```
                // LETS QUIZ //

/*  The following program has been aimed at providing a platform for teachers
    to manage a question bank (a file storing questions) and students to take
    up quizzes with some options to choose from.

    An attempt has been made to incorporate most of the elements object
    oriented C++ taught in CBSE XII Computer Science course.
    The following concepts have been used here,
      1.Classes
      2.Data file handling
      3.Arrays (1-D and 2-D)
      4.Constructors
*/

#include <iostream.h>            //                .
#include <conio.h>               //                .
#include <iomanip.h>             //setw(),endl      .
#include <dos.h>                 //delay()          .
#include <process.h>             //exit()           .
#include <fstream.h>             //                 .
#include <stdio.h>               //gets(),puts()    .
#include <string.h>              //strcmp(),strcpy().
#include <stdlib.h>              //random()         .

////////////////////////////////////////////////////////////////////////////
//                        USER DEFINED FUNCTIONS
////////////////////////////////////////////////////////////////////////////

void inline title(char id[]="\0");
void mainmenu();
void sign_in(char);
void sign_up();
void que_menu();
void add_que();
void del_que();
void mod_que();
void display_contrb();
void stu_rank();
void stu_menu();
void quiz();
void quiz_menu();
void perf_rep();
void random_quiz(long r=0,int t=0);
void score_updt(int,int);

////////////////////////////////////////////////////////////////////////////
//            GLOBAL VARIABLE FOR SIGNED IN
char cur_acc[15]="\0";
////////////////////////////////////////////////////////////////////////////
//                       CLASS TO MANAGE QUESTIONS
////////////////////////////////////////////////////////////////////////////

class question
{  int q_no;
   char que[250];
   char op[4][25];
   char contrb[15];
   int topic;
   int ans;

  public:
   void add_qno()
   { cout<<"\n Enter question number: ";
     cin>>q_no;
   }
```

```
67
68      void add_q();
69      void display_q();
70      void modify_q();
71      void display_qno()
72      {cout<<" Q"<<q_no<<" : ";}
73
74      int get_ans()
75       { return ans;}
76      int get_q_no()
77       { return q_no;}
78      char* get_contrb()
79       { return contrb;}
80      int get_topic()
81       { return topic;}
82
83  }que;
84
85  void question::add_q()
86  { cout<<"\n Enter the question:\n  ";
87       gets(que);
88       strcat(que,"?");
89       cout<<"\n Enter the topic number(1.GK, 2.Science, 3.Math) : ";
90       cin>>topic;
91       for(int i=0;i<4;i++)
92       { cout<<"\n Enter option: "<<i+1<<". ";
93         gets(op[i]);
94       }
95       cout<<"\n Enter the correct answer :";
96       cin>>ans;
97       strcpy(contrb,cur_acc);
98       cout<<"\nAdding question...." ;
99       delay(1000);
100
101 }
102
103 void question::display_q()
104 {
105      puts(que);
106      cout<<endl<<"\t";
107      for(int i=0;i<4;i++)
108      { cout<<i+1<<". ";
109        puts(op[i]);
110        cout<<"\t";
111      }
112 }
113
114 void question::modify_q()
115 { cout<<"\n The question you want to modify is:\n";
116      cout<<"Q"<<q_no<<" : ";
117      puts(que);
118      cout<<"\n\t";
119      int i,a;
120      for(i=0;i<4;i++)
121      { cout<<i+1<<". ";
122        puts(op[i]);
123        cout<<"\t";
124      }
125      cout<<"\n Topic(1.GK,2.Science,3.Math):"<<topic;
126      cout<<"\n Answer : "<<ans;
127
128      char q[250],opt[4][25];
129      cout<<"\nNew question (Enter '.' to retain old one):\n";
130      gets(q);
131      cout<<"\n";
132      if(strcmp(q,".")!=0)
```

```
    strcpy(que,q);
     for(i=0;i<4;i++ )
     { cout<<"New option (Enter '.' to retain old one)"<<i+1<<" : ";
       gets(opt[i]);
       if(strcmp(opt[i],".")!=0)
     strcpy(op[i],opt[i]);
     }
     cout<<"\nNew answer (Enter 5 to retain old one): ";
     cin>>a;
     if(a==1||a==2||a==3||a==4)
       ans=a;

     cout<<"\nEnter topic (Enter 5 to retain old one): ";
     cin>>a;
