Online Exam Management System

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Submitted by:

Sidra Babar S2023015007

Supervised by:

Sir Ghulam Murtaza

Department of Information Technology

University of Management and Technology

Lahore Pakistan

Introduction

The Online Exam Management System is a comprehensive platform designed to streamline the process of conducting exams online. This system provides various functions and features to ensure process efficient administration and management of different types of exams. In this particular system, we will focus on four specific exam types: MDCAT, ECAT, Agha Khan Test.

MDCAT (Medical and Dental College Admission Test)

MDCAT is an entrance exam conducted for students aspiring to pursue medical and dental education in Pakistan. The Online Exam Management System provides a dedicated module for MDCAT exams, allowing administrators to create exam schedules, manage registrations, and generate unique exam IDs for each student. The system also enables the secure delivery of exam papers and provides a time-limited environment for the students to complete their exams online. It includes features such as automatic scoring, result generation, and exam analytics.

ECAT (Engineering College Admission Test)

ECAT is an entrance exam conducted for students aiming to join engineering colleges in Pakistan. The Online Exam Management System caters to ECAT exams by providing similar functionalities as the MDCAT module. It allows administrators to create and manage ECAT exams, including question bank management, exam scheduling, student registrations, and result generation. The system ensures a secure and standardized testing environment for ECAT aspirants.

AGHA Khan Test

The Agha Khan Test refers to a specific examination conducted by the Agha Khan University for admissions to their programs. The Online Exam Management System incorporates a module dedicated to managing Agha Khan Test exams. It includes features such as question selection and randomization, exam and scheduling, student enrollment, and result processing. The system ensures the integrity and fairness of the Agha Khan Test process, providing a user-friendly experience for both administrators and candidates.

Invalid exam Type

This will be shown on the console screen when user enter none of the case among them, which is provided to him. So, this message can be seen by the user in case he will not select the optional exam type.

FUNCTIONS

1) MDCAT

Function Explanation

The system allows the user to select the MDCAT exam. When the user chooses the MDCAT option, a question paper consisting of 10 multiple-choice questions is displayed. The user can input their answers for each question.

After the user completes the exam, the system automatically calculates the score based on the answers provided. The score is determined by comparing the user's answers with the correct answers for each question.

If the user's score is greater than 5, a congratulatory message is displayed in aqua color. Additionally, a voice-over message with the same text is played. The message says, "Congratulations! You have passed the MDCAT exam. Better luck for merit!"

This message signifies that the user has achieved a passing score and wishes them good luck for the further stages of the exam.

Following the message, the user is prompted to enter their name. The system then stores the user's name and score in a text file. The text file is created using file handling code. Each entry in the text file contains the user's name and their corresponding score.

This functionality allows the system to provide an interactive and automated experience for MDCAT exam takers. It simplifies the process of answering questions, calculates the score and maintains a record of user's names and scores for future reference or analysis.

Code Explanation

This section is further divided into two parts one of them is function definition which is mentioned before the main. And the other one is the function calling which is called in main.

1) Function Definition

The function is named as **questionPaperMDCAT** including that it is responsible for handling the question paper for the MDCAT exam.

It takes two parameters

a) **stu_ans:** This parameter is of type **char** and represents the student's answer to a particular question in the question paper. It is used to compare the student's answer with the correct answer to calculate the score.

b) **score:** This parameter is passed by reference **(int&),** indicating that it is a variable used to store and update the score throughout the function. Any changes made to the **score** variable within the function will affect the original variable outside the function scope.

The return type of the function is **void,** which means that it does not return any value, it performs its operations and update the score variable as a side effect.

Function body consist of mcqz and score code accordingly. There is one mark for one mcqz and score will assign according to student's correct answer.

2) Function calling

case 'A'

This line represents a specific case where the user has selected option 'A'. The following block of code will be executed when this case is match.

SetConsoleTextAttribute(hconsole, FOREGROUND_GREEN)

This line sets the text color in the console to green. This is likely to provide visual feedback. **questionPaperMDCAT(character, score)**

This line is used to call the function **questionPaperMDCAT** and passes two arguments: **character** and **score**. The **questionPaperMDCAT** is responsible for handling the MDCAT question paper, processing the user's answers, and updating the **score** variable.

cout << "Score is" << score << endl;

This line outputs the value of the score variable to the console. It displays the score achieved by the user in the MDCAT test.

If(score>=6)

This line checks if the score is greater then or equal to 6. If the condition is true, the following block of code will be executed.

Sleep(100)

This line introduces a brief delay of 100 milliseconds. It causes a pause in the program execution, allowing the user to read the previous output before the next operations.

cin.ignore()

This line discards any remaining characters in the input buffer to prevent unwanted input reference.

PlaySound(TEXT("PassTest"), NULL, SND_ASYNC);

This line plays a sound file named "PassTest". It is likely a notification sound to indicate the user's success in passing the test.

SetConsoleTextAttribute(Console, FOREGROUND_BLUE | FOREGROUND | FOREGROUND_INTENSITY)

This line sets the text color in the console to a combination an aqua. It is likely used to provide visual feedback or highlight the success message.

cout << "Congratulations! You have passed your test, better luck for merit" <<endl;

Simply displays a congratulatory message if user passes the exam.

int score and int name

This line declare two variables score of int type and name of string type to store the student score and the name

cout << "Enter your score"<<endl;/ or name

These lines prompt the user to enter the name and the score.

ofstream file ("score.txt")

This line creates an output file stream object named **file** and associates it with the file named "score.txt". It prepares to write data to the file.

file << score<<endl; and file<<name<<endl;

These lines write the score and name values to the file, each followed by the newline character. They store the user's score and name in the "score.txt" file.

file.close()

This line closes the file, ensuring that all the data is properly written and saved.

If(score<=5) and cout << "Fail" <<endl;

These lines check if the score is less than or equal to 5. If the condition is true, the program outputs "Fail" to indicate the user did not pass the test.

break;

This line terminates the execution of the switch-case block, exiting the switch statement and continuing with the rest of the program's execution.

Function calling

```
case 'A': {
      SetConsoleTextAttribute(hConsole, FOREGROUND_GREEN);
      questionPaperMDCAT(character, score);
      cout << "Score is " << score << endl;
      if(score>=6){
           Sleep(100);
           cin.ignore();
            PlaySound(TEXT("PassTest"), NULL, SND_ASYNC);
               SetConsoleTextAttribute(hConsole, FOREGROUND_BLUE | FOREGROUND_GREEN |
FOREGROUND_INTENSITY);
         cout<<"Congratulations! You have passed your test, better luck for merit"<<endl;
         int score;
         string name;
 cout << "Enter your score  : ";
 cin >> score;
 cout<<"Enter your name  :   ";
 cin>>name;
 ofstream file("score.txt");
 file << score << endl;
 file << name << endl;
 file.close();
      }
      if(score<=5){
            SetConsoleTextAttribute(hConsole, FOREGROUND_RED);
         cout<<"FAIL"<<endl;
      }
      break;
  }
```

