CS PROJECT

BY
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BONAFIDE CERTIFICATE

(Computer Science Department)

This bonafide is to certify that the project titled"Air Hockey: The Game" is an original creative venture created by Sidharth. V, Praveen Kumar. R, and Rahul Solaiappan of Class XII-A in the computer science lab of The Hindu Senior Secondary School

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at

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ACKNOWLEDGEMENTS

I sincerely thank my computer science teacher ***Mrs.Dhanalakshmi*** *for giving us the opportunity to present our ideas in our own perspective and giving us the chance to expand our interests and foster our creative thinking. Over the course of our project, we learnt to program in c++ using graphics along with the techniques with our valuable ma'am taught us. All our ideas were given equal importance and we had the freedom to choose what we thought was best. By allowing us the autonomy of picking our preferred project, we could let our thoughts flow freely and design our game in our own way. This boundless sense of liberty made us better programmers, creative thinkers and expert problem solvers. We sincerely express our indebted gratitude to our respected teachers. I thank our principal* ***Mrs.PadminiSriraman*** *and our vice-principal* ***Mr. KasiViswanathan*** *for supporting us throughout the project. Lastly, I thank my friends for giving cheerful, positive thoughts and competitive encouragement that helped in engaging us and growing our project.*

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INTRODUCTION

Air Hockey is our take on the classic games that children used to play in the 1980's. We realized that with our knowledge of c++, we could create a new and improved version of this "long-forgotten" game. The game consists of 2 red disks (one spare in case lost) and called pucks, a board stood on four legs, and scorecard on the center at the side which is to be manually changed. Air Hockey, in real life, is a game that was played with two people using a puck and two devices that are used to move this puck. The aim is to push the puck into your opponent's goal wherein you get a point. The borders of the game and flashy red lines on white tile really made the board pop out and attractive to the kid's generation. The first person to get 5 points is declared the winner. In real life, the one player mode is not possible as the other side cannot be controlled intrinsically. Air Hockey is generally played on an aerated, white board that is hard, malleable material. Its popularity declined during the onslaught of more newer and interactive games. But this lack of popularity was brought back as nostalgia of old game grew into an extreme sense of wanting similar to that of Pokemon Go.

We feel we have included all the aspects of the original game coupled with our own touch that adds our sense of style and unique perspective. At the introduction of the digital age, the game was coded to be played on the computer and then on the tablets and phones respective, the latter being the most popular nowadays. In our game we have implemented <graphics.h> to create the design, layout, and the physical aspects of the game. Although we had not learned to use graphics, we were interested implementing our game in c++ so we learned to use the file. The functions in the file were extremely self-explanatory and aided us in creating the various parts of the game design. The color, shading, styles, and options were coded separately and had to be integrated to create the whole final program. Extreme meticulousness and attention to detail were used to create the game so that process was clean, smooth and neat.

FUNCTIONS USED

- ***coverpage();***

This function is used to display the title of the game in the more fashioned manner. User who enter the program will encounter this page first.

- ***mainmenu();***

It allows the user to access various parts of the program. For example to start game, instruction, about the game, access player details etc..

- ***submenu();***

Once player chooses single player mode, he enters this screen where it allows the player to select the various difficulty levels and start the game

- ***instruction();***

This function is used to display the instructions and rules to play the game

- ***displayabout();***

This function is used to display credits and various aspects of the game.

- ***gameplatform();***

This function is an important function which is invoked for the player to play the game and it deals with the whole working of the game

- ***drawborder();***

This function is used to display the background of the game platform,the score and other details.

- ***player1pad(int,int); and player2pad(int,int);***

This function is used to draw the playing pad for player1 and player 2 respectively accepting the y coordinates and the fillstyle type as the parameters.

- ***erasepad1(int); and erasepad2(int);***

This function is used to erase the pad by creating a pad in background colour. This function accepts the previous pad position as the parameter.

- ***createball(int,int);***

This function is used to create a ball at the current position accepting the x and y coordinates of the center of the ball to be created.

- ***eraseball(int,int);***

This function is used to erase the ball in the previous position by creating a ball in the previous position in background colour by accepting the x and y coordinates of the center of the ball to be erased

- ***updatel();***

This function is called when the player wants to update his or her details stored in the file. This function reads the id number of the player whose details is to be updated and checks whether any such player details is stored in the file. If yes it calls memberfunction update() using object p(it refers to the player who is found in the file), else it displays appropriate error messages.

- ***playerpage();***

This function is used to display a menu which allows the user to create an account, change his or her details view his details with score card and view leaderboard.

- ***checkstart();***

This function is called when the player chooses single player mode. This function asks whether the player has an account or not. If yes it accepts the id number and check whether any such player exist if yes it calls submenu function, else it will direct the player to sign up page.

- ***checkplayer();***

This function is called when the player wants to view his her details. This function reads the id of the player whose dtails is to be displayed and checks whether any such player exist or not. If yes it calls member function displays using the object of found player in the file. Else it shows appropriate error messages

- ***updatebard(player);***

In single player mode once the player finishes the game and his score is updated in the file this function is called to place the player in the leader board based upon his topscore in hi record.

- ***disp_data();***

This function is called when the player wants to see the leaderboard. This function access the leader.dat file and displays the details of first 10 records stored in the file. For this the function calls the member function displayl(int ,int) using object of type player by passing the x and y coordinates of the point where the line is to be displayed as the parameters.

MEMBER FUNCTIONS OF THE CLASS PLAYER:-

- ***addscore(int);***

This function is called when the player finishes the game(only in single player mode). It accepts the score secured by the player as the parameter and adds it to the player recored stored in the file. The function employs the methodology of insertion sort to sort the scores in the score card.

- ***getdata();***

This function is called when the player wants to create an account. This function accepts the name, age and gender of the player and generates an unique player id for the player ensuring that no two players in the record has the same player id.

- ***display();***

This function is called by the check player function after checking the existence of the player's record in the file. It displays the player id , player's name, player's age, player' gender and the score card of the player.

- ***update();***

This function reads the player id whose details is to be updated. The function allows the user to update his or her details in the record after checking for the existence of such record in the file.