     if(a==1||a==2||a==3)
       ans=a;
}


////////////////////////////////////////////////////////////////////////////
//                    CLASS TO MANAGE ACCOUNTS
////////////////////////////////////////////////////////////////////////////

class accounts
{  char user_id[15];
   char password[15];
   char name[25];
   long id;


  public:
   char desc;
   void ent_det()
    { cout<<"\t Enter Details:"
      <<"\n\n\t Name :";
      gets(name);

    }

   void ent_idno()
    { cout<<"\t ID/Registration number:";
      cin>>id;
    }

   void ent_id()
    { cout<<"\n\tEnter Credentials (within 15 characters): "
      <<"\n\n\t Username :";
      gets(user_id);
    }
   void ent_pwd();

   char* ret_id()
   {return user_id;}

   char* ret_pwd()
   {return password;}

   char* ret_name()
   {return name;}

   long int get_idno()
   {return id;}

}acc;

void accounts::ent_pwd()
```

```
{  cout<<"\n\t Password :";
      for(int i=0;i<=15;i++)
       { password[i]=getch();
     if(password[i]==13)
        break;
     cout<<"*";
       }

}

////////////////////////////////////////////////////////////////////////
//          CLASS TO MANAGE STUDENT REPORT
////////////////////////////////////////////////////////////////////////

class s_report
{  long s_id;
   int n_test;
   float average;

  public:

   s_report()
   { s_id=0;
     n_test=0;
     average=0.0;
   }

   void ent_id(long id)
   {s_id=id;}

   void updt_avg(float);
   float getavg()
   { return average;}

   void updt_n();
   int getn()
   { return n_test;}

   long int ret_s_id()
   { return s_id;}

}rep;

void s_report::updt_avg(float n)
{ average=(average+n)/2.0;
}

void s_report::updt_n()
{ n_test++;
}


////////////////////////////////////////////////////////////////////////
//                              MAIN FUNCTION
////////////////////////////////////////////////////////////////////////


void main()
{  mainmenu();
}

////////////////////////////////////////////////////////////////////////
//                         FUNCTION DEFINITIONS
////////////////////////////////////////////////////////////////////////

void inline title(char id[20])
```

```
{ clrscr();
  cout<<"\t\t       ----- LETS  QUIZ !!!! -----    \n";
  if(strcmp(id,"\0")!=0)
    cout<<"\t\t\t\t\t\t   -> Signed in as "<<id<<"\n\n\n";
  else
    cout<<"\n\n\n";
}

void mainmenu()
{ while(1)
 {
  clrscr();
  int num;
  title();
  cout<<"Welcome to LETS QUIZ .inc  .\n\n\n"
      <<"Choose your corresponding identity:"
      <<"\n\n 1.Teacher \t\t 2. Student \t\t 3.Exit \n\n :-> ";
  cin>>num;

  switch(num)
  { case 1  : title();
         menu2:
         cout<<"\t 1. SIGN IN \t 2. SIGN UP\n\n  :-> ";
         cin>>num;
         if(num==1)
          { sign_in('t');}
         else if(num==2)
          { acc.desc='t';
        sign_up();}
         else
          {  cout<<"Wrong choice !";
         delay(3000);
         goto menu2;}
         break;

    case 2  : title();
         menu3:
         cout<<"\t 1. SIGN IN \t 2. SIGN UP\n\n  :-> ";
         cin>>num;
         if(num==1)
          { sign_in('s'); }
         else if (num==2)
          { acc.desc='s';
        sign_up();}
         else
          {  cout<<"Wrong choice !";
         delay(3000);
         goto menu3;}
         break;
    case 3  : exit(0);
    default : cout<<"Wrong choice ! Try Again."; delay(2000);

   }
 }
}

void sign_up()
{ title();
  char found;
  acc.ent_det();
  cout<<"\n\n";
  while(1)
  { found='f';
    acc.ent_idno();
    acc.ent_id();
    accounts a;
```

```
    ifstream f_acc("accounts.dat",ios::in|ios::binary);
    while(f_acc.read((char*)&a,sizeof(a)))
    { if((strcmp(acc.ret_id(),a.ret_id())==0)||(a.get_idno()==acc.get_idno()))
    { cout<<"\nThis username/ID/R.no. already exists. Try a different one.\n\n";
      delay(2000);
      found='t';break;
    }
    }
    f_acc.close();
    if(found=='f')
    break;

  }

  acc.ent_pwd();
  ofstream f_acc("accounts.dat",ios::app|ios::binary);
  f_acc.write((char*)&acc,sizeof(acc));
  f_acc.close();
  if(acc.desc=='s')
  {  ofstream f_rep("report.dat",ios::app|ios::binary);
     s_report r;