Function definition

```
void questionPaperMDCAT(char stu_ans, int& score){
   system("cls");
    cout<<"\t\t\t\t\t**********************************************"<<endl;
 Sleep(500);
          cout<<"\t\t\t\t\t*           WELCOME TO MDCAT            *"<<endl;
 Sleep(500);
          cout<<"\t\t\t\t\t**********************************************\n\n"<<endl;
   cout << "1.What does the term bacteriophage refer to?" << endl;
   cout << "a. A virus that infects bacteria" << "\t\t" << "b. A bacterium that infects virus\n";
   cout << "c. A virus which behaves as bacteria" << "\t\t" << "d. Combination of bacterium and virion"
<< endl;
   cin >> stu_ans;
    int question1Score = 0;
   if (stu_ans == 'a' || stu_ans == 'A') {
      question1Score = 1;
   }
     score += question1Score;
   cout<<"2.Which of the following virus contain SSD\n";
   cout<<"a.Adeno virus"<<"\t\t"<<"b.parvo virus"<<endl;
   cout<<"c.Herpes virus"<<"\t\t"<<"d.Pox virus"<<endl;
   cin>>stu_ans;
      int question2score = 0;
   if (stu_ans == 'c' || stu_ans == 'C') {
     question2score = 1;
   }
   score += question2score;
```

```
cout<<"3.How many tail fibrils are attached to the end of the of bacteriophage"<<endl;
   cout<<"a.2"<<"\t\t"<<"b.4"<<"\t\t"<<"c.6"<<"d.8"<<endl;
   cin>>stu_ans;
    int question3score = 0;
   if(stu_ans == 'c' || stu_ans == 'C'){
      question3score = 1;
   }
    score += question3score;
cout<<"4.The enzyme invertase,protease and reverese transcriptase are found in which of the following virus"<<endl;
cout<<"a. Hepatitis A"<<"\t\t"<<"c. Influenza"<<endl;
cout<<"b. Herpis"<<"\t\t"<<"d.Human Immunodeficiency"<<endl;
cin>>stu_ans;
 int question4score = 0;
   if (stu_ans == 'd' || stu_ans == 'D') {
      question4score = 1;
   }
   score += question4score;
cout<<"5.What is the end product of glucose by yeast in anaerobic respiration"<<endl;
cout<<"a.Ethanol and Oxygen"<<"\t\t"<<"b.Ethanol and water"<<endl;
cout<<"c.Ethanol and CO2"<<"\t\t"<<"d.Lactic acid and CO2"<<endl;
cin>>stu_ans;
 int question5score = 0;
   if (stu_ans == 'c' || stu_ans == 'C') {
      question5score = 1;
   }
   score += question5score;
```

```
cout<<"6.Each carrier in Electron Transport Chain is first _______ and then ______ "<<endl;
cout<<"a.Broken down and Regenerate"<<"\t\t"<<"b.Generated and Broken down"<<endl;
cout<<"c.Oxidized, Reduced "<<"\t\t"<<"Reduced, Oxidized"<<endl;
cin>>stu_ans;
 int question6score = 0;
   if (stu_ans == 'd' || stu_ans == 'D') {
      question6score = 1;
   }
   score += question6score;
cout<<"7.Electron Transport Chain Explains"<<endl;
cout<<"a.Photophosphorlyation"<<"\t\t"<<"b.Z-Scheme"<<endl;
cout<<"c.Photolysis"<<"\t\t"<<"d.Mechanism of ATP Synthesis"<<endl;
cin>>stu_ans;
 int question7score = 0;
   if (stu_ans == 'd' || stu_ans == 'D') {
      question7score = 1;
   }
   score += question7score;
cout<<"8.What is the color of cholorophyll b molecule"<<endl;
cout<<"a.Bluish green"<<"\t\t"<<"b.Yellowish green"<<endl;
cout<<"c.Dark green"<<"\t\t"<<"Yellowish green"<<endl;
cin>>stu_ans;
 int question8score = 0;
   if (stu_ans == 'b' || stu_ans == 'B') {
      question8score = 1;
   }
   score += question8score;
```

```
cout<<"9.Upon initial hydrolysis starch yield"<<endl;
cout<<"a.Maltose"<<"\t\t"<<"b.Glucose"<<endl;
cout<<"c.Sucrose"<<"\t\t"<<"d.Mannose"<<endl;
cin>>stu_ans;
 int question9score = 0;
   if (stu_ans == 'a' || stu_ans == 'A') {
       question9score = 1;
   }
   score += question9score;
cout<<"10.Human bone cells contain ..... % of water"<<endl;
cout<<"a.20"<<"\t\t"<<"b.40"<<endl;
cout<<"c.85"<<"\t\t"<<"d.90"<<endl;
cin>>stu_ans;
 int question10score = 0;
   if (stu_ans == 'a' || stu_ans == 'A') {
       question10score = 1;
   }
   score += question10score;


}
```

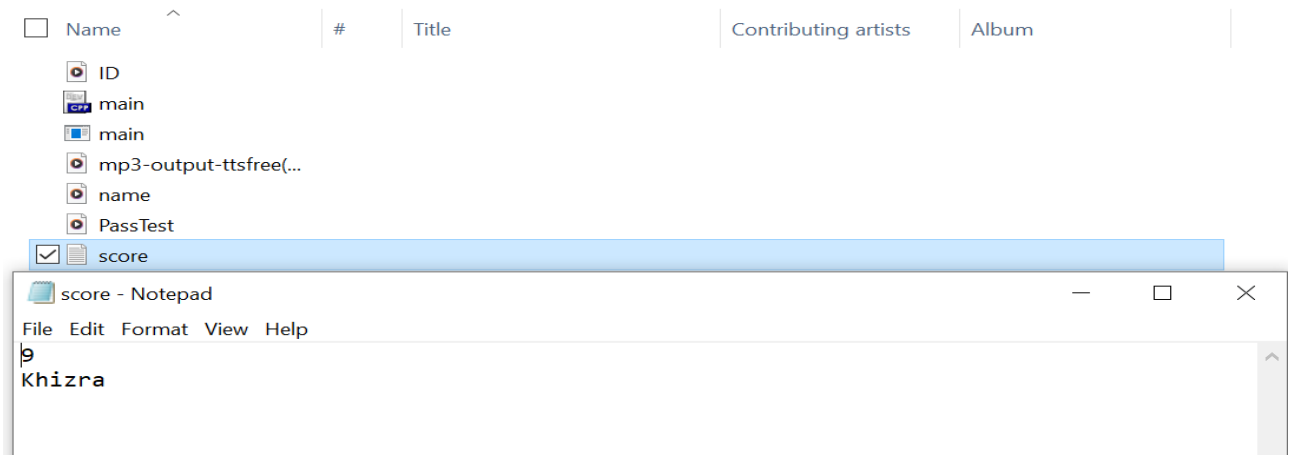
OUTPUT

```
                                    ****************************************
                                    *          Online Exam Management System   *
                                    ****************************************


                    Please enter your name: Khizra
                    Please enter your ID: 1001
               *Successfully verified

             *)Select exam type
             *)Press A for MDCAT
             *)Press B for ECAT
             *)Press C for AGHA KHAN Test
A
```

```
                                    ****************************************
                                    *              WELCOME TO MDCAT               *
                                    ****************************************


1.What does the term bacteriophage refer to?
a. A virus that infects bacteria               b. A bacterium that infects virus
c. A virus which behaves as bacteria           d. Combination of bacterium and virion
```

```
                                    ******************************************
                                    *              WELCOME TO MDCAT          *
                                    ******************************************



1.What does the term bacteriophage refer to?
a. A virus that infects bacteria                b. A bacterium that infects virus
c. A virus which behaves as bacteria            d. Combination of bacterium and virion
a
2.Which of the following virus contain SSD
a.Adeno virus           b.parvo virus
c.Herpes virus          d.Pox virus
c
3.How many tail fibrils are attached to the end of the of bacteriophage
a.2             b.4             c.6d.8
c
4.The enzyme invertase,protease and reverese transcriptase are found in which of the following virus
a. Hepatitis A          c. Influenza
b. Herpis               d.Human Immunodeficiency
d
5.What is the end product of glucose by yeast in anaerobic respiration
a.Ethanol and Oxygen            b.Ethanol and water
c.Ethanol and CO2               d.Lactic acid and CO2
c
6.Each carrier in Electron Transport Chain is first _______ and then ______
a.Broken down and Regenerate            b.Generated and Broken down
c.Oxidized, Reduced             Reduced, Oxidized
d
7.Electron Transport Chain Explains
a.Photophosphorlyation          b.Z-Scheme
c.Photolysis            d.Mechanism of ATP Synthesis
d
8.What is the color of cholorophyll b molecule
a.Bluish green          b.Yellowish green
c.Dark green            Yellowish green
c
9.Upon initial hydrolysis starch yield
a.Maltose               b.Glucose
c.Sucrose               d.Mannose
a
10.Human bone cells contain ........ % of water
a.20            b.40
c.85            d.90
a
Score is 9
Congratulations! You have passed your test, better luck for merit
Enter your score  :
```

```
Score is 9
Congratulations! You have passed your test, better luck for merit
Enter your score  : 9
Enter your name  :   Khizra

--------------------------------
Process exited after 230.1 seconds with return value 0
Press any key to continue . . .
```




```
                                    **********************************************
                                    *              WELCOME TO MDCAT              *
                                    **********************************************


.What does the term bacteriophage refer to?
. A virus that infects bacteria                b. A bacterium that infects virus
. A virus which behaves as bacteria            d. Combination of bacterium and virion

.Which of the following virus contain SSD
.Adeno virus           b.parvo virus
.Herpes virus          d.Pox virus

.How many tail fibrils are attached to the end of the of bacteriophage
.2            b.4            c.6d.8

.The enzyme invertase,protease and reverese transcriptase are found in which of the following virus
. Hepatitis A          c. Influenza
. Herpis               d.Human Immunodeficiency

.What is the end product of glucose by yeast in anaerobic respiration
.Ethanol and Oxygen            b.Ethanol and water
.Ethanol and CO2               d.Lactic acid and CO2

.Each carrier in Electron Transport Chain is first _______ and then ______
.Broken down and Regenerate            b.Generated and Broken down
.Oxidized, Reduced             Reduced, Oxidized

.Electron Transport Chain Explains
.Photophosphorlyation          b.Z-Scheme
.Photolysis            d.Mechanism of ATP Synthesis

.What is the color of cholorophyll b molecule
.Bluish green          b.Yellowish green
.Dark green            Yellowish green

.Upon initial hydrolysis starch yield
.Maltose               b.Glucose
.Sucrose               d.Mannose

0.Human bone cells contain ........ % of water
.20            b.40
.85            d.90

core is 3
AIL

--------------------------------
rocess exited after 30.14 seconds with return value 0
ress any key to continue . . .
```