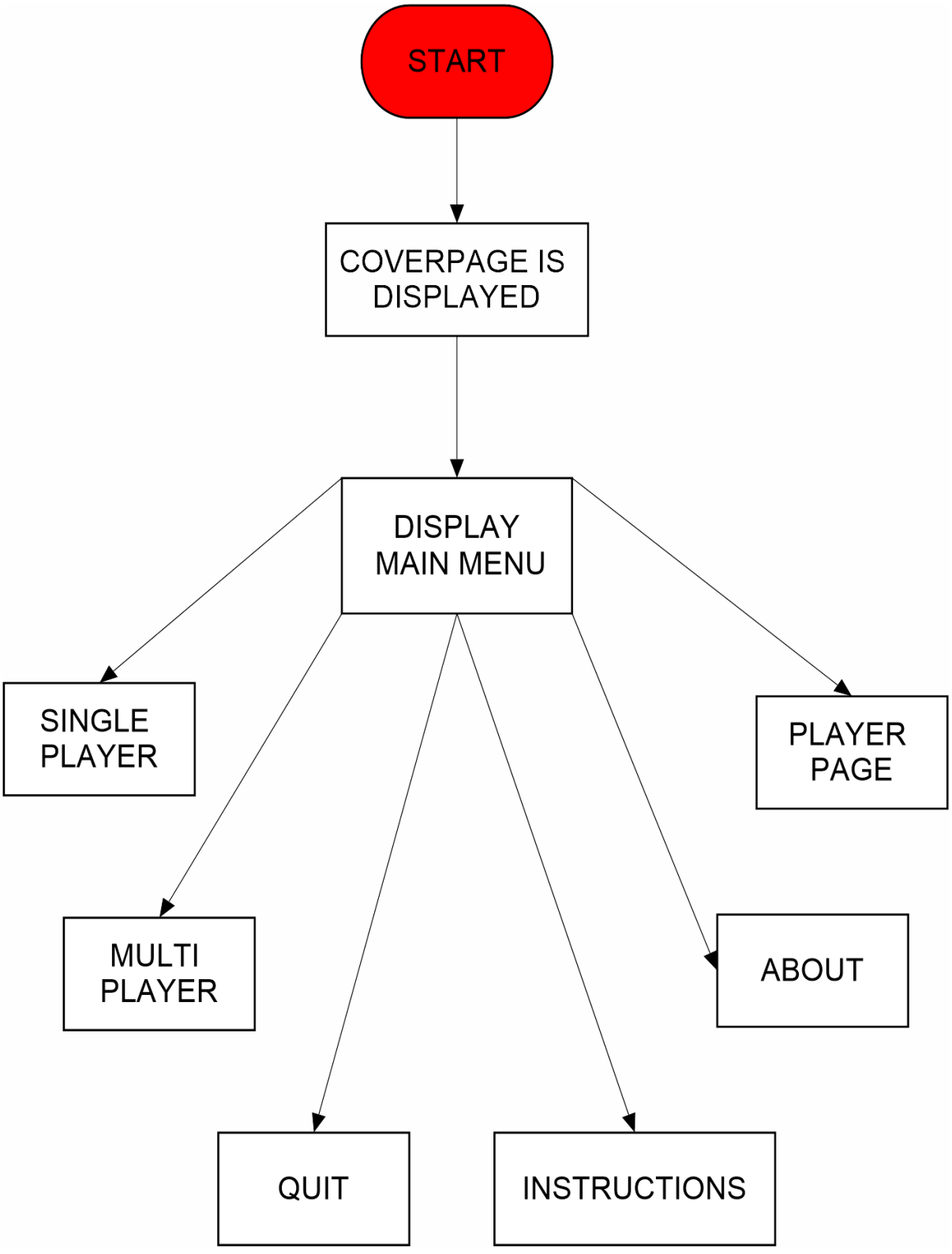
- ***ret();***

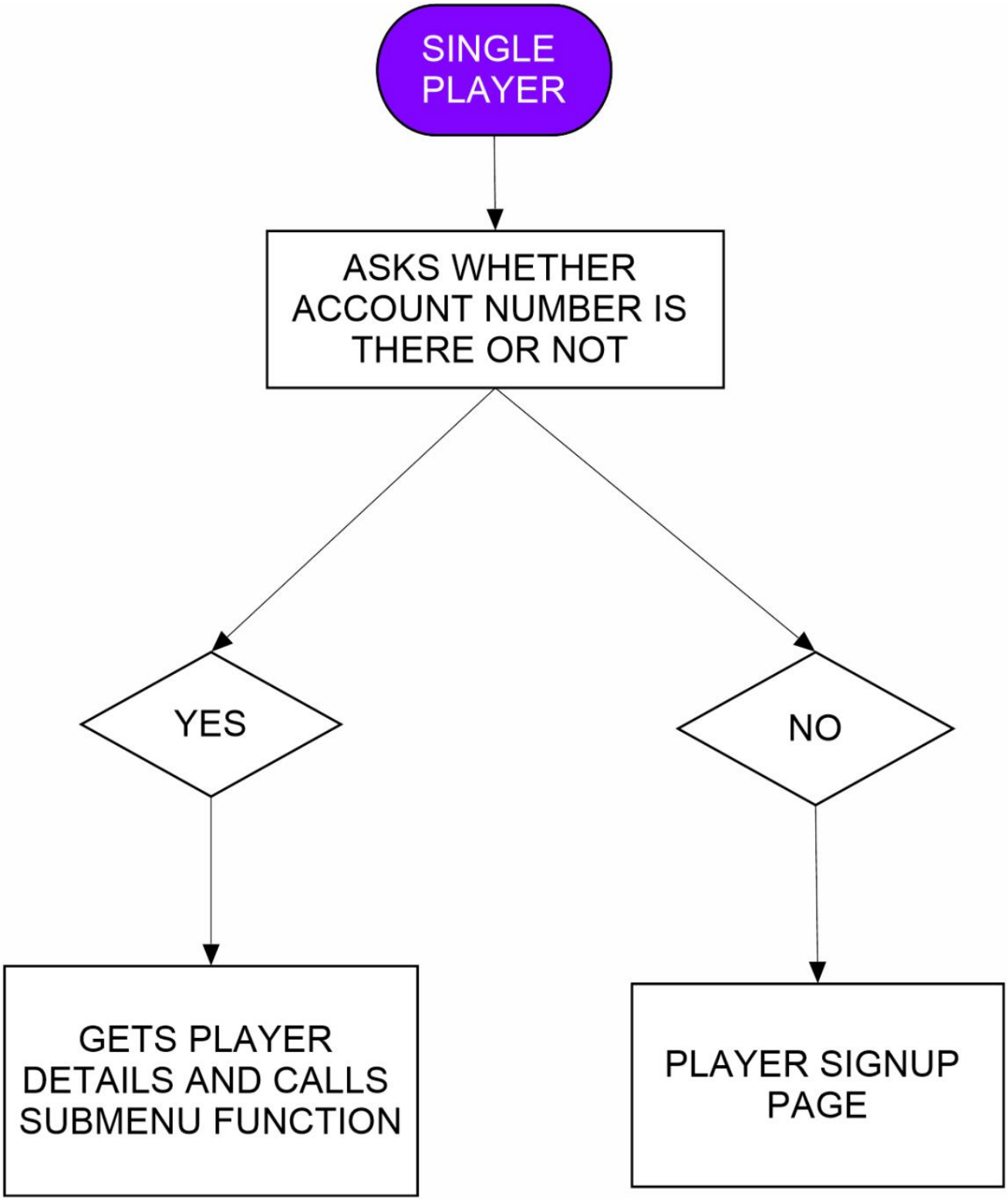
This function returns the player id of the player with which the object is called with.

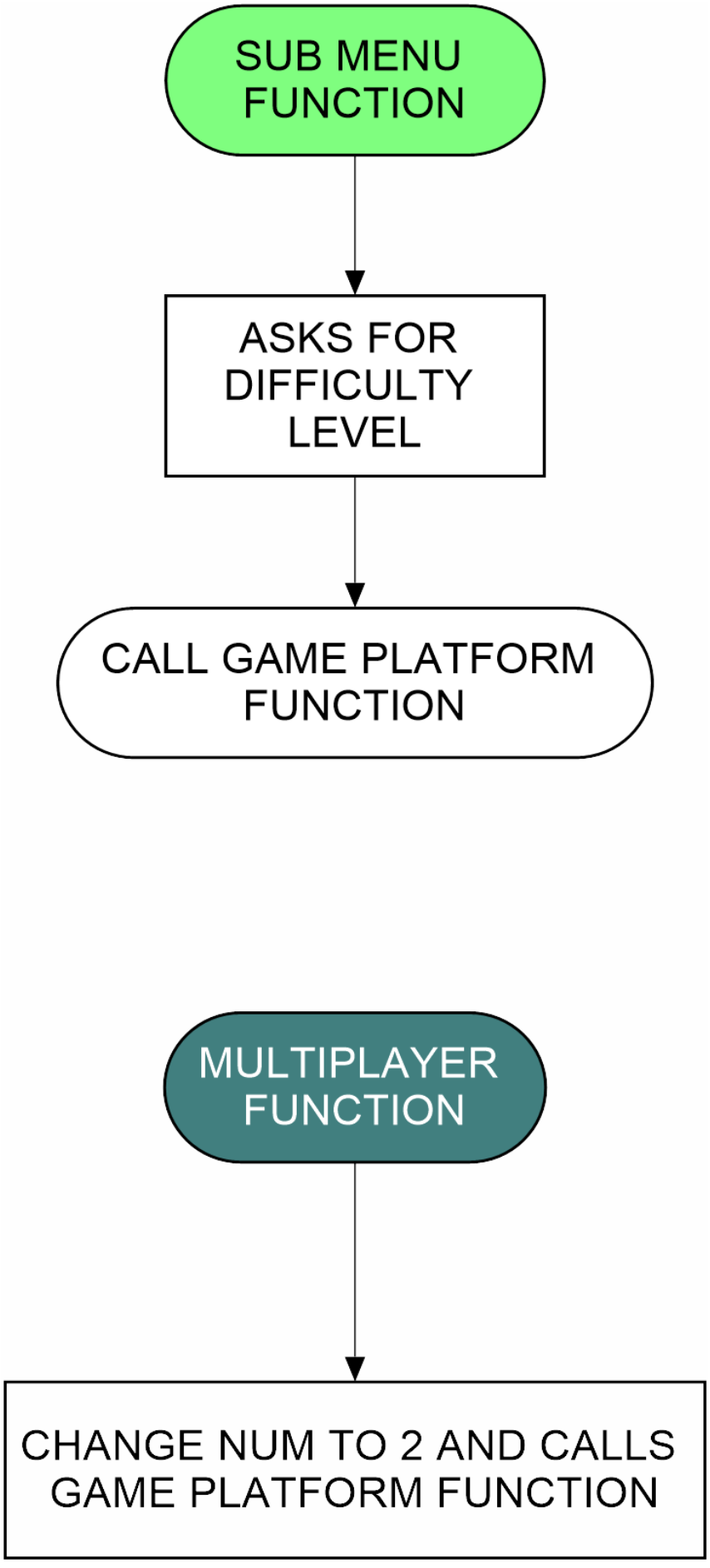
- ***rettopscore();***

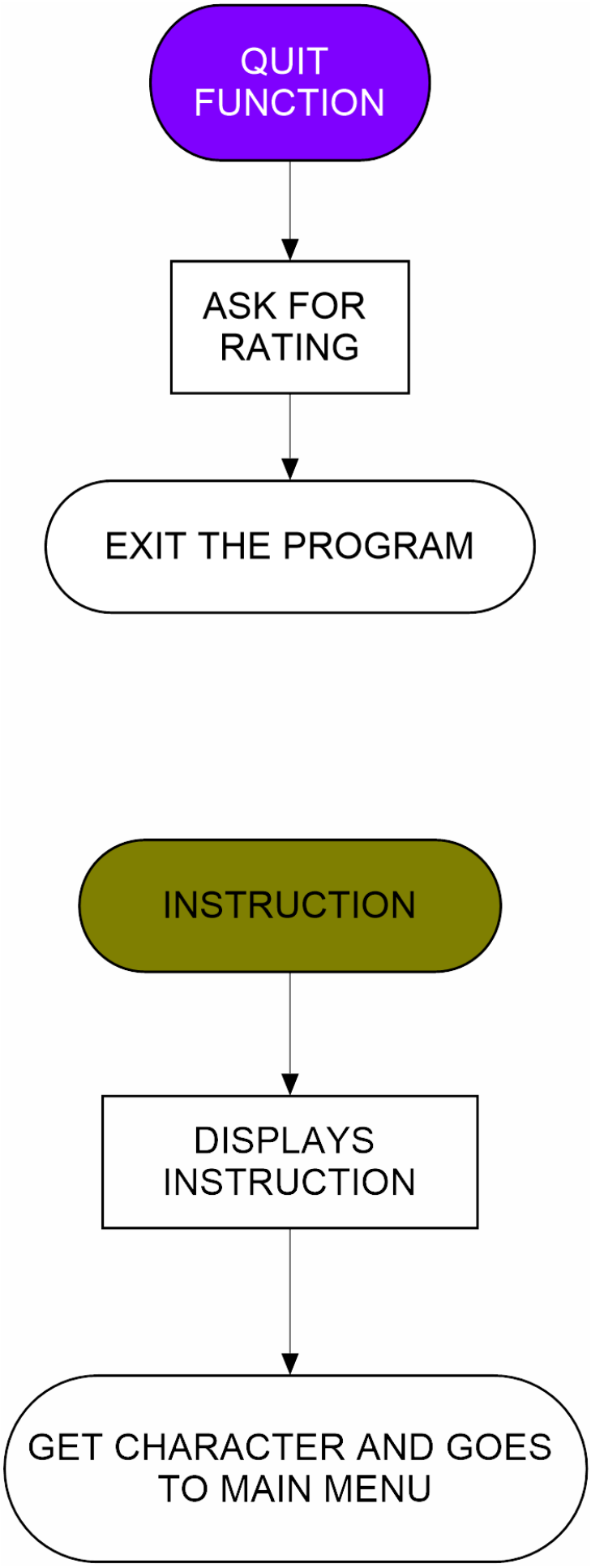
This function returns the element in the zeroth position if the array is not empty else it returns 0.