     long rno=acc.get_idno();
     r.ent_id(rno);
     f_rep.write((char*)&r,sizeof(r));
     f_rep.close();
  }
  cout<<"\n\nThankyou for joining us. ";
  delay(3000);

}

void sign_in(char ch)
{ title();
  accounts a;
  char found='f';
  int i=0;
  ifstream f_acc("accounts.dat",ios::in|ios::binary);
  a.ent_id();

  while(f_acc.read((char*)&acc,sizeof(acc)))
  { if((strcmp(a.ret_id(),acc.ret_id())==0)&&(ch==acc.desc))
    {  pwd:
       cout<<"\n\tAccount holder - "<<acc.ret_id()<<" - Enter your, \n";
       a.ent_pwd();
       if(strcmp(a.ret_pwd(),acc.ret_pwd())==0)
    {  cout<<"\n\n\t SUCCESSFUL LOGIN";
       found='t';
       strcpy(cur_acc,acc.ret_id());
       delay(2000);
       if(acc.desc=='t')
         que_menu();
       else if(acc.desc=='s')
         stu_menu();
       exit(0);
    }
    else
    {  cout<<"\n\nIncorrect password!\n";delay(1000);
       i++;
       if(i<3)
         goto pwd;
       else
         exit(0);
    }
    }

  }
```

```
  if(found=='f')
    { cout<<"\n\nAccount NOT found!  Try again.";delay(1000);}

  f_acc.close();

}

////                      TEACHER RELATED FUNCTIONS

void que_menu()
{ title();
  int choice;
  while(1)
  { title(cur_acc);
    char ch='y';
    cout<<"\n\nWhat would you like to do?";
    cout<<"\nMENU :\n\t 1.Add a question to question reservoir."
    <<    "\n\t 2.Delete a question."
    <<        "\n\t 3.Modify a question."
    <<        "\n\t 4.View your previous contributions."
    <<        "\n\t 5.View ranking of registered students."
    <<        "\n\t 6.Sign out and exit to main menu.\n\n\t:";
    cin>>choice;
    switch(choice)
    { case 1: while(ch=='y')
          { title(cur_acc);
        add_que();
        cout<<"\nWant to continue?(y/n) :";
        cin>>ch;
          }
          break;
      case 2: while(ch=='y')
          { title(cur_acc);
        del_que();
        cout<<"\nWant to continue?(y/n) :";
        cin>>ch;
          }
          break;
      case 3: while(ch=='y')
          { title(cur_acc);
        mod_que();
        cout<<"\nWant to continue?(y/n) :";
        cin>>ch;
          }
          break;
      case 4: title(cur_acc);
          display_contrb();
          cout<<"\n Press Enter to continue.";
          getch();
          break;
      case 5: stu_rank();
          break;
      case 6: mainmenu();
          break;
     default: cout<<"Wrong choice!Try again;";
          delay(2000);
  }
 }



}

void add_que()
{ question q;
  char found;
```

```
  while(1)
  { q.add_qno();
    ifstream fin("question.dat",ios::in|ios::binary);
    found='f';
    while(fin.read((char*)&que,sizeof(que)))
    { if(q.get_q_no()==que.get_q_no())
      { cout<<"\n\nThis que no. already exists.Enter different one.\n";
    delay(3000);
    found='t';
    break;
      }
    }
    if(found=='f')
      break;

    fin.close();
  }
  q.add_q();

  ofstream f_que("question.dat",ios::app|ios::binary);
  f_que.write((char*)&q,sizeof(q));
  cout<<"\nThankyou for adding a question!";
  f_que.close();
}

void del_que()
{ ifstream f_que("question.dat",ios::in|ios::binary);
  ofstream temp("temp.dat",ios::out|ios::binary);
  int qno;
  question q;
  char found='f',confirm='n';
  cout<<"Enter the Q.no. of question to be deleted : ";
  cin>>qno;
  while(f_que.read((char*)&q,sizeof(q)))
  { if(q.get_q_no()==qno)
    { q.display_qno();
      q.display_q();
      cout<<"Answer is :"<<q.get_ans();
      cout<<"Topic(1.GK, 2.Science, 3.Math)"<<q.get_topic();
      found='t';
      cout<<"\nAre you sure you want to delete this question?(y/n)";
      cin>>confirm;
      if(confirm=='n')
    temp.write((char*)&q,sizeof(q));
    }
    else
    { temp.write((char*)&q,sizeof(q));
    }

  }
  if(found=='f')
     cout<<"Record not found!";
  f_que.close();
  temp.close();
  remove("question.dat");
  rename("temp.dat","question.dat");
}

void mod_que()
{ fstream f_que("question.dat",ios::in|ios::out|ios::binary);
  int qno;
  question q;
  long pos;
  char found='f';
  cout<<"Enter the Q.no. of question to be modified. :";
  cin>>qno;
```

```
  while(!f_que.eof())
  { pos=f_que.tellg();