2)ECAT

Function Explanation

In the ECAT exam, negative marking has been implemented according to the rules of the UET. The exam consists of 10 multiple choice questions, with each question carrying 4 marks. If a student selects an incorrect selects an incorrect answer, 5 marks are deducted from the total marks, 4 marks are deducted due to wrong selection and 1 mark is deducted due to negative marking rule in case student select a wrong answer.

To pass the ECAT exam, a student needs to achieve a score of 15 or higher out of the total 40 marks. If the student meets this criteria, they will receive a congratulatory message, which will be displayed on the screen and accompanied by a voiceover. The student will also be prompted to enter his score and name. The name and score will be stored in a file using file handling techniques for record-keeping purposes.

However, if a student fails to reach the passing score of 15, they will be shown a fail message, highlighted in red, indicating that they have not passed the ECAT exam.

Code Explanation

The function is named as **questionPaperECAT** including that it is responsible for handling the question paper for the ECAT exam. There is also a negative marking in this exam that makes it logically different from the MDCAT.

This code consists of **function definition** and **function calling**

1) Function Definition

The function is named as **questionPaperECAT** including that it is responsible for handling the question paper for the ECAT exam. In its code condition of score is different in the function definition

It takes two parameters

a) **stu_res:** This parameter is of type **char** and represents the student's answer to a particular question in the question paper. It is used to compare the student's answer with the correct answer to calculate the score.

b) **score:** This parameter is passed by reference **(int&),** indicating that it is a variable used to store and update the score throughout the function. Any changes made to the **score** variable within the function will affect the original variable outside the function scope.

As each mcq is of 4 marks so 4 marks assigned to the user in case of the correct answer, but difference is that in MDCAT if user select wrong option, then 0 mark was assigned to him, but

here if user select the wrong answer, then -1 mark will assign to him. Means that from its total marks one extra mark is deducted.

The return type of the function is **void,** which means that it does not return any value, it performs its operations and update the score variable as a side effect.

Function body consist of mcqz and score code accordingly. There is one mark for one mcqz and score will assign according to student's correct answer.

2) Function calling

case 'A'

This line represents a specific case where the user has selected option 'A'. The following block of code will be executed when this case is match.

SetConsoleTextAttribute(hconsole, FOREGROUND_GREEN)

This line sets the text color in the console to green. This is likely to provide a visual feedback.
questionPaperECAT(character, score)

This line is used to call the function **questionPaperECAT** and passes two arguments: **character** and **score**. The **questionPaperECAT** is responsible for handling the ECAT question paper, processing the user's answers, and updating the **score** variable.

cout << "Score is" << score << endl;

This line outputs the value of the score variable to the console. It displays the score achieved by the user in the ECAT test.

If(score>=15)

This line checks if the score is greater than or equal to 15. If the condition is true, the following block of code will be executed.

Sleep(100)

This line introduces a brief delay of 100 milliseconds. It causes a pause in the program execution, allowing the user to read the previous output before the next operations.

cin.ignore()

This line discards any remaining characters in the input buffer to prevent unwanted input reference.

PlaySound(TEXT("PassTest"), NULL, SND_ASYNC);

This line plays a sound file named "PassTest". It is likely a notification sound to indicate the user's success in passing the test.

SetConsoleTextAttribute(Console, FOREGROUND_BLUE | FOREGROUND | FOREGROUND_INTENSITY)

This line sets the text color in the console to a combination an aqua. It is likely used to provide visual feedback or highlight the success message.

cout << "Congratulations! You have passed your test, better luck for merit" <<endl;

Simply displays a congratulatory message if user passes the exam.

int score and int name

This line declares two variables score of int type and name of string type to store the student score and the name

cout << "Enter your score"<<endl;/ or name

These lines prompt the user to enter the name and the score.

ofstream file ("score.txt")

This line creates an output file stream object named **file** and associates it with the file named "score.txt". It prepares to write data to the file.

file << score<<endl; and file<<name<<endl;

These lines write the score and name values to the file, each followed by the newline character. They store the user's score and name in the "score.txt" file.

file.close()

This line closes the file, ensuring that all the data is properly written and saved.

If(score<=14) and cout << "Fail" <<endl;

These lines check if the score is less than or equal to 14. If the condition is true, the program outputs "Fail" to indicate the user did not pass the test.

break;

This line terminates the execution of the switch-case block, exiting the switch statement and continuing with the rest of the program's execution.

