need to re-enter their name after clicking this button.
- A home button to display the home interface.

# Instructions to the Competitor

- Project should be accessible via /XX_module_a / where XX is the workstation number.
- All assessment is done on server. No assessment process in workstation.
- You should consider the quality of code.
- Your talent is needed to enhance the gameplay experience.
- All game play records are stored in localStorage.