    f_que.read((char*)&q,sizeof(q));
    if(q.get_q_no()==qno)
    { q.modify_q();
      found='t';
      f_que.seekg(pos);
      f_que.write((char*)&q,sizeof(q));
      break;

    }

  }
  if(found=='f')
     cout<<"Record not found!";
  f_que.close();

}

void display_contrb()
{ ifstream f_que("question.dat",ios::in|ios::binary);
  int i=0;
  while(f_que.read((char*)&que,sizeof(que)))
  { if(strcmp(cur_acc,que.get_contrb())==0)
     { if(i==2)
    { cout<<"\n\n Press Enter to move to next page.";
      getch();
      title(cur_acc);
      i=0;
    }
       cout<<"\n";
       que.display_qno();
       que.display_q();
       cout<<"Answer is : "<<que.get_ans();
       cout<<"\nTopic(1.GK, 2.Science, 3.Math) : "<<que.get_topic()<<"\n";
       i++;
     }
  }
  f_que.close();
}

void stu_rank()
{ title(cur_acc);

  cout<<"\n\n"<<"The Registered students and thier average scores are as follows:";
  cout<<"\n\n\t NAME \t   AVERAGE SCORE";
  ifstream f_acc("accounts.dat",ios::in|ios::binary);
  while(f_acc.read((char*)&acc,sizeof(acc)))
  { if(acc.desc=='s')
    { ifstream f_rep("report.dat",ios::in|ios::binary);
      while(f_rep.read((char*)&rep,sizeof(rep)))
      { if(acc.get_idno()==rep.ret_s_id())
      { cout<<"\n"<<setw(15)<<acc.ret_name();
        cout<<"\t\t"<<rep.getavg();
      }
      }
    }
  }

  cout<<"\n\nPress Enter to continue.";
  getch();

}

////                      STUDENT REALTED FUNCTIONS

```

```
595
596 void stu_menu()
597 { title();
598   int choice;
599   while(1)
600   { title(cur_acc);
601     char ch='y';
602     cout<<"\n\nWhat would you like to do?";
603     cout<<"\nMENU :\n\t 1.Take up a quiz."
604     <<    "\n\t 2.View performance report."
605     <<        "\n\t 3.Sign out and exit to main menu.\n\n\t:";
606     cin>>choice;
607     switch(choice)
608     { case 1: while(ch=='y')
609           { title(cur_acc);
610         quiz_menu();
611         cout<<"\nWant to test yourself again?(y/n) :";
612         cin>>ch;
613           }
614           break;
615       case 2: title(cur_acc);
616           perf_rep();
617           cout<<"\nPress enter to continue.";
618           getch();
619
620           break;
621       case 3: mainmenu();
622           break;
623      default: cout<<"Wrong choice!Try again;";
624           delay(2000);
625   }
626  }
627 }
628
629
630 void quiz_menu()
631 { title(cur_acc);
632   int num,n;
633   cout<<"\tChoose your type of quiz...\n"
634       <<"\n\n\t 1.Generate a random questionnaire."
635       <<  "\n\t 2.Questions by reknowned teachers."
636       <<  "\n\t 3.Topic based questionnaire."
637       <<  "\n\t 4.Return to previous menu.\n\n\t:";
638   cin>>num;
639
640   switch(num)
641   { case 1:
642       random_quiz();
643       break;
644
645     case 2:
646       title(cur_acc);
647       long int t_id;
648       cout<<"\t Choose one of the following teachers and enter their ID:\n";
649
650       ifstream f_acc("accounts.dat",ios::in|ios::binary);
651       while(f_acc)
652       { f_acc.read((char*)&acc,sizeof(acc));
653     if(acc.desc=='t')
654     { cout<<"\n"<<setw(20)<<acc.ret_name();
655       cout<<"\t"<<acc.get_idno();
656     }
657       }
658
659       f_acc.close();
660       cout<<"\n\n \t ID: ";
```

```
661         cin>>t_id;
662         random_quiz(t_id);
663         break;
664
665       case 3:
666         title(cur_acc);
667         int t;
668         cout<<"\n\n Enter one of the following topic numbers."
669         <<"\n\n\t 1. GK (A mix of general knowledge question)"
670         <<  "\n\t 2. Science (Questions from varied scientific fields)"
671         <<  "\n\t 3. Math (Intriguing math questions)\n :";
672         cin>>t;
673         random_quiz(0,t);
674         break;
675
676       case 4:
677         stu_menu();
678         break;
679       default:
680         cout<<"Wrong choice !!!";
681         delay(2000);
682         exit(0);
683
684
685     }
686   }
687
688
689   void random_quiz(long r, int t)
690   { int arr[50],a[50],cnt=0,k,j,num,flag,ans[50],score=0,n;
691     // arr[] holds all question numbers, a[] will hold the questions already shown.