Function calling

```
case 'B':{
      SetConsoleTextAttribute(hConsole, FOREGROUND_GREEN);
   questionPaperECAT(character,score);
   cout<<"Score is "<<score<<endl;
    if(score>=15){
           Sleep(100);
           cin.ignore();
            PlaySound(TEXT("PassTest"), NULL, SND_ASYNC);
            SetConsoleTextAttribute(hConsole, FOREGROUND_BLUE | FOREGROUND_GREEN |
FOREGROUND_INTENSITY);
          cout<<"Congratulations! You have passed your test, better luck for merit"<<endl;
         int score;
          string name;
  cout << "Enter your score : ";
  cin >> score;
  cout<<"Enter your name :  ";
  cin>>name;
  ofstream file("score.txt");
  file << score << endl;
  file << name << endl;
  file.close();
      }
      if(score<=14){
            SetConsoleTextAttribute(hConsole, FOREGROUND_RED);
         cout<<"FAIL"<<endl;
      }
   break;
   }
```

Function definition

```
void questionPaperECAT(char stu_res,int& score){
   system("cls");
   cout<<"\t\t\t\t\t**********************************************"<<endl;
  Sleep(500);
          cout<<"\t\t\t\t\t*           WELCOME TO ECAT            *"<<endl;
  Sleep(500);
          cout<<"\t\t\t\t\t**********************************************\n\n"<<endl;
   cout<<"Note:Use smallcaps to give ans";
   cout<<"1.which one is the highest power multiple"<<endl;
   cout<<"a.Giga"<<"\t\t"<<"b.Tera"<<endl;//a
   cout<<"c.Mega"<<"\t\t"<<"d.Deca"<<endl;
   cin>>stu_res;
   int ques1score=0;
   if(stu_res=='a'){
     ques1score=4;
   }
  if(stu_res == 'b' || stu_res == 'c' || stu_res == 'd') {
    ques1score = -1;
  }
   score+=ques1score;
```

```
cout<<"2.SI unit of charge is"<<endl;
  cout<<"a.Ampere"<<"\t\t"<<"b.Coulomb"<<endl<<"c.Watt"<<"\t\t"<<"Calorie"<<endl;
  cin>>stu_res;
  int ques2score=0;
  if(stu_res=='b'){
    ques2score=4;
  }
 if(stu_res == 'a' || stu_res == 'c' || stu_res == 'd') {
   ques2score = -1;
 }
  score+=ques2score;
  cout<<"3.Force on a current carrying conductor on a uniform magnetic field is "<<endl;
  cout<<"a.F=NIAcos90"<<"\t\t"<<"b.F=ILBsin90"<<endl;//b
  cout<<"c.F=nl"<<"\t\t"<<"d.F=ILAsin90"<<endl;
  cin>>stu_res;
  int ques3score=0;
  if(stu_res == 'b'){
    ques3score = 4;
  }
 if(stu_res == 'a' || stu_res == 'c' || stu_res == 'd') {
   ques3score = -1;
 }
  score+=ques3score;
```

```
cout<<"4.The sensitivity of a galvanometer can be decrease by"<<endl;
  cout<<"a.An increasing magnetic field"<<"\t\t"<<"b.Increasing BAN Ration"<<endl;//b
  cout<<"c.Increasing number of turns of coil"<<"\t\t"<<"d.Decreasing length of couple"<<endl;
  cin>>stu_res;
  int ques4score=0;
  if(stu_res == 'b'){
    ques4score = 4;
  }
 if(stu_res == 'a' || stu_res == 'c' || stu_res == 'd') {
   ques4score = -1;
 }
  score+=ques4score;
  cout<<"5.If 'V' is applied potential difference across 'R', then loss in potential energy per unit time is
"<<endl;
  cout<<"a.VI"<<"\t\t"<<"b.I^2R"<<endl<<"c.V^2/R"<<"\t\t"<<"d.All of the above"<<endl;//d
  cin>>stu_res;
  int ques5score=0;
  if(stu_res=='d'){
    ques5score=4;
  }
 if(stu_res == 'a' || stu_res == 'c' || stu_res == 'd') {
   ques5score = -1;
 }
  score+=ques5score;
```

```
cout<<"6.The equivalent current which passes from a point at higher potential to a point at lower potential as if it represented the movement of positive charges is"<<endl;
  cout<<"a.Electronic current"<<"\t\t"<<"Electric current"<<endl<<"c.Magnetic lines"<<"\t\t"<<"d.Conventional current"<<endl;//d
  cin>>stu_res;
  int ques6score=0;
  if(stu_res=='d'){
    ques6score = 4;
  }
 if(stu_res == 'b' || stu_res == 'c' || stu_res == 'a') {
   ques6score = -1;
 }
  score+=ques6score;
  cout<<"7.SI unit of electric flux is"<<endl;
  cout<<"a.NmC-1"<<"\t\t"<<"b.Nm2C-1"<<"c.Nm2C-1"<<"\t\t"<<"d.Nm2C-2"<<endl;//c
  cin>>stu_res;
  int ques7score=0;
  if(stu_res=='a' || stu_res=='A'){
    ques7score=4;
  }
 if(stu_res == 'b' || stu_res == 'c' || stu_res == 'd') {
   ques7score = -1;
 }
  score+=ques7score;
```

```
cout<<"9.Electric intensity is a vector quantity and its direction is"<<endl;
  cout<<"a.perpendicular to the direction of the field"<<"\t\t"<<"b.Opposite to the direction of the field"<<endl;
  cout<<"c.Along the direction of the force"<<"\t\t"<<"At a certain angle"<<endl;//c
  cin>>stu_res;
  int ques9score=0;
  if(stu_res == 'c'){
    ques9score=4;
  }
 if(stu_res == 'b' || stu_res == 'a' || stu_res == 'd') {
   ques9score = -1;
 }
  score+=ques9score;
  cout<<"10.Sodium-24 has half life has half-life of 15 hours and it is used in medicine estimate"<<endl;//b
  cout<<"a.Kidney Function"<<"\t\t"<<"b.Plasma blood volume"<<endl<<"c.Iron in plasma"<<"\t\t"<<"d.Blood Function"<<endl;
  cin>>stu_res;
  int ques10score = 0;
  if(stu_res == 'b'){
    ques10score = 4;
  }
 if(stu_res == 'a' || stu_res == 'c' || stu_res == 'd') {
   ques10score = -1;
 }
  score+=ques10score;
```