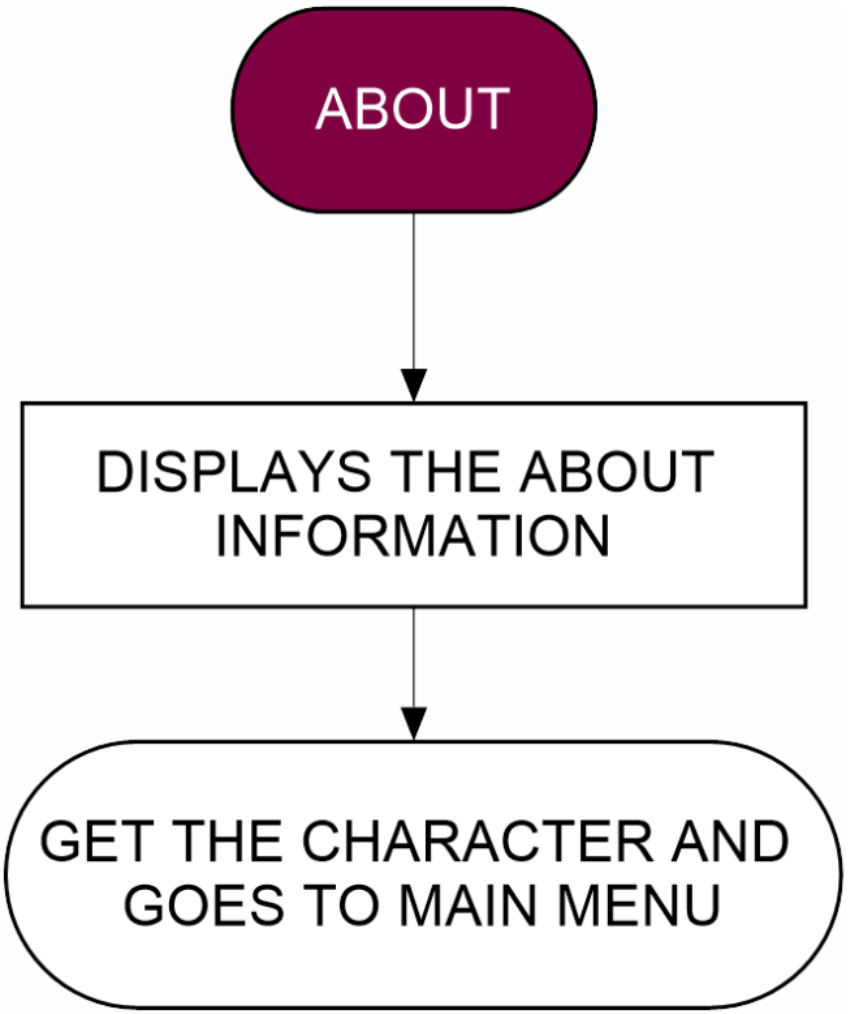
FLOW OF CONTROL

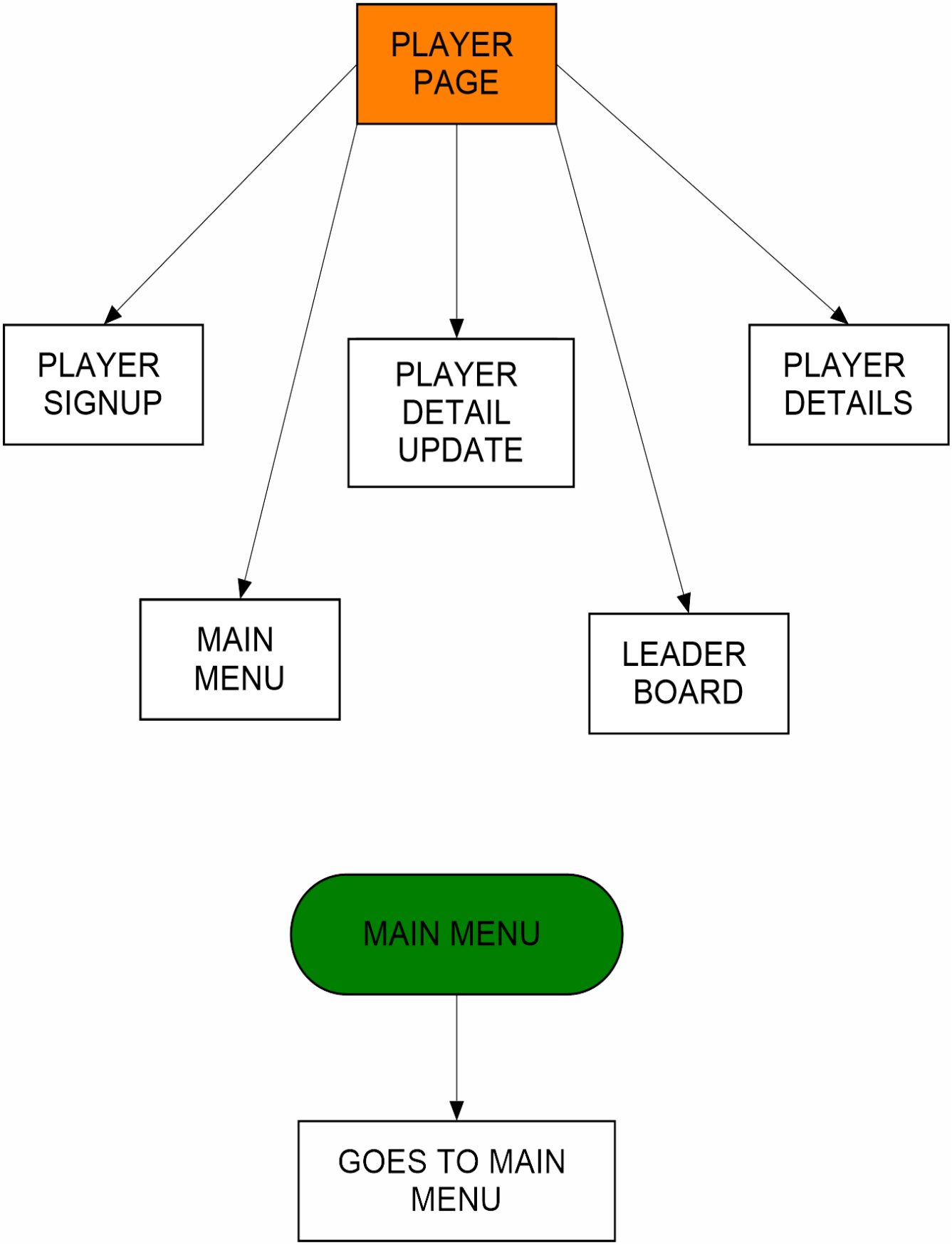


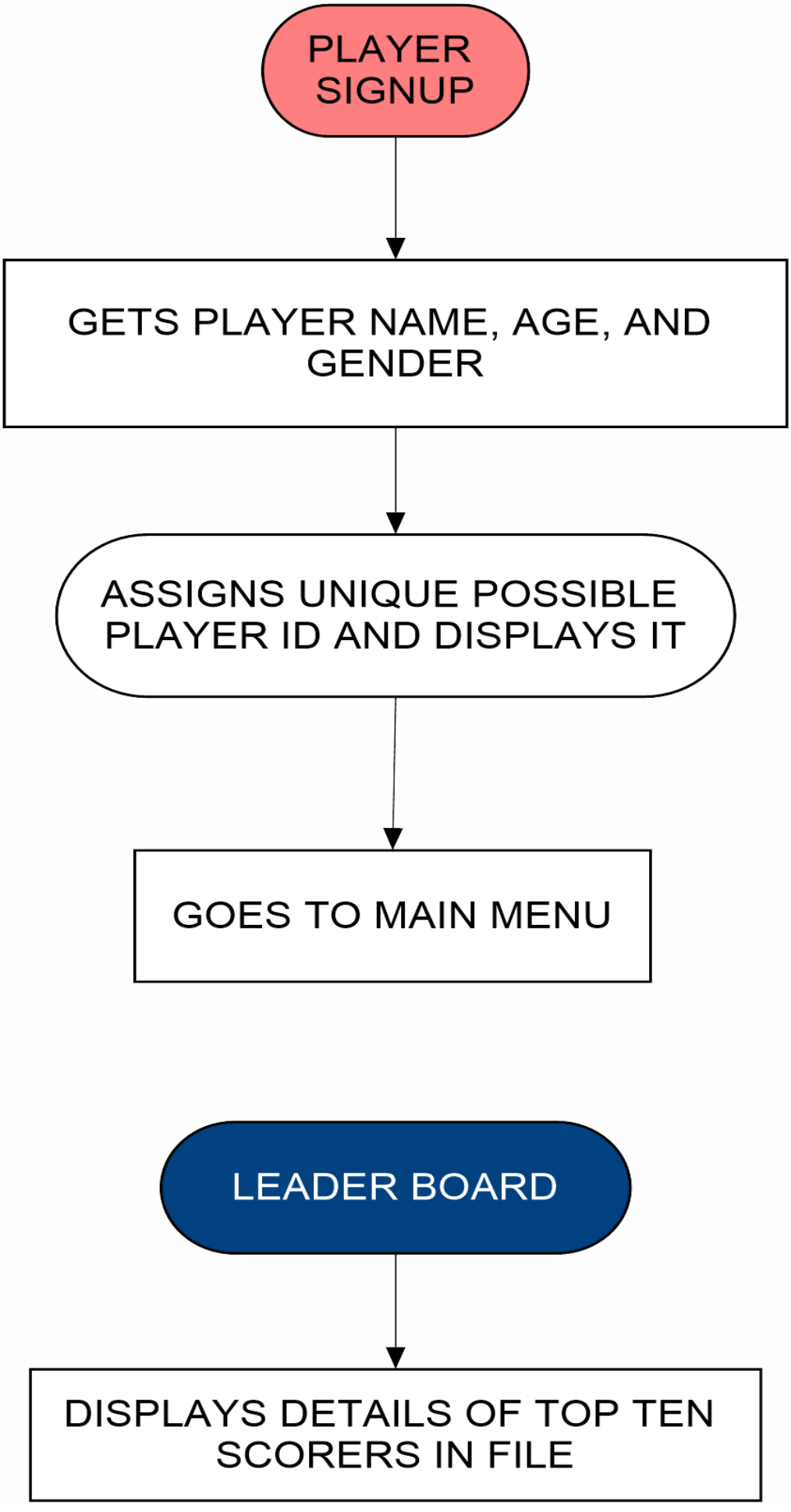

SINGLE PLAYER
ASKS WHETHER ACCOUNT NUMBER IS THERE OR NOT
YES
NO
GETS PLAYER DETAILS AND CALLS SUBMENU FUNCTION
PLAYER SIGNUP PAGE

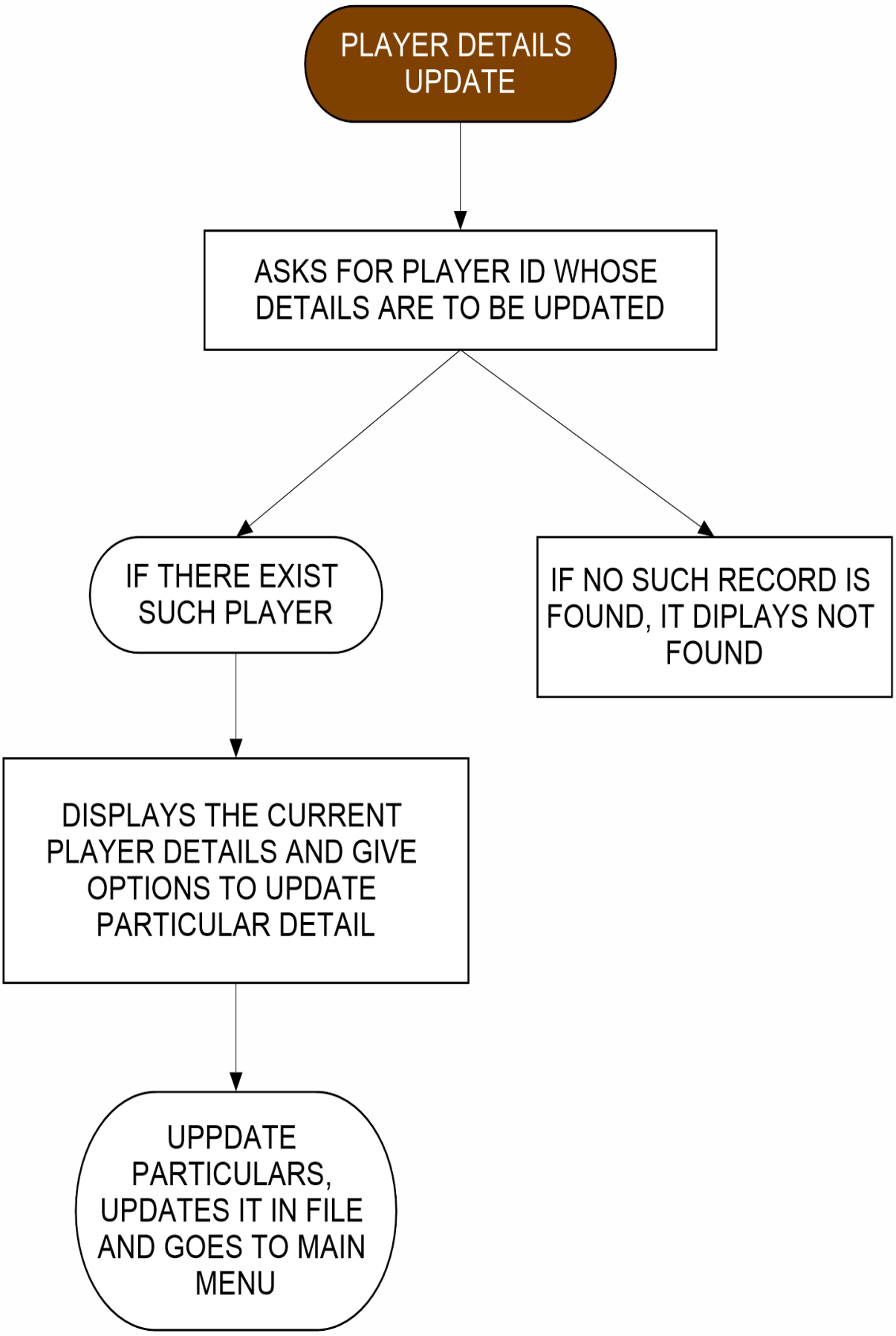

SUB MENU FUNCTION
ASKS FOR DIFFICULTY LEVEL
CALL GAME PLATFORM FUNCTION
MULTIPLAYER FUNCTION
CHANGE NUM TO 2 AND CALLS GAME PLATFORM FUNCTION