692     ifstream f_que("question.dat",ios::in|ios::binary);
693     char t_uid[15];
694
695     for(int i=0;i<50;i++)
696        a[i]=-1;
697
698
699     if(r!=0)
700     { ifstream f_acc("accounts.dat",ios::in|ios::binary);
701       while(f_acc.read((char*)&acc,sizeof(acc)))
702       { if(r==acc.get_idno())
703       { strcpy(t_uid,acc.ret_id());
704         break;
705       }
706       }
707       f_acc.close();
708     }
709
710     while(f_que.read((char*)&que,sizeof(que)))
711     { if((r!=0)&&(strcmp(t_uid,que.get_contrb())==0))
712       { arr[cnt]=que.get_q_no();
713         cnt++;
714
715       }
716       else if(que.get_topic()==t)
717       { arr[cnt]=que.get_q_no();
718         cnt++;
719       }
720       else if(r==0&&t==0)
721       { arr[cnt]=que.get_q_no();
722         cnt++;
723       }
724     }
725
726     f_que.close();
```

```
727
728    cout<<"\nWe have "<<cnt<<" questions of your chosen type available.\n";
729    cout<<"Enter no. of questions : ";
730    cin>>n;
731
732    if(cnt<n)
733    { cout<<"Sorry, We have only "<<cnt<<" questions available.";
734      delay(2000);
735      quiz_menu();
736    }
737    randomize();
738
739    title(cur_acc);
740
741    for(k=0;k<n;)
742    { num=arr[random(cnt)];
743      flag=0;
744
745      for(j=0;j<=k;j++)
746        if(a[j]==num)
747      flag=1 ;
748
749      if(flag==1)
750        continue;
751
752      else
753      { a[k]=num;
754        title(cur_acc);
755        cout<<"\n  Q."<<k+1<<"  ";
756        ifstream f_que("question.dat",ios::in|ios::binary);
757        while(f_que.read((char*)&que,sizeof(que)))
758        { if(que.get_q_no()==a[k])
759      { que.display_q();
760        cout<<"\n\n  Enter answer : ";
761        cin>>ans[k];
762
763        if(ans[k]==que.get_ans())
764          score++;
765      }
766        }
767        f_que.close();
768        k++;
769      }
770    }
771
772    score_updt(score,n);
773    cout<<"\n\t Your score was "<<score<<" out of "<<n;
774    cout<<"\n\t Your average for the test was "<<((float)score/n)*100<<"%\n";
775
776  }
777
778
779  void score_updt(int sc,int no)
780  { title(cur_acc);
781    float s=sc,avg;
782    avg= (s/no)*100;
783    long rno=0,pos;
784
785    ifstream f_acc("accounts.dat",ios::in|ios::binary);
786    while(f_acc.read((char*)&acc,sizeof(acc)))
787    { if(strcmp(acc.ret_id(),cur_acc)==0)
788        rno=acc.get_idno();
789    }
790    f_acc.close();
791
792    fstream f_rep("report.dat",ios::in|ios::out|ios::binary);
```

```
793     f_rep.seekg(0);
794     while(!f_rep.eof())
795     { pos=f_rep.tellg();
796       f_rep.read((char*)&rep,sizeof(rep));
797       if(rno==rep.ret_s_id())
798       { rep.updt_avg(avg);
799         rep.updt_n();
800         f_rep.seekg(pos);
801         f_rep.write((char*)&rep,sizeof(rep));
802         break;
803       }
804     }
805     f_rep.close();
806   }
807
808
809   void perf_rep()
810   { ifstream f_rep("report.dat",ios::in|ios::binary);
811     long rno;
812
813     ifstream f_acc("accounts.dat",ios::in|ios::binary);
814     while(f_acc.read((char*)&acc,sizeof(acc)))
815     { if(strcmp(acc.ret_id(),cur_acc)==0)
816         rno=acc.get_idno();
817     }
818     f_acc.close();
819
820     while(f_rep.read((char*)&rep,sizeof(rep)))
821     { if(rno==rep.ret_s_id())
822       {  cout<<"\n\n Your quizzing history is as follows:" ;
823          cout<<"\n\n\t Number of tests taken: "<<rep.getn()
824          <<  "\n\t Average score : "<<rep.getavg()<<"%";
825          break;
826       }
827     }
828     f_rep.close();
829
830
```