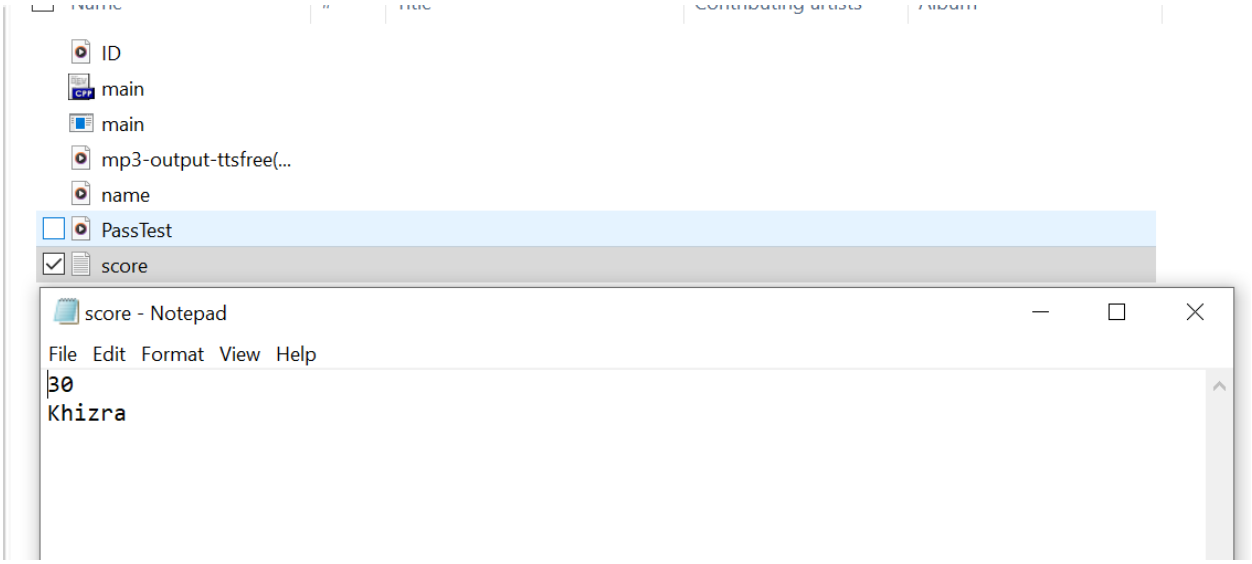
OUTPUT

```
                                    ******************************************
                                    *          Online Exam Management System   *
                                    ******************************************


                    Please enter your name: Khizra
                    Please enter your ID: 1001
               *Successfully verified

            *)Select exam type
            *)Press A for MDCAT
            *)Press B for ECAT
            *)Press C for AGHA KHAN Test
B
```

```
                                    ******************************************
                                    *              WELCOME TO ECAT             *
                                    ******************************************


Note:Use smallcaps to give ans1.which one is the highest power multiple
a.Giga          b.Tera
c.Mega          d.Deca
```

```
                                    ****************************************
                                    *            WELCOME TO ECAT           *
                                    ****************************************



Note:Use smallcaps to give ans1.which one is the highest power multiple
a.Giga          b.Tera
c.Mega          d.Deca
a
2.SI unit of charge is
a.Ampere                b.Coulomb
c.Watt          Calorie
b
3.Force on a current carrying conductor on a uniform magnetic field is
a.F=NIAcos90            b.F=ILBsin90
c.F=nl          d.F=ILAsin90
b
4.The sensitivity of a galvanometer can be decrease by
a.An increasing magnetic field          b.Increasing BAN Ration
c.Increasing number of turns of coil            d.Decreasing length of couple
b
5.If 'V' is applied potential difference across 'R', then loss in potential energy per unit time is
a.VI            b.I^2R
c.V^2/R         d.All of the above
d
6.The equivalent current which passes from a point at higher potential to a point at lower potential as if it represented the movement of positive charges is
a.Electronic current            Electric current
c.Magnetic lines                d.Conventional current
d
7.SI unit of electric flux is
a.NmC-1         b.Nm2C-1c.Nm2C-1                d.Nm2C-2
a
8.The magnitude of an electric field between two separate plates can be calculated by the following relation
a.V=Ed          b.V=E/d
V=E/qE=d/V
a
9.Electric intensity is a vector quantity and its direction is
a.perpendicular to the direction of the field           b.Opposite to the direction of the field
c.Along the direction of the force              At a certain angle
c
10.Sodium-24 has half life has half-life of 15 hours and it is used in medicine estimate
a.Kidney Function               b.Plasma blood volume
c.Iron in plasma                d.Blood Function
a
Score is 30
Congratulations! You have passed your test, better luck for merit
Enter your score :
```

```
10.Sodium-24 has half life has half-life of 15 hours and it is used in medicine estimate
a.Kidney Function               b.Plasma blood volume
c.Iron in plasma                d.Blood Function
a
Score is 30
Congratulations! You have passed your test, better luck for merit
Enter your score : 30
Enter your name :  Khizra

--------------------------------
Process exited after 739.1 seconds with return value 0
Press any key to continue . . .
```




```
                                    ******************************************
                                    *             WELCOME TO ECAT            *
                                    ******************************************


Note:Use smallcaps to give ans1.which one is the highest power multiple
a.Giga          b.Tera
c.Mega          d.Deca
a
2.SI unit of charge is
a.Ampere                b.Coulomb
c.Watt          Calorie
a
3.Force on a current carrying conductor on a uniform magnetic field is
a.F=NIAcos90            b.F=ILBsin90
c.F=nl          d.F=ILAsin90
a
4.The sensitivity of a galvanometer can be decrease by
a.An increasing magnetic field          b.Increasing BAN Ration
c.Increasing number of turns of coil            d.Decreasing length of couple
a
5.If 'V' is applied potential difference across 'R', then loss in potential energy per unit time is
a.VI            b.I^2R
c.V^2/R         d.All of the above
a
6.The equivalent current which passes from a point at higher potential to a point at lower potential as if it represented the movement of positive charges is
a.Electronic current            Electric current
c.Magnetic lines                d.Conventional current
a
7.SI unit of electric flux is
a.NmC-1         b.Nm2C-1c.Nm2C-1                d.Nm2C-2
a
8.The magnitude of an electric field between two separate plates can be calculated by the following relation
a.V=Ed          b.V=E/d
V=E/qE=d/V
a
9.Electric intensity is a vector quantity and its direction is
a.perpendicular to the direction of the field           b.Opposite to the direction of the field
c.Along the direction of the force              At a certain angle
a
10.Sodium-24 has half life has half-life of 15 hours and it is used in medicine estimate
a.Kidney Function               b.Plasma blood volume
c.Iron in plasma                d.Blood Function
a
Score is 5
FAIL

--------------------------------
Process exited after 29.22 seconds with return value 0
Press any key to continue . . .
```

3) AGHA Khan Test

Function Explanation

In the Agha Khan Test, there are a total of 10 multiple-choice questions, and each question carries a score of 1 mark. However, if a student selects an incorrect option, a negative marking system us applied where 1.25 marks are deducted from the total score.

To pass the Agha Khan Test, a student must achieve a score of 5 or higher. If the student meets this criterion, a congratulatory message is displayed on the screen along with a voiceover. The screen is then prompted to enter the name and scores in a file using the file handling techniques for record keeping purposes.

However, if a student fails to reach the passing score of 5, the word "Fail" is displayed on the console screen in red color, indicating that the student did not pass the Agha Khan test.

Code Explanation

The function is named as **questionPaperAghaKhan** including that it is responsible for handling the question paper for the Agha Khan Test exam. In Agha Khan test criteria of assigning the score to the student is different, 1 mark will assign to the student in case of the correct answer and -0.25 mark is assigned to him in case of one wrong question, so for one wrong question total 1.25 marks will be deducted from the total rather than 1.

1) Function Definition

The function is named as **questionPaperAghaKhan** including that it is responsible for handling the question paper for the Agha Khan exam. In its code condition of score is different in the function definition

It takes two parameters

a) **stu_choice :** This parameter is of type **char** and represents the student's answer to a particular question in the question paper. It is used to compare the student's answer with the correct answer to calculate the score.

b) **score:** This parameter is passed by reference **(int&),** indicating that it is a variable used to store and update the score throughout the function. Any changes made to the **score** variable within the function will affect the original variable outside the function scope.

As each mcq is of 1 mark so 1 mark will assign to the user in case of the correct answer, but difference is that in MDCAT if user select wrong option, then 0 mark was assigned to him, but here if user select the wrong answer, then -0.25 mark will assign to him. Means that from its total marks 0.25 extra mark is deducted.

The return type of the function is **void,** which means that it does not return any value, it performs its operations and update the score variable as a side effect.

Function body consist of mcqz and score code accordingly. There is one mark for one mcqz and score will assign according to student's correct answer.

2) Function calling

case 'A'

This line represents a specific case where the user has selected option 'A'. The following block of code will be executed when this case is match.

SetConsoleTextAttribute(hconsole, FOREGROUND_GREEN)

This line sets the text color in the console to green. This is likely to provide a visual feedback.
questionPaperAghaKhan (character, score)

This line is used to call the function **questionPaperAghaKhan** and passes two arguments: **character** and **score**. The **questionPaperAghaKhan** is responsible for handling the ECAT question paper, processing the user's answers, and updating the **score** variable.

cout << "Score is" << score << endl;

This line outputs the value of the score variable to the console. It displays the score achieved by the user in the Agha Khan test.

If(score>=4)

This line checks if the score is greater than or equal to 4. If the condition is true, the following block of code will be executed.

Sleep(100)

This line introduces a brief delay of 100 milliseconds. It causes a pause in the program execution, allowing the user to read the previous output before the next operations.

cin.ignore()

This line discards any remaining characters in the input buffer to prevent unwanted input reference.

PlaySound(TEXT("PassTest"), NULL, SND_ASYNC);

This line plays a sound file named "PassTest". It is likely a notification sound to indicate the user's success in passing the test.