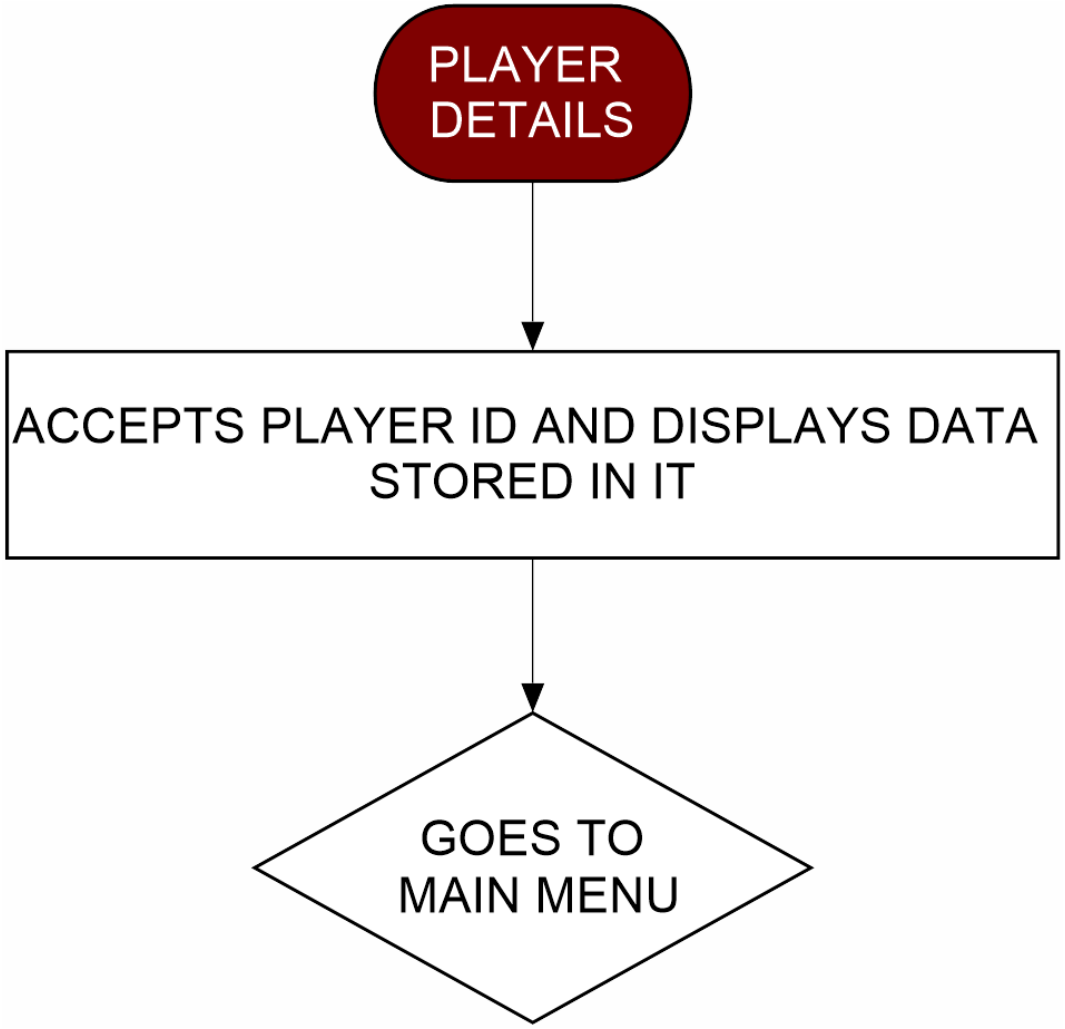

QUIT FUNCTION
ASK FOR RATING
EXIT THE PROGRAM
INSTRUCTION
DISPLAYS INSTRUCTION
GET CHARACTER AND GOES TO MAIN MENU

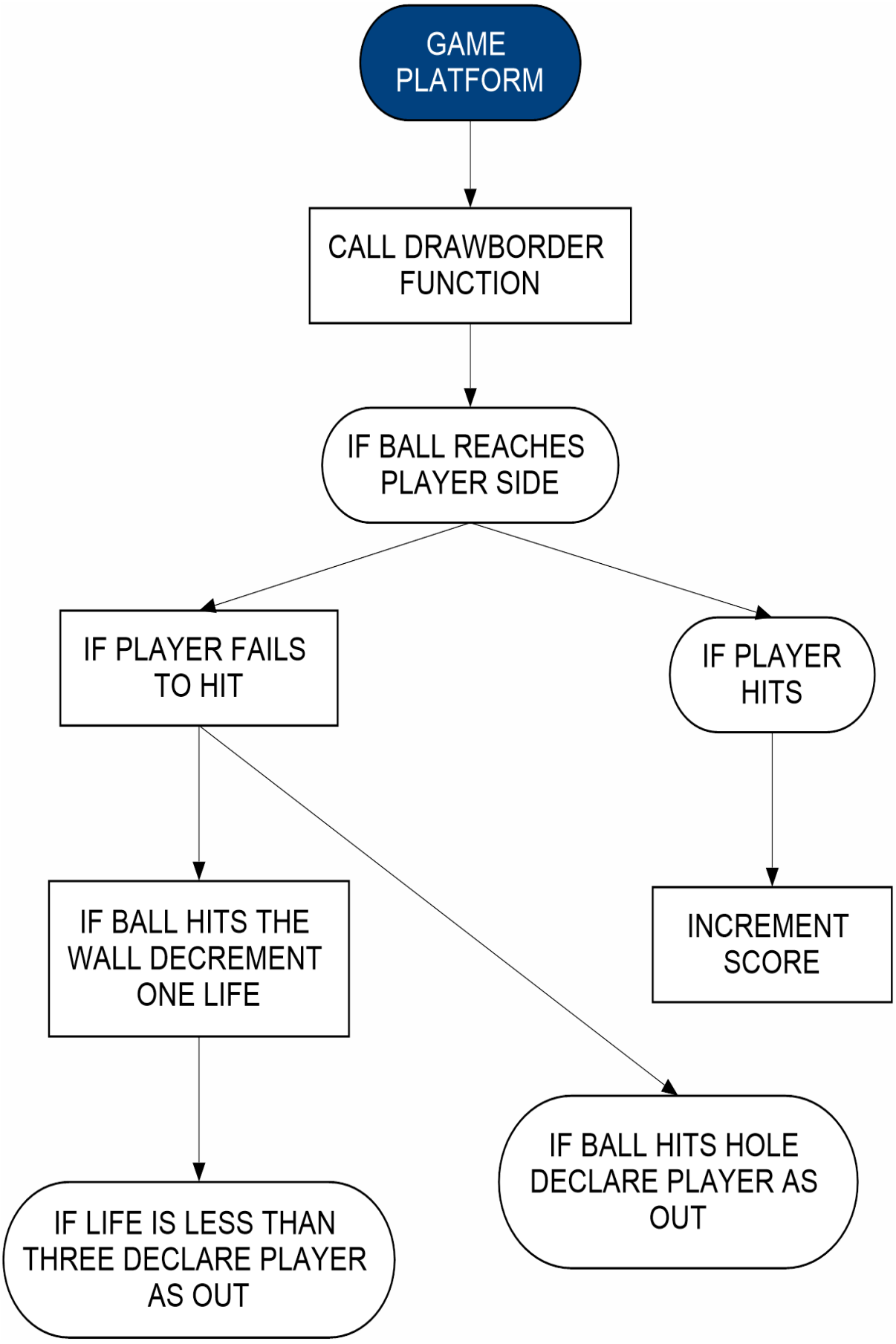

ABOUT
DISPLAYS THE ABOUT INFORMATION
GET THE CHARACTER AND GOES TO MAIN MENU

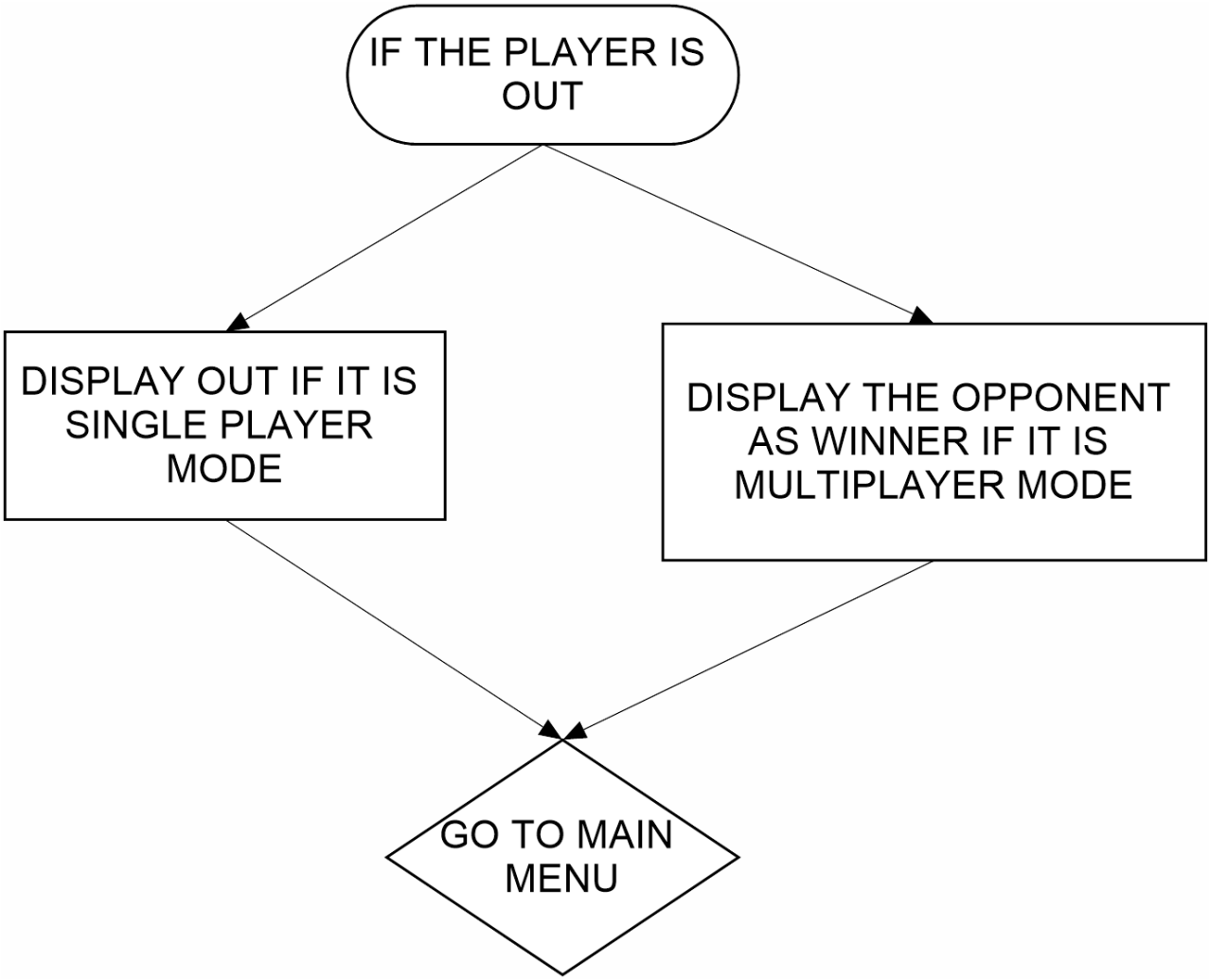

PLAYER PAGE
PLAYER SIGNUP
PLAYER DETAIL UPDATE
PLAYER DETAILS
MAIN MENU
LEADER BOARD
MAIN MENU
GOES TO MAIN MENU


PLAYER SIGNUP
GETS PLAYER NAME, AGE, AND GENDER
ASSIGNS UNIQUE POSSIBLE PLAYER ID AND DISPLAYS IT
GOES TO MAIN MENU
LEADER BOARD
DISPLAYS DETAILS OF TOP TEN SCORERS IN FILE

