Game Developer

CASE STUDY

Case Description

The goal of this case study is to evaluate the programming knowledge and skills of the developer candidate. The candidate is expected to complete the tasks given below, upload the compressed Unity project to Google Drive and share the link privately with us. The solutions of all tasks should be included in the same Unity project. If anything is missing or unclear, let us know.

Tasks

1. In the JobOptimization.cs file, optimize the Update callback by making use of parallelized Unity jobs.

2. In the WeakReferences.cs file, read the instructions and implement your solution.

3. In this task, you are expected to develop a prototype with a main menu and four different mini games, where three of the mini games are dummy screens and the fourth one is a puzzle game called Lights Out.

The features that the prototype should have :

a) The main menu screen contains four buttons that lead to four different mini game screens.
b) All mini game screens have an exit button that returns the user to the main menu.
c) The application is as responsive as possible while transitions between screens are in progress.
d) The transitions are set up such that the assets of all four mini games and the main menu are not held in memory at the same time.
e) The first three mini games have only titles on the screen and no functionality.
f) Fourth mini game is the Lights Out game. Description and rules of the game are given below.
    i. Implement the Lights Out game with a simple level progression loop. (Success -> Next Level)
    ii. Persist grid state if the user quits in the middle of a game and restore on restart.
    iii. Make sure the grid fits the screen perfectly in all mobile resolutions.
    iv. Generate random levels at runtime. **(Filtering unsolvable grids is a bonus.)**
    v. Write the code that, for a given state of Lights Out grid, returns the set of moves that lead to the solution. **(Bonus)**
    vi. Show a hint (a move that leads to solution in the shortest way) if the user stays inactive for 4 seconds. **(Bonus)**

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Rules of the Lights Out Game

1. The game is played on a grid of lights (MxN).
2. At the start, some of these lights (randomly selected or predefined) are switched on.
3. Pressing a light toggles it and all the adjacent lights.
4. The goal is to switch all the lights out.
5. Number of moves allowed can be limited to increase the difficulty.
6. The grid can have empty (inactive) cells.