SetConsoleTextAttribute(Console, FOREGROUND_BLUE | FOREGROUND | FOREGROUND_INTENSITY)

This line sets the text color in the console to a combination an aqua. It is likely used to provide visual feedback or highlight the success message.

cout << "Congratulations! You have passed your test, better luck for merit" <<endl;

Simply displays a congratulatory message if user passes the exam.

int score and int name

This line declare two variables score of int type and name of string type to store the student score and the name

cout << "Enter your score"<<endl;/ or name

These lines prompt the user to enter the name and the score.

ofstream file ("score.txt")

This line creates an output file stream object named **file** and associates it with the file named "score.txt". It prepares to write data to the file.

file << score<<endl; and file<<name<<endl;

These lines write the score and name values to the file, each followed by the newline character. They store the user's score and name in the "score.txt" file.

file.close()

This line closes the file, ensuring that all the data is properly written and saved.

If(score<=3) and cout << "Fail" <<endl;

These lines check if the score is less than or equal to 3. If the condition is true, the program outputs "Fail" to indicate the user did not pass the test.

break;

This line terminates the execution of the switch-case block, exiting the switch statement and continuing with the rest of the program's execution.

Function calling

```
case 'C':{
      SetConsoleTextAttribute(hConsole, FOREGROUND_GREEN);


   questionPaperAghaKhan(character,score);
   cout<<"Score is "<<score<<endl;
   if(score>=4){
       Sleep(100);
           cin.ignore();
            PlaySound(TEXT("PassTest"), NULL, SND_ASYNC);
        SetConsoleTextAttribute(hConsole, FOREGROUND_BLUE | FOREGROUND_GREEN |
FOREGROUND_INTENSITY);
          cout<<"Congratulations! You have passed your test, better luck for merit"<<endl;
          int score;
          string name;
  cout << "Enter your score : ";
  cin >> score;
  cout<<"Enter your name : ";
  cin>>name;
  ofstream file("score.txt");
  file << score << endl;
v
  file.close();
      }
      if(score<=3){
            SetConsoleTextAttribute(hConsole, FOREGROUND_RED);
          cout<<"FAIL"<<endl;
      }
   break;
   }
```

Function Definition

```
void questionPaperAghaKhan(char stu_choice,int& score){
   system("cls");
cout<<"\t\t\t\t\t**********************************************"<<endl;
 Sleep(500);
          cout<<"\t\t\t\t\t*           WELCOME TO AGHAKHAN TEST         *"<<endl;
 Sleep(500);
          cout<<"\t\t\t\t\t**********************************************\n\n"<<endl;
cout<<"1.Choose the best word to complete the space:"<<endl;
cout<<"Asking for a pen"<<endl<<"Student A: Do you have a pen "<<endl<<"Student B: Yes there
_____ a pen in my bag"<<endl;
cout<<"a.is"<<endl<<"b.Does"<<endl<<"c.Have"<<endl;//a
cin>>stu_choice;
int q1score = 0;
if (stu_choice == 'a'){
  q1score = 1;
}
if (q1score=='b' || q1score == 'c' || q1score == 'd')
{
   q1score = -0.25;
}
score+=q1score;
cout<<"2.The University has _____ very heavily in teaching and learning facilities"<<endl;
cout<<"a.costed"<<"\t\t"<<"b.invested"<<endl;
cout<<"c.spent"<<endl;
cin>>stu_choice;
int q2score = 0;
if (stu_choice == 'b'){
  q2score = 1;
}
```

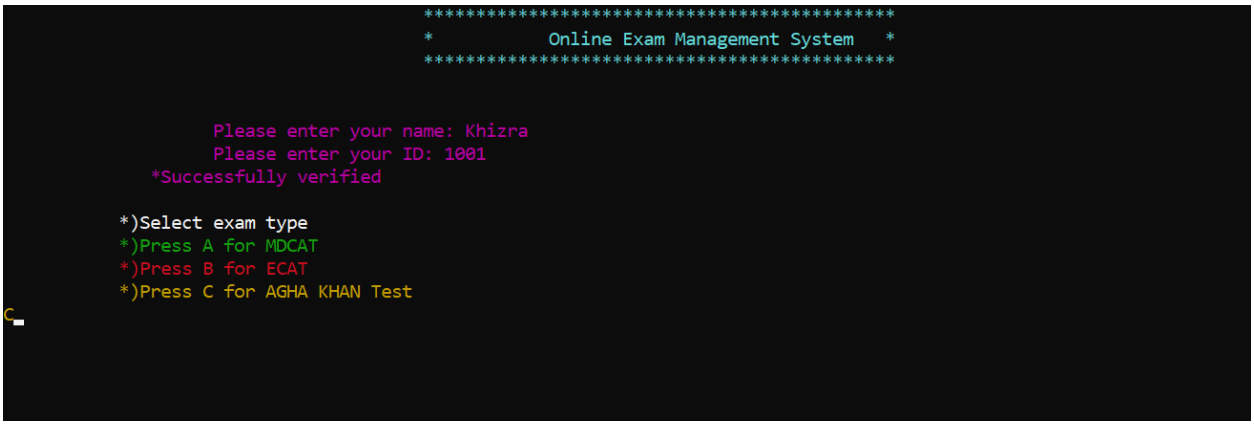
```
if (q2score == 'a' || q2score == 'c' || q2score == 'd')

{

   q2score = -0.25;

}

score+=q2score;

cout<<"3.“When you arrive at the university you will be registered at the faculty office.Which word is closest to registered?"<<endl;

cout<<"a. Functioned"<<"\t\t"<<"b. Participated"<<endl<<"c.Resigned"<<"\t\t"<<"d. Recorded"<<endl<<"e. Estimated"<<endl;

cin>>stu_choice;

int q3score=0;

if (stu_choice == 'd'){

  q3score=1;

}

if (q3score == 'a' || q3score == 'c' || q3score == 'b')

{

   q3score=-0.25;

}

score+=q3score;

cout<<"4.“Please go to the lounge”.Which word is most often used with lounge"<<endl;

cout<<"a. train lounge"<<"\t\t"<<"b. meeting lounge"<<endl<<"c. departure lounge"<<"\t\t"<<"d. information lounge"<<endl<<"e. waiting lounge"<<endl;

cin>>stu_choice;

int q4score=0;

if (stu_choice == 'c'){

  q4score = 1;

}

if (q4score == 'a' || q4score == 'b' || q4score == 'd')

{

   q4score=-0.25;
```