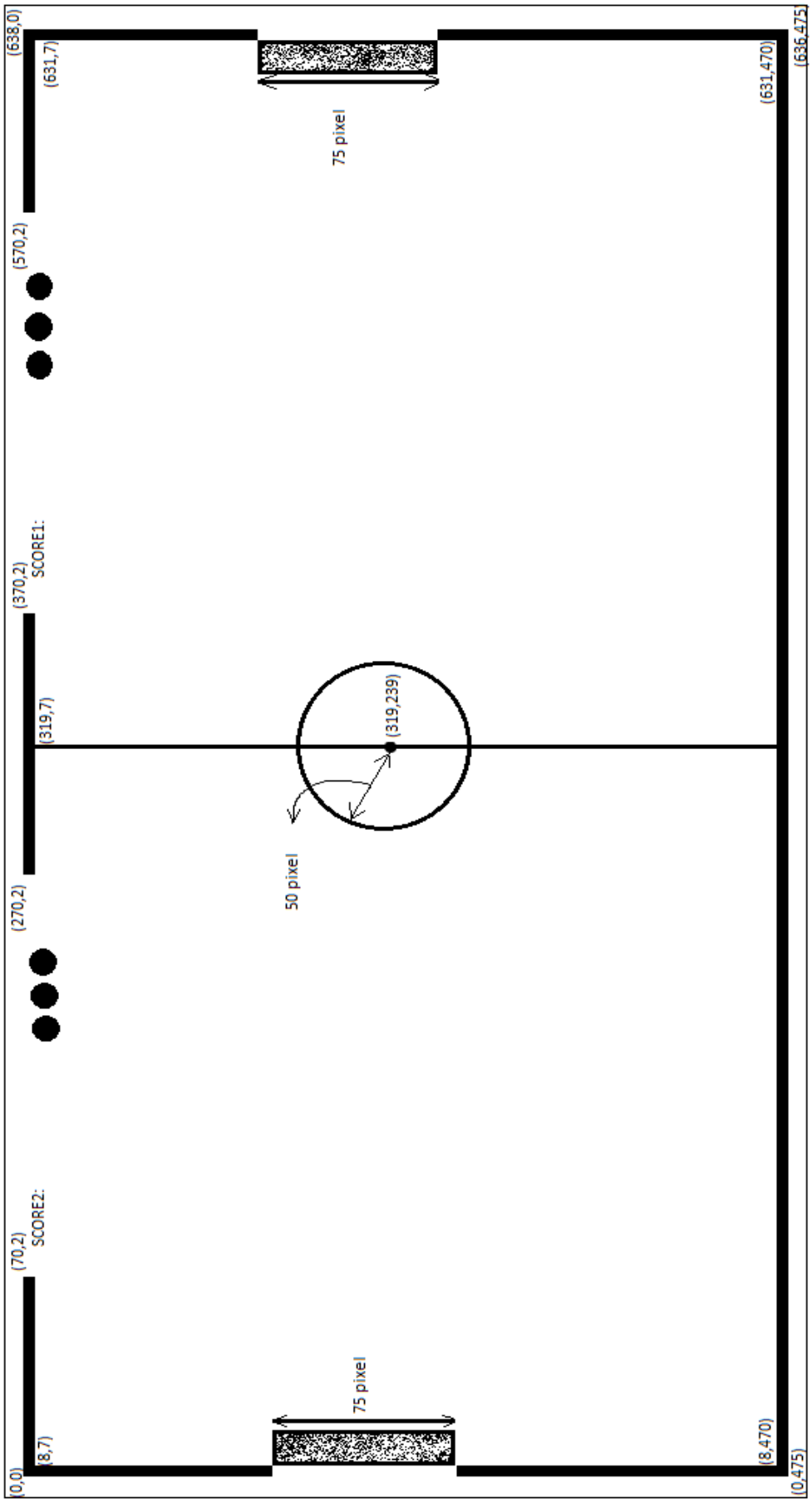

PLAYER DETAILS UPDATE
ASKS FOR PLAYER ID WHOSE DETAILS ARE TO BE UPDATED
IF THERE EXIST SUCH PLAYER
IF NO SUCH RECORD IS FOUND, IT DIPLAYS NOT FOUND
DISPLAYS THE CURRENT PLAYER DETAILS AND GIVE OPTIONS TO UPDATE PARTICULAR DETAIL
UPPDATE PARTICULARS, UPDATES IT IN FILE AND GOES TO MAIN MENU


PLAYER DETAILS
ACCEPTS PLAYER ID AND DISPLAYS DATA STORED IN IT
GOES TO MAIN MENU


GAME PLATFORM
CALL DRAWBORDER FUNCTION
IF BALL REACHES PLAYER SIDE
IF PLAYER FAILS TO HIT
IF PLAYER HITS
IF BALL HITS THE WALL DECREMENT ONE LIFE
INCREMENT SCORE
IF BALL HITS HOLE DECLARE PLAYER AS OUT
IF LIFE IS LESS THAN THREE DECLARE PLAYER AS OUT


IF THE PLAYER IS OUT
DISPLAY OUT IF IT IS SINGLE PLAYER MODE
DISPLAY THE OPPONENT AS WINNER IF IT IS MULTIPLAYER MODE
GO TO MAIN MENU

