Code / Project : CME1252 / 1

Year / Semester : 2021-2022 Spring Semester

Duration : 4 weeks

Project: Who Wants to Be a Millionaire

The aim of the project is to develop a software application for the "*Who Wants to Be a Millionaire*" competition.

General Information

It is a quiz competition with contestants attempting to win a top prize of $1,000,000, by answering a series of five multiple-choice questions with increasing difficulty.

Competition Start & Input File Initialization

Input File Initialization

The questions are loaded from a text file that has the following format:
Category#Text#Choice1#Choice2#Choice3#Choice4#CorrectAnswer#Difficulty

An automated spell-checking mechanism should be provided by the software. It should check each word in the question text by using the dictionary. The correction of the words must be suggested by the spell-checking mechanism; if there is a letter spelling error, or if two letters are reversed.

After loading the file, the program has to give the following information:
- How many questions belong to each category?
- How many questions belong to each difficulty level?

In addition to two compulsory categories (English and Computer Engineering), there can be many different categories such as mathematics, physics, and history.

The information about the participants is loaded from a text file that has the following format:
Name#Birthdate#Phone#Address

Start of the Competition

A number of participants are sitting in a particular place to be a contestant. The next contestant is randomly selected among the waiting participants, until the show is over.

A word cloud of topics related to the questions are presented to the contestant. The contestant selects one of the topics. The first and the following questions are determined according to this chosen topic, by considering the question's difficulty level. The word cloud should not include stop words such as "the", "as", "my", "again", "at", "its", "next", etc.

Playing the Competition

The competition has the following characteristics:

- Contestants try to correctly answer all the five consecutive multiple-choice questions and win the top prize.
- The questions are of increasing difficulty, from 1 to 5.
- There is a 20 second time limit on each question. The timer begins to run as soon as the four answer options are revealed. The contestant has to give a final answer before time runs out. If time rans out, the game ends and the contestant has to leave with the money won up to that point.

- Each question is set to have a specific money prize; the amounts are not cumulative.
  Upon correctly answering questions two and four, contestants are guaranteed to have the amount of prize money associated with that tier level. If at any time the contestant gives a wrong answer, the game is over and the contestant's winnings are reduced to zero for tier-1 questions, €100,000 for tier-2 questions, and $500,000 for tier-3 question.

Question 1 -	$20,000	tier-one
Question 2 -	**$100,000**	
Question 3 -	$250,000	tier-two
Question 4 -	**$500,000**	
Question 5 -	$1,000,000	tier-three

- The correct answer of each question is revealed only after the contestant answers it.
- In the case of a correct answer, the contestant's money in the bank is updated.
- The program should store all the answers' history in a text file as:
  (QuestionID, ContestantID, IsAnsweredCorrectly).

Lifelines

Forms of assistance known as "lifelines" are available for a contestant to use if a question proves difficult. Multiple lifelines may be used on a single question, but each one can only be used once per game. The time taken to use lifelines does not pause the clock. Two lifelines are available from the start of the game.

50%: Two incorrect answers are eliminated, leaving the contestant with a choice between the correct answer and one remaining incorrect answer.

Double Dip: This lifeline allows a contestant to give a second answer, if the first one was wrong. The contestant has to invoke the lifeline before giving the answer.

Game Over Conditions

The competition of a contestant is over when one of the following happens:

- If the contestant correctly answers all the five consecutive multiple-choice questions, the game is over, and he/she has won the top prize.
- If at any time the contestant gives a wrong answer, the game is over. Contestants giving an incorrect answer see their winnings drop down to the last tier milestone achieved.
- The contestant may choose to stop playing after being presented with a question, allowing them to keep all the money they have won up to that point. In other words, choosing to stop allows the contestants to keep their money in the bank.

The next contestant is randomly selected among the participants until the show is over. At the end of each game, the user is asked if he/she would like to play again.

Statistics

At the end of the show, the software should display the following statistics:

- The most successful contestant
- The category with the most correctly answered
  The category with the most badly answered
- On average, how many questions did contestants in each age group answer correctly?
  Age<=30, 30<Age<= 50, Age>50
- The city with the highest number of participants

Sample Screens

```
***** Menu *****
1.Load questions
2.Load participants
3.Start competition
4.Show statistics
5.Exit

> Enter your choice: 1
> Enter file name to load: questions.txt
Category    The number of questions
English               12
Computer              14
Mathematics            8

Difficulty level    The number of questions
        1                       7
        2                       6
        3                       7
        4                       6
        5                       8

> Enter your choice: 2
> Enter file name to load: participants.txt
The file is loaded.

> Enter your choice: 3

Contestant: Canan KAYA
-------------------------------------------------------------------------------------------
Word Cloud:
history     hardware          network          music  finance    algorithm
  sports      database   people    project  window          monday     laptop
      university           firewall    table   student   programming  cloud

> Enter your selection: firewall

Q1- Firewall in computer ___ for security.                    Money: $0
A) are used                                                   Remaining Time: 15 s
B) is used                                                    50%
C) uses                                                       Double Dip
D) use

> Enter your choice (E:Exit): B
  Correct Answer!


-------------------------------------------------------------------------------------------
Word Cloud:
      manage     Google          monitor          music  health    data
  student     embedded   human    operating   sunday      PC          matrix
programming     security                tourism       Ottoman     software

> Enter your selection: Google

Q2- Google, Bing, Yahoo! and Baidu are the four popular ________   Money: $20,000
A) search for                                                     Remaining Time: 11 s
B) search engines                                                 50%
C) Internet research                                              Double Dip
D) webquest
```

```
> Enter your choice (E:Exit): 50%
A)
B) search engines
C)
D) webquest

> Enter your choice (E:Exit): Double Dip
A)
B) search engines
C)
D) webquest

> Enter your choice (E:Exit): D
Wrong Answer, Please Make Your Second Choice!

A)
B) search engines
C)
D)

> Enter your choice (E:Exit): B
  Correct Answer!

  ...

Q4- What is another word for applications in computer engineering?
A) Face makeup
B) CV submission
C) Peripherals
D) Programs

> Enter your choice: B
Wrong answer, GAME OVER!
You won $100,000

> Next contestant? (Y/N)
> N

  ...

> Enter your choice: 4
Statistics
   • The most successful contestant: Arda ARSLAN
   • The category with the most correctly answered: Computer
   • The category with the most badly answered: Physics
   • Age<=30  2.3        30<Age<=50  3.4         Age>50  2.8
   • The city with the highest number of participants: Izmir

> Enter your choice: 5
BYE!
```

```
Money: $20,000
Remaining Time: 12 s
-
Double Dip
```

```
Money: $20,000
Remaining Time: 5 s
-
-
```

```
Money: $100,000
Remaining Time: 2 s
-
-
```

```
Money: $250,000
Remaining Time: 20 s
-
-
```

Suggested Weekly Program

1. Designing the screen. Reading input files. Spell check. Word cloud.
2. Designing classes, creating the necessary data structures.
3. Competition. Lifelines.
4. Statistics. Remaining parts of the project.

First Evaluation: 04.03.2022 **Report:** 04.03.2022	**Final Evaluation:** 18.03.2022 (powerpoint + video (max 1 min., mp4)) **Report:** 18.03.2022