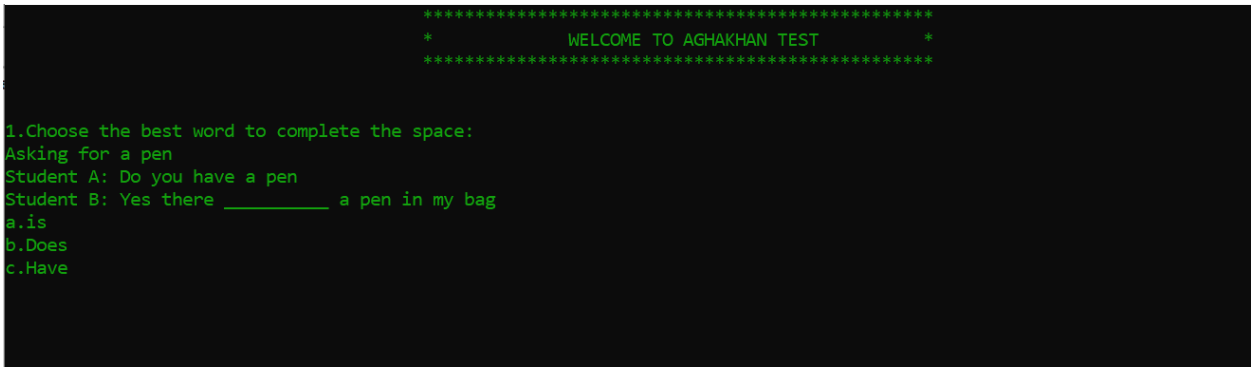
```
cout<<"5.Which of the following quantities is the largest?"<<endl;
cout<<"a. 45%"<<"\t\t"<<" b. 0.5%"<<endl<<" c. 3/4"<<"\t\t"<<"d. 0.6666"<<endl;
cin>>stu_choice;
int q5score = 0;
if (stu_choice == 'c'){
  q5score = 1;
}
if (q5score == 'a' || q5score == 'b' || q5score == 'd')
{
   q5score=-0.25;
}
score+=q5score;
cout<<"6.The cost of a book increased from Rs. 600 to Rs. 624. The increase in cost is"<<endl;
cout<<"a. 4%"<<"\t\t"<<"b. 24%"<<endl<< "c. 104%"<<"\t\t"<<"d. 124%"<<endl;
cin>>stu_choice;
int q6score=0;
if (stu_choice == 'a'){
  q6score=1;
}
if (q6score == 'b' || q6score == 'c' || q6score == 'd')
{
   q6score=-0.25;
}
score+=q6score;
```

```
cout<<"7.A toy helicopter normally cost Rs. 600. Bilal bought the toy helicopter when the price was reduced by 30%. How much did Bilal save?"<<endl;

cout<<"a. Rs. 420"<<"\t\t"<<" b. Rs. 300"<<"\t\t"<< "c. Rs. 240" <<"\t\t"<<"d. Rs. 180"<<endl;

cin>>stu_choice;

int q7score = 0;

if (stu_choice == 'd'){

  q7score=1;

}

if (q7score == 'a' || q7score == 'c' || q7score == 'b')

{

   q7score = -0.25;

}

score+=q7score;

cout<<"8. Three bells A, B & C ring simultaneously at 6:00 am. Now Bell A will ring after every 15 minutes,";

cout<<" Bell B after every 20 minutes and Bell C after 30 minutes. At what time will all the three bells ring together again?"<<endl;

cout<<"a. 6:15 am"<<"\t\t"<< "b. 6:20 am"<<endl<< "c. 6:30 am"<<"\t\t"<<"d. 7:00 am"<<endl;

cin>>stu_choice;

int q8score=0;

if (stu_choice == 'd'){

  q8score = 1;

}

if (q8score == 'a' || q8score == 'c' || q8score == 'b')

{

   q8score = -0.25;

}

score+=q8score;
```

```
cout<<"9.The sum of five positive numbers is 20. What could be the smallest possible median?"<<endl;
cout<<"a. 10"<<"\t\t"<<"b. 5"<<endl<<"c. 4"<<"\t\t"<<"d. 1"<<endl;
cin>>stu_choice;
int q9score=0;
if (stu_choice == 'd'){
  q9score=1;
}
if (q9score == 'a' || q9score == 'c' || q9score == 'b')
{
   q9score = -0.25;
}
score+=q9score;
cout<<"10.The mode value of the data set “16, 3, 6, 9, 16, 27, 16, 27, 10, 27, 16” is"<<endl;
cout<<"a. 27"<<"\t\t"<<"b. 16"<<endl<<"c. 16 or 27"<<"d. 16 and 27"<<endl;
cin>>stu_choice;
int q10score = 0;
if (stu_choice == 'b'){
  q10score = 1;
}
if (q10score == 'a' || q10score == 'c' || q10score == 'd')
{
   q10score = -0.25;
}
score+=q10score;
}
```

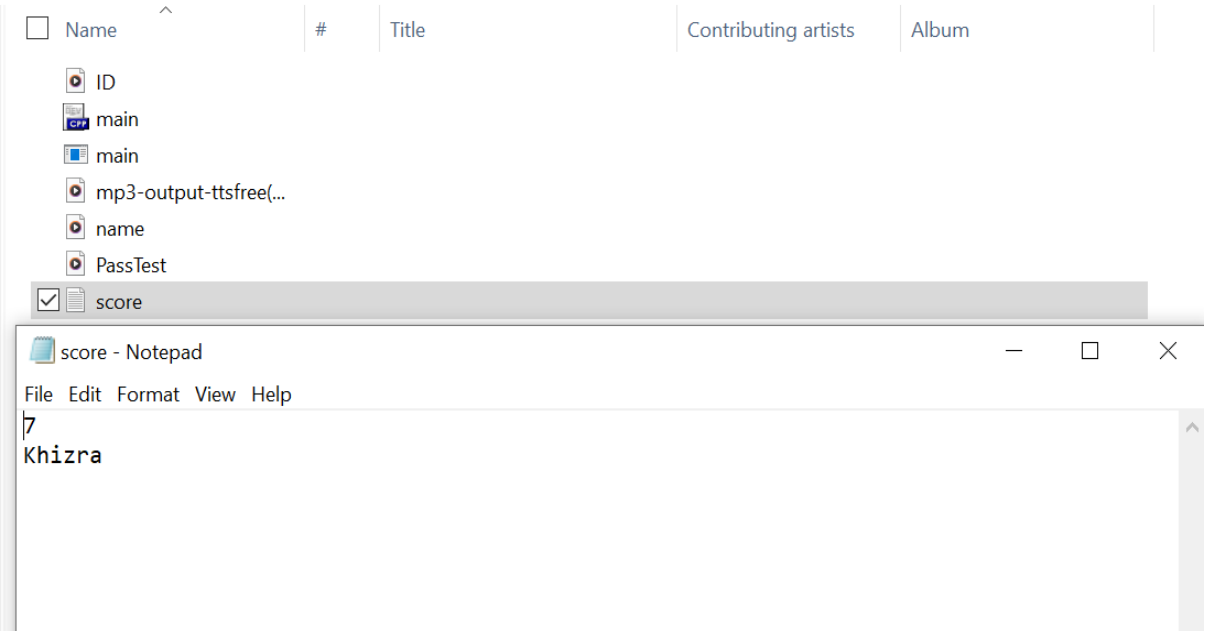
OUTPUT


****
* Online Exam Management System *
****
Please enter your name: Khizra
Please enter your ID: 1001
*Successfully verified
*)Select exam type
*)Press A for MDCAT
*)Press B for ECAT
*)Press C for AGHA KHAN Test
C


****
* WELCOME TO AGHAKHAN TEST *
****
1.Choose the best word to complete the space:
Asking for a pen
Student A: Do you have a pen
Student B: Yes there _____ a pen in my bag
a.is
b.Does
c.Have

```
                                *            WELCOME TO AGHAKHAN TEST         *
                                ********************************************



1.Choose the best word to complete the space:
Asking for a pen
Student A: Do you have a pen
Student B: Yes there _________ a pen in my bag
a.is
b.Does
c.Have
a
2.The University has _______ very heavily in teaching and learning facilities
a.costed              b.invested
c.spent
b
3.ôWhen you arrive at the university you will be registered at the faculty office.Which word is closest to registered?
a. Functioned          b. Participated
c.Resigned             d. Recorded
e. Estimated
d
4.ôPlease go to the loungeõ.Which word is most often used with lounge
a. train lounge        b. meeting lounge
c. departure lounge            d. information lounge
e. waiting lounge
a
5.Which of the following quantities is the largest?
a. 45%          b. 0.5%
 c. 3/4        d. 0.6666
c
6.The cost of a book increased from Rs. 600 to Rs. 624. The increase in cost is
a. 4%          b. 24%
c. 104%        d. 124%
b
7.A toy helicopter normally cost Rs. 600. Bilal bought the toy helicopter when the price was reduced by 30%. How much did Bilal save?
a. Rs. 420             b. Rs. 300            c. Rs. 240             d. Rs. 180
d
8. Three bells A, B & C ring simultaneously at 6:00 am. Now Bell A will ring after every 15 minutes, Bell B after every 20 minutes and Bell C after 30 minutes. At what time
 will all the three bells ring together again?
a. 6:15 am             b. 6:20 am
c. 6:30 am             d. 7:00 am
d
9.The sum of five positive numbers is 20. What could be the smallest possible median?
a. 10          b. 5
c. 4           d. 1
d
10.The mode value of the data set ô16, 3, 6, 9, 16, 27, 16, 27, 10, 27, 16õ is
a. 27          b. 16
c. 16 or 27d. 16 and 27
a
Score is 7
Congratulations! You have passed your test, better luck for merit
Enter your score :
```

```
Score is 7
Congratulations! You have passed your test, better luck for merit
Enter your score : 7
Enter your name : Khizra

--------------------------------
Process exited after 374.6 seconds with return value 0
Press any key to continue . . .
```