GAME SETUP LAYOUT WITH COORDINATES



SOURCE CODE

AIR HOCKEY: THE GAME

```
/*=========================================================*/
/*                      HEADER FILES                       */
/*=========================================================*/
#include<fstream.h>
#include<graphics.h>
#include<process.h>
#include<stdlib.h>
#include<string.h>
#include<stdio.h>
#include<conio.h>
#include<dos.h>
#include<math.h>
#include<ctype.h>

/*=========================================================*/
/*                      ENUMERATION                        */
/*=========================================================*/
enumlvl
        {
          unbeatable=1,
          veryhard,
          hard,
          normal,
          easy,
          veryeasy
          };
```

```
/*============================================================*/
/*                        CLASS DEFINITION                    */
/*============================================================*/
class player
{
int s[20],top;
int topscore;
intp_id;
char p_name[20];
int p_age;
char p_gender;
public:
player()
        {
        top=-1;
        }
void addscore(int);
void getdata();
void display();
void displayl(int,int);
void update();
int ret() { return p_id; }
int rettopscore();
}p;


/*============================================================*/
/*                        GLOBAL VARIABLES                    */
/*============================================================*/
int level=6,arrow=1,num,point1=0,point2=0,dir=2,life1=3,life2=3;
intxb,yb,s=3,dy=0;
```

```
/*============================================================*/
/*                    USER DEFINED FUNCTIONS                  */
/*============================================================*/
void coverpage();
void displayabout();
void instruction();
void mainmenu();
void submenu();
void gameplatform();
void drawborder();
void creatball(int,int);
void eraseball(int,int);
void player1pad(int,int);
void player2pad(int,int);
void erasepad1(int);
void erasepad2(int);
void quitscreen();
void update1();
void playerspage();
void checkplayer();
void checkstart();
void updateboard(player);
void disp_data();
```

```
/*============================================================*/
/*                    MEMBER FUNCTION DEFINITIONS             */
/*============================================================*/

int player::rettopscore()
 {
if(top==-1)
        return 0;
else
        return s[0];
  }
void player::getdata()
 {
int k;
gotoxy(30,3);
cout<<"²²²+++°°° Player sign up °°°+++²²²";
gotoxy(20,7);
cout<<"Enter the player name: ";
gets(p_name);
gotoxy(20,9);
cout<<"Enter age: ";
cin>>p_age;
gotoxy(20,11);
cout<<"Enter gender (M/F): ";
cin>>p_gender;
ifstream f("pdetail.dat",ios::binary);
        f.seekg(0,ios::end);
        int l=f.tellg();
        if(l==0)
          {
            k=1000;
          }
```

```
        else
 {
        int flag=1;
        player play;
        while(1)
{
        flag=1;
        f.seekg(0);
        f.clear();
           k=random(9000)+1000;
        while(f)
           {
                f.read((char*)&play,sizeof(player));
                if(k==play.ret())
                flag=0;
           }
        if(flag==1)
          {
        p_id=k;
        break;
          }
}
}
p_id=k;
f.close();
gotoxy(10,13);
cout<<"Congratulations your id number has been generated....";
cout<<"\n         Your id number is :"<<p_id;
cout<<"\n              press any key to go to main menu.....;)";
ofstream f2("pdetail.dat",ios::app|ios::binary);
                        f2.write((char*)&p,sizeof(player));
                        f2.close();
                        getch();
```

```
                    mainmenu();

  }


void player::display()
{
int driver=DETECT,mode;
initgraph(&driver,&mode,"..\\bgi");
settextstyle(3,0,5); setcolor(13);
outtextxy(150,50,"PLAYER DETAILS");
settextstyle(1,0,2);
setcolor(2);
outtextxy(75,150,"Player ID : ");
char A[20];
sprintf(A,"%d",p_id);
outtextxy(200,150,A);
outtextxy(75,200,"Player name : ");
outtextxy(270,200,p_name);
outtextxy(75,250,"Player gender : ");
if(p_gender=='m' || p_gender=='M')
        sprintf(A,"Male");
else
        sprintf(A,"Female");
outtextxy(290,250,A);
outtextxy(75,300,"Player age : ");
sprintf(A,"%d",p_age);
outtextxy(250,300,A);
settextstyle(3,0,3);
setcolor(12);
outtextxy(440,120,"SCORE CARD");
settextstyle(3,0,2);
setcolor(2);
```

```
for(int i=0;i<=top;i++)
  {
        sprintf(A,"Score %d : %d",(i+1),s[i]);
        outtextxy(450,(150+(i*20)),A);
 }
settextstyle(1,0,3);
setcolor(14);
outtextxy(100,350,"Press any key to gotomainmenu....;)");
getch();
mainmenu();
}


void player::displayl(inta,int b)
{
char A[100];
sprintf(A,"%d",p_id);
outtextxy(a-10,b,A);
sprintf(A,"%s",p_name);
outtextxy(a+75,b,A);
sprintf(A,"%c",p_gender);
outtextxy(a+250,b,A);
sprintf(A,"%d",p_age);
outtextxy(a+385,b,A);
sprintf(A,"%d",s[0]);
outtextxy(a+530,b,A);
  }



void player::update()
{
intch;
```

```
gotoxy(10,10);
cout<<"The folowing are the player details:-\n";
cout<<"          1.Player name  : "<<p_name<<"\n";
cout<<"          2.Player id    : "<<p_id<<"\n";
cout<<"          3.Player age   : "<<p_age<<"\n";
cout<<"          4.Player gender: "<<p_gender<<"\n";
gotoxy(5,17);
cout<<"What do you want to change :";
cin>>ch;
char name[20];
int n;
switch(ch)
   {
        case 1:
        cout<<"\nEnter the new name :";
        gets(name);
        strcpy(p_name,name);
        break;
        case 2:
        cout<<"\nSorry you cannot change your id.";
        break;
        case 3:
        cout<<"\nEnter new age :";
        cin>>n;
        p_age=n;
        break;
        case 4:
        char g;
        cout<<"\nEnter the gender :";
        cin>>g;
        p_gender=g;
        break;
        default:
```

```
        cout<<"Sorry invalid choice...";
        }
        _setcursortype(_NOCURSOR);
if(ch>=1&&ch<=4&&ch!=2)
   {
        player d;
        ofstream f2("edit.dat",ios::binary);
        ifstream f1("pdetail.dat",ios::binary);
        while(f1&&f2)
         {
        f1.read((char*)&d,sizeof(player));
        if(f1&&d.ret()!=p_id)
        f2.write((char*)&d,sizeof(player));
        else if(f1)
        f2.write((char*)&p,sizeof(player));
        }
        f2.close();
        f1.close();
        int re=remove("pdetail.dat"); if(!re){
        rename("edit.dat","pdetail.dat");}

        cout<<"The player details are successfully updated.";
        }
cout<<"\nPress any key to goto main menu.";
getch();
mainmenu();
  }
void player::addscore(int a)
{
Inti,j,pos=0,flag=0,temp;
s[++top]=a;
for(i=1;i<=top;i++)
{
```

```
temp=s[i];
        j=i-1;
        while(j>=0 && s[j]<temp)
        {
        s[j+1]=s[j];
        j--;
        }
        s[j+1]=temp;
  }

ifstream f("pdetail.dat",ios::binary);
ofstream f1("pnew.dat",ios::binary);
player c;
while(f1&&f)
  {
f.read((char*)&c,sizeof(player));
if(f&&c.ret()!=p.ret())
        f1.write((char*)&c,sizeof(player));
else if(f)
        f1.write((char*)&p,sizeof(player));
  }
f.close();
f1.close();
int k=remove("pdetail.dat");
if(!k)
rename("pnew.dat","pdetail.dat");
}
```

```
/*============================================================*/
/*                    USER DEFINED FUNCTIONS DEFINITION       */
/*============================================================*/

voidcoverpage()
{
int driver=DETECT,mode;
initgraph(&driver,&mode,"..\\bgi");
outtextxy(50,130,"  Press any key to continue...");
settextstyle(3,0,9); setcolor(12);
outtextxy(65,140,"AIR HOCKEY");
settextstyle(4,0,3); setcolor(10);
outtextxy(250,240,"The Game " ); gotoxy(28,25);
settextstyle(1,0,3); setcolor(9);
outtextxy(120,330,"By sidharth, praveen and rahul");

getch();
closegraph();
}




voidmainmenu()
{
int driver=DETECT,mode;
initgraph(&driver,&mode,"..\\bgi");
charch;
while(1)
{
settextstyle(4,0,6);setcolor(3);
outtextxy(20,40,"The Game: AIR HOCKEY");
settextstyle(1,0,2);setcolor(9);
```

```
outtextxy(5,140,"To change options press arrow keys and to select press
enter");
settextstyle(3,0,3);
setcolor(14);
        if(arrow==1) outtextxy(100,180,"-->");
        if(arrow==2) outtextxy(150,220,"-->");
        if(arrow==3) outtextxy(200,260,"-->");
        if(arrow==4) outtextxy(240,300,"-->");
        if(arrow==5) outtextxy(290,340,"-->");
if(arrow==6) outtextxy(340,380,"-->");
setcolor(6);
outtextxy(150,180,"Single Player");
setcolor(12);
outtextxy(200,220,"Multi player");
setcolor(4);
outtextxy(250,260,"Quit");
setcolor(9);
outtextxy(290,300,"Instruction");
setcolor(13);
outtextxy(340,340,"About");
setcolor(7);
outtextxy(390,380,"Player Page");
                {
                ch=getch();
                if(ch==13)
                {
                if(arrow==1) ch='s';
                if(arrow==2) ch='m';
                if(arrow==3) ch='q';
                if(arrow==4) ch='i';
                if(arrow==5) ch='a';
                if(arrow==6) ch='h';
                }
```

```
if(ch=='q')
        {  cleardevice();
        closegraph();
        quitscreen();
        delay(1000); exit(0);
         }
if(ch=='s')
         {
        num=1;
        cleardevice();
        closegraph();
        checkstart();
        break;
         }
if(ch=='m') {num=2; cleardevice();closegraph(); break; }
if(ch=='a')
 {
        cleardevice();
        displayabout();
        getch();
        cleardevice();
 }
if(ch=='i')
 {
cleardevice();
instruction();
cleardevice();
  }
if(ch=='h')
 {
cleardevice();
closegraph();
playerpage();
```

```
            }
          if(ch==80)
            {
          arrow++;
          if(arrow>6)
          arrow=1;
            }
          if(ch==72)
          {
arrow--;
          if(arrow<=0)
          arrow=6;
            }
          cleardevice();
          }
  }
}

void submenu()
{
intgdrive=DETECT,gmode;
initgraph(&gdrive,&gmode,"..\\bgi");
   _setcursortype(_NOCURSOR);
chardif[12],ch;
strcpy(dif,"Easy");
int arrow=1;
while(1)
{
setbkcolor(0);
settextstyle(3,0,4);
setcolor(5);
outtextxy(100,100,"Let's Start Playing! #GameIn C++");
settextstyle(1,0,2);
```

```
setcolor(14);
if(arrow==1) outtextxy(220,140,"-->");
if(arrow==2) outtextxy(200,184,"-->");
setcolor(9);
outtextxy(270,140,"Start game"); setcolor(3);
outtextxy(250,184,"Difficulty:");
setcolor(14); gotoxy(45,13);cout<<dif;
if(kbhit())
  {
        ch=getch();
        if(ch==13)
         {
        if(arrow==1) ch='s';
        if(arrow==2) ch='d';}
        if(ch=='d') { level--; if(level==0) level=6;  }
        if(ch=='s')
         {
        cleardevice();
        closegraph();
        gameplatform();
        break;
}
        if(level==veryeasy) {strcpy(dif,"Very Easy"); s=1;dy=3;}
        if(level==easy) {strcpy(dif,"Easy");s=1;dy=3;}
        if(level==normal) {strcpy(dif,"Normal");s=2;dy=2;}
        if(level==hard) {strcpy(dif,"Hard");s=2;dy=2;}
        if(level==veryhard) {strcpy(dif,"Very Hard");s=3;dy=1;}
        if(level==unbeatable) {strcpy(dif,"Unbeatable");s=3;dy=1;}
        if(ch==80)
{
        arrow++;
        if(arrow>2) arrow=1;
}
```

```
        if(ch==72)
        {
arrow--;
        if(arrow<1) arrow=2;
}
        cleardevice();
  }
  }
}
voiddisplayabout()
{
setcolor(5);
settextstyle(1,0,4);
outtextxy(200,100,"ABOUT THE GAME");
setcolor(12);
settextstyle(1,0,1);
outtextxy(20,150,"Welcome to the world of air hockey. Unlike other usual
hockey games");
outtextxy(20,175,"the speciality of this game is that the disc which is usually
used");
outtextxy(20,200,"the speciality of this game is that the disc which is usually
used");
outtextxy(20,225,"play the game is not here. This wonderful game would be
helpful");
outtextxy(20,250,"for one to pass time and forget loneliness. ");
outtextxy(20,275,"Got excited!!!!!! No more reading.... Enjoy the game;)");
settextstyle(3,0,2);
setcolor(4);
outtextxy(100,370,"Press any key to go to menu....:)");
 }
void instruction()
 {
setcolor(2);
```

```
settextstyle(4,0,6);
outtextxy(170,10,"Instruction");
settextstyle(1,0,2);
setcolor(9);
outtextxy(10,100,"Hi player(s), the rules of the game are simple and easy.");
outtextxy(10,125,"All that you need to do is act as role of goal keeper.");
outtextxy(10,150,"That is to stop the puck from going to the other side.");
outtextxy(10,175,"If it goes into your goal, your opponent will gain a point.");
setcolor(11);
outtextxy(10,200,"The moves are as follow:-");
setcolor(15);
line(110,227,535,227);
line(325,227,325,312);
line(110,255,535,255);
line(110,227,110,312);
line(535,227,535,312);
line(110,312,535,312);
setcolor(10);
outtextxy(120,230,"Player-1(RHS)");
setcolor(14);
outtextxy(360,230,"Player-2(LHS)");
setcolor(10);
outtextxy(115,255,"Up = up arrow");
outtextxy(115,280,"Down = down arrow");
setcolor(14);
outtextxy(360,255,"Up = W (or) w");
outtextxy(360,280,"Down = S (or) s");
setcolor(9);
outtextxy(0,310,"If the mode is single player, then you're Player 1.");
setcolor(14);
outtextxy(0,330,"(NOTE:In any one of the above modes, if a player fails to hit");
outtextxy(0,350,"the ball his/her life will be decremented by one unit. If");
outtextxy(0,370,"the player loses all the lives he is declared as out.");
```

```
setcolor(13);
outtextxy(10,400,"  Enjoy gaming.... press any key to go to menu....");
getch();
}




void update1()
{
clrscr();
intcheck,flag=0;
gotoxy(25,5);
cout<<"²²²±±±°°° Player updation °°°±±±²²²";
gotoxy(10,8);
cout<<"Enter your player id: ";
cin>>check;
ifstream f("pdetail.dat",ios::binary);
        while(f)
        {
        f.read((char*)&p,sizeof(player));
        if(f&&p.ret()==check)
         {
        flag=1;
        break;
         }
         }
f.close();
if(!flag)
  {
        gotoxy(30,10);
        cout<<"Sorry, no such player record is stored....";
        cout<<"\n                press any key to goto main menu....";
```

```
        getch();
        clrscr();
        mainmenu();
  }
else
p.update();
}
voidupdateboard(player k)
{
fstream f("leader.dat",ios::in|ios::out|ios::binary|ios::app);
player t;
int flag=0;
ofstream f1("nlead.dat",ios::binary);
while(f)
  {
        f.read((char*)&t,sizeof(player));
        if(f)
          {
                if(f&&t.rettopscore()<=k.rettopscore()&&!flag&&k.ret()!=t.ret())
                        {
                        flag=1;
                        f1.write((char*)&p,sizeof(player));
                        f1.write((char*)&t,sizeof(player));
                        }
        else if(k.ret()!=t.ret())
                        f1.write((char*)&t,sizeof(player));
          }
  }
if(flag==0)
  {
        f1.write((char*)&p,sizeof(player));
   }
```

```
f.close();
f1.close();
int test=remove("leader.dat");
if(test==0)
rename("nlead.dat","leader.dat");
}
voiddisp_data()
{
intgdrive=DETECT,gmode;
initgraph(&gdrive,&gmode,"..\\bgi");
cleardevice();
settextstyle(4,0,6);
setcolor(4);
outtextxy(100,70,"LEADER BOARD");
ifstream f("leader.dat",ios::binary);
player r;
int i=0;
setcolor(14);
settextstyle(3,0,2);
outtextxy(70,150,"ID");
outtextxy(140,150,"NAME");
outtextxy(280,150,"GENDER");
outtextxy(440,150,"AGE");
outtextxy(560,150,"SCORE");
while(f)
  {
        setcolor(i+3);
        f.read((char*)&r,sizeof(player));
        if(f)
        r.displayl(60,(180+(i*30)));
i++;
 }
f.close();
```

```
getch();
closegraph();
mainmenu();
}
voidcheckplayer()
{
clrscr();
intcheck,flag=0;
gotoxy(25,5);
player l;
cout<<"²²²±±±°°° Player details °°°±±±²²²";
gotoxy(10,8);
cout<<"Enter your player id: ";
cin>>check;
ifstream f("pdetail.dat",ios::binary);
        while(f)
        {
        f.read((char*)&l,sizeof(player));
        if(f&&l.ret()==check)
         {
        flag=1;
        break;
         }
         }
f.close();
if(!flag)
  {
        gotoxy(30,10);
        cout<<"Sorry, no such player record is stored....";
        cout<<"\n                press any key to goto main menu....";
        getch();
        clrscr();
        mainmenu();
```

```
  }
else
l.display();
 }
voidplayerpage()
{
int driver=DETECT,mode;
charch;
initgraph(&driver,&mode,"..\\bgi");
cleardevice();
int arrow1=1;
while(1)
{
settextstyle(1,0,5);setcolor(13);
outtextxy(20,40,"Players Page");
settextstyle(3,0,3);
setcolor(14);
if(arrow1==1) outtextxy(100,180,"-->");
if(arrow1==2) outtextxy(150,230,"-->");
if(arrow1==3) outtextxy(200,280,"-->");
if(arrow1==4) outtextxy(250,330,"-->");
if(arrow1==5) outtextxy(300,380,"-->");
setcolor(6);
outtextxy(150,180,"Player signup");
setcolor(12);
outtextxy(200,230,"Player details update");
setcolor(10);
outtextxy(250,280,"Players details");
setcolor(4);
outtextxy(300,330,"leader board");
setcolor(8);
outtextxy(350,380,"Main menu");
```

```
        {
                ch=getch();
                if(ch==13)
                {
                if(arrow1==1) ch='p';
                if(arrow1==2) ch='u';
                if(arrow1==3) ch='d';
                if(arrow1==4) ch='l';
                if(arrow1==5) ch='m';
                }
                if(ch=='p')
                 {
cleardevice();
                        closegraph();
                        p.getdata();
                 }
                if(ch=='u')
                 {
                        cleardevice();
                        closegraph();
                        update1();
                 }
                if(ch=='d')
                 {
                cleardevice();
                closegraph();
                checkplayer();
                 }

                if(ch=='l')
                 {
                cleardevice();
                closegraph();
```

```
                disp_data();
                getch();
                 }
        if(ch=='m')
           {
                cleardevice();
                closegraph();
                mainmenu();
           }
                if(ch==80)
                 {
                arrow1++;
                if(arrow1>=6)
                  arrow1=1;
                 }
        if(ch==72)
                 {
                arrow1--;
                if(arrow1<=0)
                   arrow1=5;
                 }
        cleardevice();
         }
   }
}


voiddrawborder()
{
setbkcolor(5);
int t,co1,co2;
setcolor(2);
line(319,6,319,471);
```

```
for(int j=0;j<4;j++)
 {
circle(319,239,50+j);
circle(319,239,100+j);
arc(8,7,270,360,45+j);
arc(8,7,270,360,65+j);
arc(631,7,180,270,45+j);
arc(631,7,180,270,65+j);
arc(631,475,90,180,45+j);
arc(631,475,90,180,65+j);
arc(8,470,360,90,45+j);
arc(8,470,360,90,65+j);
 }
if(num==1)
 {
   co1=480;
int l1;
for(l1=1;l1<=life1;l1++)
                {
                  co1+=25;
                setfillstyle(SOLID_FILL,8);
                setcolor(15);
                circle(co1,10,10);
                floodfill(co1,10,15);
                }
for(inte1=l1;e1<=3;e1++)
  {
         co1+=25;
        setfillstyle(SOLID_FILL,5);
        setcolor(15);
        circle(co1,10,10);
        floodfill(co1,10,15);
 }
```

```
 }
if(num==2)
{
   co2=80;  int l2;
                    for(l2=1;l2<=life2;l2++)
                    {
                       co2+=25;
                    setfillstyle(SOLID_FILL,8);
                    setcolor(15);
                    circle(co2,10,10);
                    floodfill(co2,10,15);
                     }
                    for(int e2=l2;e2<=3;e2++)
                     {
                    co2+=25;
                    setfillstyle(SOLID_FILL,5);
                    setcolor(15);
                    circle(co2,10,10);
                    floodfill(co2,10,15);
                     }
                     co1=480; int l1;
                    for(l1=1;l1<=life1;l1++)
                    {
                       co1+=25;
                    setfillstyle(SOLID_FILL,8);
                    setcolor(15);
                    circle(co1,10,10);
                    floodfill(co1,10,15);
                     }
                    for(int e1=l1;e1<=3;e1++)
                     {
                            co1+=25;
                            setfillstyle(SOLID_FILL,5);
```

```
                    setcolor(15);
                    circle(co1,10,10);
                    floodfill(co1,10,15);
                }
  }
for(int i=0;i<=4;i++)
        {
        if(num==1)
                {
                line(3+i,2,3+i,475);
                line(3,2+i,370,2+i);
                line(570,2+i,636,2+i);
                }
        else if(num==2)
          {
                line(3+i,2,3+i,180);
                line(3+i,280,3+i,475);
                line(3,2+i,70,2+i);
                line(270,2+i,370,2+i);
                line(570,2+i,636,2+i);
           }
        line(636-i,2,636-i,180);
        line(636-i,280,636-i,475);
        line(3,475-i,636,475-i);
        }
                setcolor(15);
                setfillstyle(SOLID_FILL,5);
                rectangle(370,0,470,20);
                floodfill(400,10,15);
                char A[20];
                setcolor(14);
                sprintf(A,"Score: %d",point1);
                settextstyle(1,0,1);
```

```
                outtextxy(380,0,A);
        if(num==2)
                {setcolor(15);
                setfillstyle(SOLID_FILL,5);
                rectangle(170,0,270,20);
                floodfill(200,10,15);
                char B[20];
                setcolor(14);
                sprintf(B,"Score: %d",point2);
                settextstyle(1,0,1);
                outtextxy(180,0,B);
                 }
for(t=0;t<=7;t++)
line(631+t,180,631+t,280);
  }




voidcheckstart()
{
int dot=1;
char c;
int driver=DETECT,mode;
initgraph(&driver,&mode,"..\\bgi");
        settextstyle(1,0,3);
        setcolor(11);
        outtextxy(50,50,"Do you have an account?");
        setcolor(15);
        rectangle(100,100,120,120);
        if(dot==1)
         {
        setfillstyle(SOLID_FILL,12);
```

```
        floodfill(110,110,15);
         }
        setcolor(15);
        rectangle(300,100,320,120);
        if(dot==2)
         {
        setfillstyle(SOLID_FILL,12);
        floodfill(310,110,15);
         }
        setcolor(10);
        settextstyle(3,0,3);
        outtextxy(130,120,"YES");
        setcolor(4);
        outtextxy(330,120,"NO");
while(1)
  {
        if(kbhit())
         {
        cleardevice();
        c=getch();
        if(c==75)
        {
        dot++;
        if(dot==3)
        dot=1;
        }
        if(c==77)
        {
        dot--;
        if(dot==0)
        dot=2;
        }
        settextstyle(1,0,3);
```

```
        setcolor(11);
        outtextxy(50,50,"Do you have an account?");
        setcolor(15);
        rectangle(100,100,120,120);
        if(dot==1)
         {
        setfillstyle(SOLID_FILL,12);
        floodfill(110,110,15);
         }
        setcolor(15);
        rectangle(300,100,320,120);
        if(dot==2)
         {
        setfillstyle(SOLID_FILL,12);
        floodfill(310,110,15);
         }
        setcolor(10);
        settextstyle(3,0,3);
        outtextxy(130,120,"YES");
        setcolor(4);
        outtextxy(330,120,"NO");
if(c==13)
   {
        if(dot==1)
         {
                int id=0,n;
                outtextxy(100,350,"Please enter your id number: ");
                for(int a=1;a<=4;a++)
                {
                  c=getch();
                  n=toascii(c)-48;
                id=id+(pow(10,(4-a))*n);
                char d[2];
```

```
                sprintf(d,"%d",n);
                outtextxy(500+(a*20),350,d);
                }
                ifstream f("pdetail.dat",ios::binary);
                int flag=0;
                while(f)
                 {
                f.read((char*)&p,sizeof(player));
                if(p.ret()==id)
                   {
                        flag=1;
                        break;
                   }
 }
                if(flag==1)
                submenu();
                if(flag==0)
                {  setcolor(14);
outtextxy(100,380,"Sorry no such record exist. You must sign in...");
outtextxy(100,400,"Please wait you will be directed to sign up page.");
delay(5000);
                cleardevice();
                closegraph();
                p.getdata();
                 }
         }
                if(dot==2)
                 {
        outtextxy(100,370,"Please wait you will be directed to sign up page.");
                        delay(5000);
                        cleardevice();
                        closegraph();
                p.getdata();
```

```
                    }
          }
 }
 }
}
voidcreatball(inti,int j)
{
setcolor(4);
setfillstyle(SOLID_FILL,12);
circle(i,j,10);
floodfill(i,j,4);
}


voideraseball(inti,int j)
{
intx,y;
if(dir==1)  {x=-1;y=1;}
if(dir==-1) {x=1;y=1;}
if(dir==2)  {x=1;y=-1;}
if(dir==-2) {x=-1;y=-1;}
for(int h=0;h<=s;h++)
  {
  i=xb+(x*h);
  j=yb+(y*h);
setcolor(5);
setfillstyle(SOLID_FILL,5);
circle(i,j,13);
floodfill(i,j,5);
  }
}
```

```
void player2pad(inti,int c)
{
 c=1;
setcolor(c);
int brick2[10]={10,i,25,i,25,i+75,10,i+75,10,i};
setfillstyle(11,c); fillpoly(4,brick2);
}


void erasepad2(int i)
 {
setcolor(0);
int brick2[10]={10,i,25,i,25,i+75,10,i+75,10,i};
setfillstyle(11,0); fillpoly(4,brick2);
  }
void erasepad1(int i)
  {
setcolor(0);
int brick1[10]={629,i,629,i+75,614,i+75,614,i,629,i};
setfillstyle(11,0); fillpoly(4,brick1);
  }


void player1pad(inti,int c)
{
c=1;
setcolor(c);
int brick1[10]={629,i,629,i+75,614,i+75,614,i,629,i};
setfillstyle(11,c); fillpoly(4,brick1);
}
```

```
voidquitscreen()
 {
int driver=DETECT,mode;charch[10];
initgraph(&driver,&mode,"C:\\TurboC3\\bgi");
setcolor(5);
gotoxy(20,9);
cout<<" Have a nice day!!!!! ";
settextstyle(1,0,3);
outtextxy(100,175,"THANK YOU FOR PLAYING AIR HOCKEY.....");
settextstyle(3,0,3);
outtextxy(100,250,"PLEASE RATE US FROM 1-10");
outtextxy(99,305,"-->");
gets(ch);
outtextxy(175,305,ch);
setcolor(12);
outtextxy(275,350," THANK YOU ");
 }


voidgameplatform()
{
intgdrive=DETECT,gmode;
initgraph(&gdrive,&gmode,"..\\bgi");
cleardevice();
inti,j,k,g,h=0,touch=0,bou=15,touch2=0,bou2=0;
int brick2,brick1;
double slope=-1;
drawborder();   setcolor(9);
xb=g=319;
yb=k=300;
brick1=brick2=196;
player1pad(brick1,5); if(num!=1)player2pad(brick2,5);
creatball(xb,yb);
```

```
i=brick1;
j=brick2;
intx,y;
drawborder();
while(1)
  {
        if(kbhit())
 {
if(num!=1)
        if(j!=brick2)
         {
        erasepad2(brick2);
        erasepad2(brick2+1);
        player2pad(j,5);
         brick2=j;
         }
        if(i!=brick1)
         {
        erasepad1(brick1);
        erasepad1(brick1+1);
        player1pad(i,5);
         brick1=i;
         }
        charch=getch();
        x=0;y=0;
        if(ch==72) x=-5;
        else if(ch==115) y=5;
        else if(ch==80) x=5;
        else if(ch==119) y=-5;
        else if(ch==27) break;
 i=i+x;
   j=j+y;
        if(i<9) i=9;
```

```
        if(i>394) i=394;
        if(j<9) j=9;
        if(j>394) j=394;
  }
if(num==1)
   bou2=0;
if(g>=628-15-10||g<=8+15+10)
 {
        if(g>=628-10) {life1--;}
        if(life1==0)
         {
        outtextxy(220,200,"OUT");
        delay(1000);
        break;
          }
        if(xb>=628-10&&(yb>i+75||yb<i))
        {
        setcolor(3);
        settextstyle(8,0,0);
        if(num==1&&life1<=0||(yb>=180&&yb<=280))
                {
                outtextxy(220,200,"OUT");
                delay(1000);
                break;
}
        if(num==2)
                {   point2++;
                if(point2==7||life1<=0)
                         {
                        outtextxy(220,200,"player 2 wins");
                        delay(1000);
                        break;
                         }
```

```
                }
        }
if(num==2)
         {
        if(g<=8+10&&(yb>j+75||yb<j))
                {
                        setcolor(3);
                        if((yb>j+80||yb<j-5)&&g<=8+11&&num==2)
                        {
                                life2--;
                        }
                        settextstyle(8,0,0);
                        point1++;
                        if(point1==7||life2<=0||(yb>=180&&yb<=280))
                        {
                                outtextxy(220,200,"player 1 wins");
                                delay(1000);
                                break;
                        }
                }
        if(g<=8+10)
        life2--;
        if(life2<=0)
          {
        outtextxy(220,200,"player 1 wins");
        delay(1000);
        break;
          }
        player2pad(brick2,5);
         }
        if(g>=628-15-10)
        {
        if(yb<=i+75&&yb>=i)
```

```
                {
                touch=1;
                point1++;
                 }
          }
          if(g<=8+15+10&&num==2)
          {
          if(yb<=j+75&&yb>=j)
            {touch2=1;
          point2++; }
          }
}
bou=0;bou2=0;
          if(touch2)
           {
              bou2=15;
              touch2=0;
           }
          if(touch)
          {
          bou=15;
          touch=0;
          }
if(g>=628-bou-10||g<=8+bou2+10||k>=469-10||k<=7+10)
  {
          eraseball(g,k);
          slope=-slope;
          eraseball(xb,yb);
          if(k>=469-10)
           {
          if(g>=xb)
          dir=1;
          else
```

```
        dir=-1;
        k--;
         }
        if(k<=7+10)
         {
        if(g<=xb)
        dir=2;
        else
        dir=-2;
        k++;
         }
        if(g<=8+bou2+10)
         {
        if(k>=yb)
        dir=-2;
        else
        dir=1;
        g++;
         }
        if(g>=628-bou-10)
         {
        if(k>=yb)
        dir=2;
        else
        dir=-1;
        g--;
         }
sound(300);
delay(4);
nosound();
  }
if(h==1)
yb=k;xb=g;
```

