Game: Super Mario
Milestone 1

Deadline 25/11/2022 at 11AM.

Brief Description:

You are required to implement a Super Mario game in C++. The game should include a champion who freely navigate through a map, with a goal of collecting all of the gems that gets him high score and avoiding obstacles for keeping his health as high as possible.

Game Specifications:

Your game should **at least** have two classes:

1)The champion class, it should at least include:

- A constructor printing “Constructor champion() is called”
- Variables specifying the champion’s location and health
- A print_champ_info() method that prints the current champion location, health, gems score

2)The map class, it should at least include:

- A constructor printing “Constructor map() is called”
- The map base which is the 2D array
- A print_map() method that prints "print_map() called"
- A randomize_map() method that prints "randomize_map() called"

Game flow:

The game should start by instantiating a 10x10 cells map that includes randomly allocated gems (at least 40), in addition to randomly allocated obstacles (at least 20) using the map randomization method, in addition to instantiating a champion with initial health of 100 and allocating him in cell [0,0] on the **bottom left corner**. The game then shows the map to the user, using the map printing method, and asks if he would like generate another random map before starting, or start the game now.

After starting the game, at each turn:

- The updated map should be shown in addition to the champion info, mentioned above.
- The game asks the user to enter the next move direction from (up, down, right, left) which are equivalent to 8,5,6,4 keys respectively)
- The champion is not allowed to move out of the grid
- The champion tries to collect the gems to increase his score, however whenever the champion hits an obstacle, his health decrements by 40.

Noting that you are required to handle the following:

- You are required to use dynamic memory allocation for all objects creation and the 2D array creation.
- The game ends whenever the champion collects all of the gems on the map, or when the health is 0, showing a description message to the user in both cases.
- The prints mentioned in the classes specifications above should be **ONLY** shown before the user starts the game (while still choosing the map).
- At each turn, you are required to clear the console window, as it should show only one updated map in addition to the champion info, and the motion direction hints.
- The user should enter the motion direction input, then the command gets executed automatically without the need to hit the enter button.

A hint video showing an example for parts of the needed game can be found at:
https://drive.google.com/file/d/19Bv286XgeNATbOtlJu32NWp8PpH5oZXL/view?usp=sharing

Submission details:

- Only one student should submit the project
- Please check your team number from the **teams numbers file** (will be posted on CMS), before submitting.
- You are required to submit one C++ file. The file should be named "TeamNumber_StudentName_studentID_TutorialNumber.cpp". Example: **26_KarimMohamed_12345_T2.cpp**
- Any violation to the submission information will lead to a zero.
- Submission link: will be posted on CMS