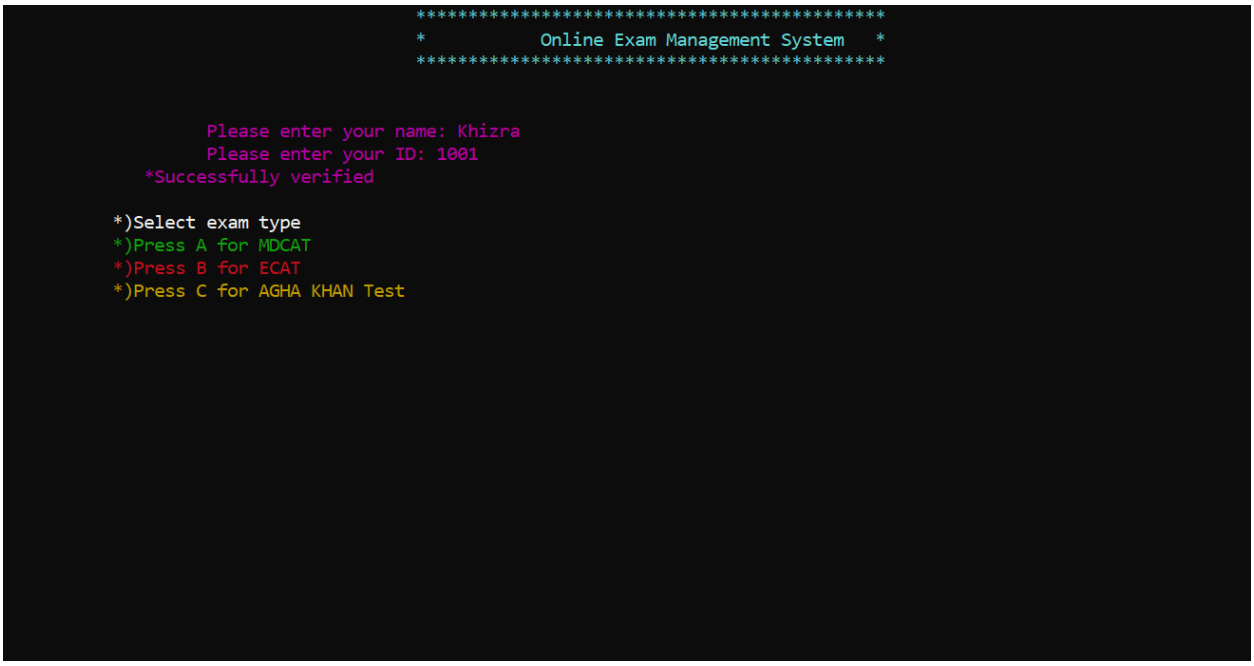
USER INTERFACE

I have used several codes in my project to enhance the user interface and provide an appealing experience. One of these is color code which is used to display the output in many different colors on the single console screen. It enhances the user experience and creates a pleasant environment for him

Furthermore, to provide a pleasant auditory experience, I incorporate voice functionality into my project. For example, when the program starts, a voiceover is played to introduce the project and prompt the user to enter their name. Similarly, after the user enters their name, a voice request is made for the user to enter his name. Similarly, after the user enters his name, a voice request is made for the user to enter the ID.

Once the user provides his name and ID, the program verifies if the entered information matches any of the registered students' records. If there is a match, the user is allowed to proceed and select desired exam type. However, if there is no match, a message is displayed, stating "You are not in the registered student list." Subsequently, the program terminates, preventing the user from taking the exam.

By utilizing these libraries and incorporating voice functionality, I have aimed to create an engaging and visually appealing user interface that enhances the user experience.



```
system("color");
    PlaySound(TEXT("mp3-output-ttsfree(dot)com"), NULL, SND_ASYNC);
   HANDLE hConsole = GetStdHandle(STD_OUTPUT_HANDLE);
   SetConsoleTextAttribute(hConsole, FOREGROUND_INTENSITY | FOREGROUND_RED |
FOREGROUND_GREEN | FOREGROUND_BLUE);



   string user_name;
   int user_ID;
   string examType;
   SetConsoleTextAttribute(hConsole, FOREGROUND_BLUE | FOREGROUND_GREEN |
FOREGROUND_INTENSITY);
  cout<<"\t\t\t\t\t*****************************************"<<endl;
 Sleep(500);
          cout<<"\t\t\t\t\t*         Online Exam Management System   *"<<endl;
 Sleep(500);
          cout<<"\t\t\t\t\t*****************************************\n\n"<<endl;
   string stu_name[5] = { "Khizra","Muneeba","Hadisa","Faiza","Noor" };
   int stu_ID[5] = { 1001,1002,1003,1004,1005 };
   Sleep(2500);
   PlaySound(TEXT("name"), NULL, SND_ASYNC);


    SetConsoleTextAttribute(hConsole, FOREGROUND_RED | FOREGROUND_BLUE |
FOREGROUND_INTENSITY);
   cout << "                Please enter your name: ";
   cin >> user_name;
```

```
Sleep(2500);
   PlaySound(TEXT("ID"), NULL, SND_ASYNC);
   cout << "                Please enter your ID: ";
   cin >> user_ID;
   bool verified = false;
   int score = 0;
   for (int i = 0; i < 5; i++) {
      if (stu_name[i] == user_name && stu_ID[i] == user_ID) {
         verified = true;
         cout << "            *Successfully verified            " << endl;
         cout<<endl;
         break;
      }
   }
   if (!verified) {
         SetConsoleTextAttribute(hConsole, FOREGROUND_RED);
      cout << "       Sorry, You are not in the registered students' list      " << endl;

      return 0;
   }
```

Libraries and their Code

#include <iostream>

#include <string>

By including the <string> header file in code, you gain access to the string class, which allows you to create and manipulate strings. It provides methods for string concatenation, comparison, substring extraction, and more.

Additionally, the <string> header file also includes other utility functions and classes related to string operations such as **getline()** for reading input lines into strings.

#include <fstream>

The #include **<fstream>** statement is a preprocessor directive in C++ that includes the header file <fstream>. It provides functionality for handling file input and output operations in C++. It includes classes such as **ifstream**, **ofstream** and **fstream**, which are used to read from and write to files.

By including the <fstream> header file in your code, you gain access to the necessary classes and functions to perform file operations, such as opening, reading and writing to files.

Including this header file enables you to work with file streams and utilize file handling capabilities in C++ program.

#include <Windows.h>

By including the <window.h> header file in your code, you gain access to a wide range of functionality provided by the Windows operating handling operating system. This includes features such as GUI programming window creation, message handling, file input/output, memory management, multireading, and more.

This is used for color in this project to enhance the beauty of console.

#include <MMsystem.h>

#include "MMsystem.h"

This is part of the Windows Multimedia API (MMSystem) and provides access to multimedia functions and constants. It allows you to work with audio, video and other multimedia-related operations in your Windows-based C++ program.