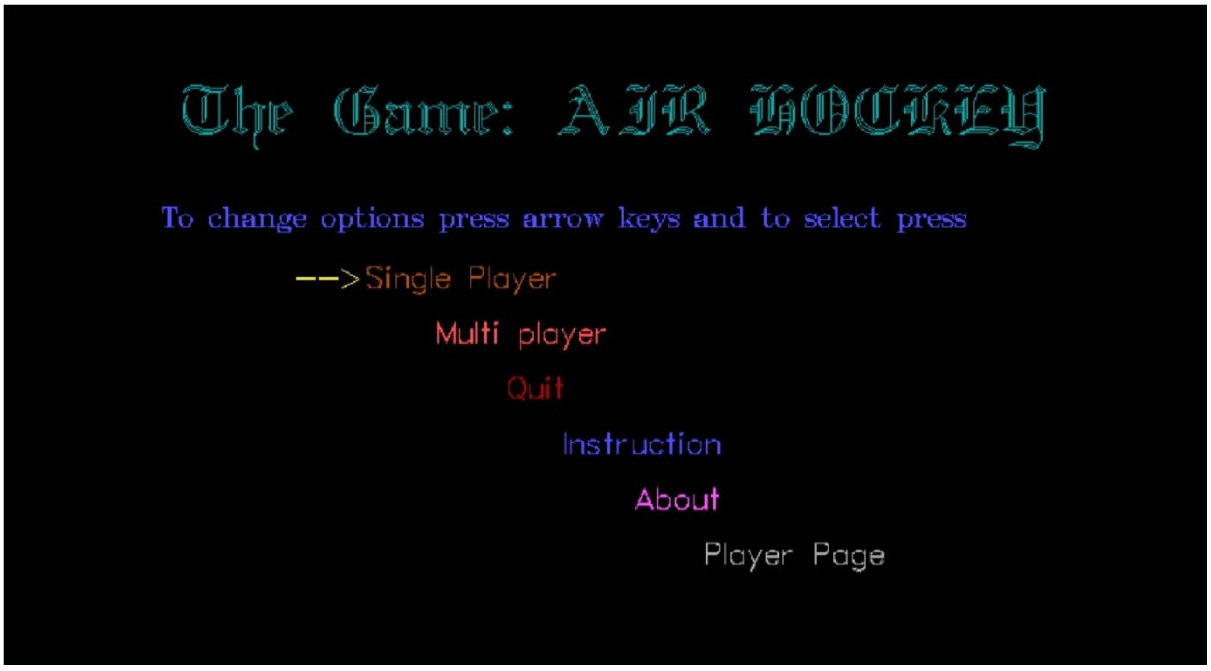
```
        if(dir==1)
          {
                for(k=yb-s;k<=470-10&&k>=7+10;k-=5)
                 {
                for(g=xb+s;g>=8+10&&g<=628-10;g+=5)
                        if(k==(int)(slope*(g-xb)+yb))
                        {
                        eraseball(g,k);
                        eraseball(xb,yb);
                        creatball(g,k);
                        delay(dy);
                        break;
                        }
                break;
                }
         }
if(dir==-1)
        {
        for(k=yb-s;k<=470-10&&k>=7+10;k-=5)
                {
                for(g=xb-s;g>=8+10&&g<=628-10;g-=5)
                        if(k==(int)(slope*(g-xb)+yb))
                        {
                        eraseball(xb,yb);
                        creatball(g,k);
                        delay(dy);
                        break;
                        }
                break;
                }
        }
        if(dir==2)
         {
```

