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Bust The Ghost Report

GhostBusters is a game in which you click on a cell from the grid (8x20), and then a color appears. The green color appears when you are far from the ghost by at least 5 cells. The yellow color appears when you are away by 3 or 4 cells. The orange color appears when you are 1 or 2 cells away. Finally, the red color shows up when you are on the ghost. The game has probabilities that change each time you click on a cell and that will guide the player and help him find the ghost location to bust and win the game.

For the implementation, this projects contains 4 scripts:

Games.cs: In which you can find all the primary functions of the program. This script is considered as one of the main scripts of this project, because it is the one responsible for placing the ghost, placing a noisy reading, taking the color and calculation the distance…

- Placeghost(): This is the function that takes care of placing the ghost randomly in one of the cells of the grid.
- PlaceColor(): this function places the colors (green, yellow, orange, red) depending on the placement of the ghost (Depending on the distance).
- JointProbability(): This is a function that helps placing the right color in the right place by taking the distance and the colors and returning the probability.
- CheckInputGrid(): This function takes care of all the probabilities by using the Bayesian inference
  P(Ghost_t)=P(Ghost/Color_t)=P(Ghost_t-1)*P(Color/Distance from Ghost).
  P(Ghost_0)= P(Ghost/Color_0)= P(Ghost) the prior probability.

  By this equation, the probabilities change depending on the calculated distance from the ghost. Getting closer to the ghost make the probabilities get higher, getting far from the ghost make the probabilities get lower.

Tile.cs: In this script, you can find all the variables used for the grid. In other words, all the cells that constitute the grid.
WinLose.cs: for both the winning situation and the losing situation.
ProbabilityText.cs: This code is the one responsible for displaying the probability text and changing the numbers each time we click on a certain cell.

To sum up, this project made us learn how to refer to probabilities and colors in order to win the game. Also, in this game we have a limited number of clicks that we need to respect in order to win the game, If the gamer keeps clicking too many times to find the ghost he will

end up by losing. Following the colors and the higher probabilities, the player can easily win the game, and by finding a probability that equals 1, the player can bust the ghost and win.

The project was made by Yasmine Najd and Ahmed Al Hilal.

Here is the link of our demo: https://www.youtube.com/watch?v=JpMOuKsYl1Q