Student Name: Ziling Huang
Instructor: Chris Llop / Summer 2020

Medical Jeopardy!

Program Overview

Seven classes of objects are created for this game which tests medicals student knowledge through a question-and-answer style interactive game using the American College Physician's Q&A Database.

Game Objectives

Player begin the game as a rookie doctor managing a small hospital. The player solves questions to earn money while racing against time and unique computer opponents.

Game Rules

Hospitals require regular funding for expenses. The player can choose to use funds remaining after regular expenditure to upgrade the hospital or to keep the cash on hand.

There are 10 questions in each round of the game.

Game difficulty level is determined by the computer opponent selected by the player and the number of rounds played. Any one of three computer opponents can be selected: Professor Brainiac, Physician Heartfilia and Resident Sunshine. The prize for answering a question correctly increases with game difficulty as does the penalty for an incorrect answer. Ending a round with negative hospital funds earns the player a black mark from a healthcare inspector. Accumulating three blackmarks results in a downgrade of the hospital rating.

The game is over when the hospital rating reaches the lowest grade.

Earning Cash

The player earns money by answering questions correctly. Answer a question incorrectly and funds will be deducted. If question is skipped and no answer is given, there will be no impact on funds. However, not earning cash means the hospital can go into the red.

Spending Cash

Player can choose to spend funds to upgrade their hospital. They can also use funds to purchase assistance for hints to the answer. At the end of each round, a healthcare inspector will arrive to inspect and grade the hospital.

A scoreboard keeps track of player performance, inventory, funds, and hospital grade during the game.

Computer Opponents

Defeat an opponent 15 rounds in a game to win a special medal which upgrades your hospital rating.

Objects

Class: Player *Stores and calculates player stats*	Attributes: • Player Name • Rounds Played • Rounds Won • Answer Rate • Accuracy Rate • Average Speed • Funds Available	Methods: • Select Opponent : *Accepts player input to choose between 3 opponent names* • Start round : *Accepts player input to initiate question round.* • Answer question: *Player input of answer choice.* • End round: *Player input to end round prematurely.* • Generate Expenses: *Regular Hospital Expenses are charged to the player at the end of each round* • Pay expenses: *Player inputs amount to pay* • Ask for assistance: *Ask for assistance to eliminate two incorrect choices.* • Calc Stats (Answer Rate, Accuracy, Average Speed): *Calculate the above based on data on answer speed in Player Class and data on answer accuracy from Game Class.* • Calculate funds available: *Retrieve prizes, penalties from Game class, expenditure from Hospital class upgrades and expenditure for regular expenses in Player class.* • Rounds Tracker: *Receives rounds status from Game Class and tracks it*

Class: Scoreboard *Stores all player stats, hospital. Medal and funds taking input from other classes attributes*	Attributes: • Player Name • Total funds available • Medal Collection • Hospital Grade • Black marks • Player Performance Stats	Methods: • Get Scoreboard : *Outputs all information in the scoreboard for player to access.*

Class: Game *Provides data for player stats calc, grades answers and awards prize or imposes penalty*	Attributes: • Game Status • Round Status	Methods: • Start game: *Accepts player input to start game* • Quit game: *Accepts player input to quit program.* • Game Rules:

		Prints Game rules and command functions. - Present Question: *Retrieves and presents question and set of multiple-choice answers from question bank.* - Opponent Answer: *Input trigger from Computer Opponent Class and outputs correct answer* - Check Answer: *Checks player input from player class for accuracy then feeds correct or wrong back to the player class for accuracy calculations, feeds input into method for prize or penalty assignment.* - Assign question value *Looks up value for the question based on rounds played from Player class and computer opponent selected from Opponent Class.* - Assign prize or penalty: *Checks for input from Check Answer method to assign and track rewards or penalties to Player or Computer Opponent* - Round Tracker: *Keeps track of round performance by Computer and Player to determine round status attribute* - Game Over: *Accepts grade input from hospital and if grade reaches F, trigger Game Over message and program break. Asks user if they would like to restart the game.*

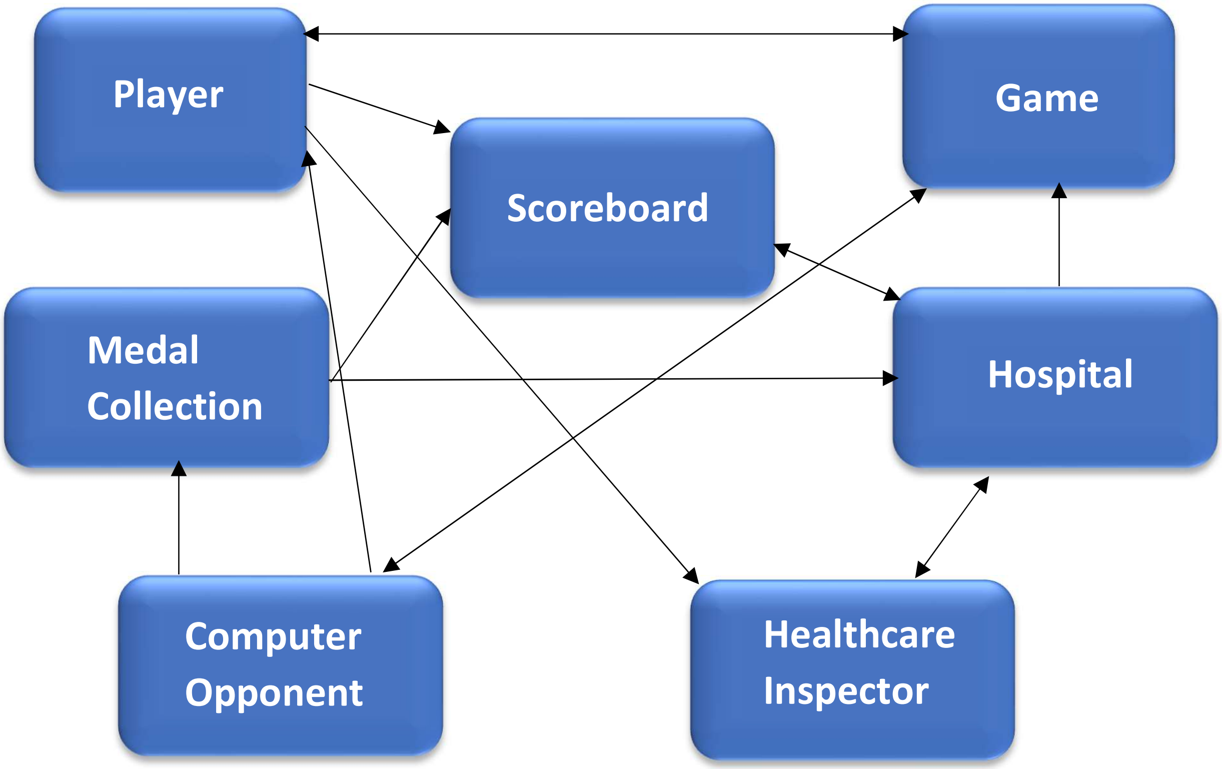
Class: Healthcare Inspector *Evaluates and awards black marks at end of each round*	Attributes: - Inspector Name	Methods: - Award black mark: *Checks funds available from Player Class and awards blackmarks to hospital* - Describe Hospital: *Accepts hospital attributes and describes it in prose*

Class: Computer Opponent *Three opponent objects which answer questions before the player does*	Attributes: - Opponent Name - Opponent Answer Accuracy - Opponent Answer Speed - No. of rounds won - No. of rounds lost	Methods: - Answer question: *Looks up assigned attributes on answer accuracy and speed to answer question. Feeds output to trigger event in Game Class.* - Skip question: *Looks up assigned attributes on answer accuracy and speed to answer question. Feeds output to trigger event in Game Class.* - Get rounds lost per opponent character: *Receives round status attribute from Game class. Feeds it to Medal Collection class.*

Class: **Medal Collection** *Medals awarded by beaten opponents*	Attributes: • Medals	Methods: • Medals Tracker: *Calculate and track medals based on input from Opponent Class and feeds that to the Hospital Class*

Class: **Hospital** *Stores hospital stats and calculates hospital grade*	Attributes: • Hospital Name • Player Name • Hospital Grade • Medal Collection • No. of blackmarks from healthcare inspector	Methods: • Add funds *Allows user to add funds to upgrade hospital grade* • Assess hospital grade *Calculate grade based on funds added, medals and blackmarks. Outputs to game, health inspector and scoreboard.*

Object Relationships


Player
Game
Scoreboard
Medal Collection
Hospital
Computer Opponent
Healthcare Inspector