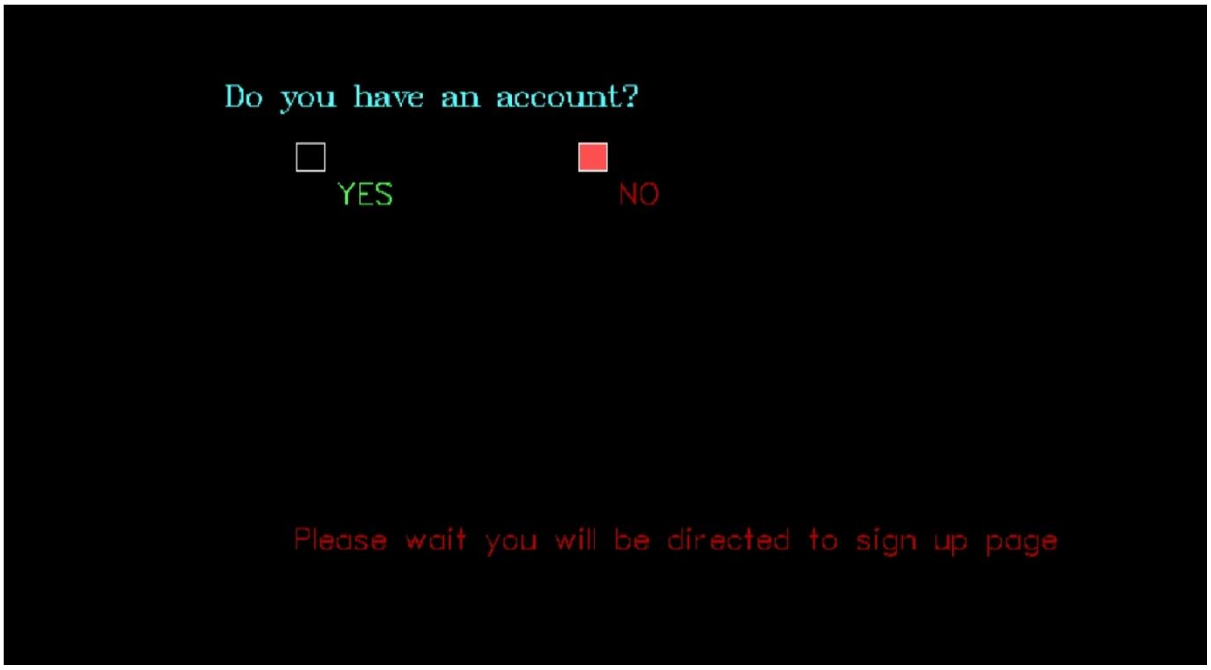
```
        for(k=yb+s;k<=470-10&&k>=7+10;k+=5)
                {
                for(g=xb-s;g>=8+10&&g<=628-10;g-=5)
                        if(k==abs((int)(slope*(g-xb)+yb)))
                        {
                        eraseball(xb,yb);
                        creatball(g,k);
                        delay(dy);
                        break;
                        }
        break;
                }
        }
        if(dir==-2)
        {
        for(k=yb+s;k<=470-10&&k>=7+10;k+=5)
                {
                for(g=xb+s;g>=8+10&&g<=628-10;g+=5)
                        if(k==(int)(slope*(g-xb)+yb))
                         {
                        eraseball(xb,yb);
                        creatball(g,k);
                        delay(dy);
                        break;
                        }
                break;
                }
        }
player1pad(brick1,5);
if(num==2)
player2pad(brick2,5);
   h=1;
drawborder();
```

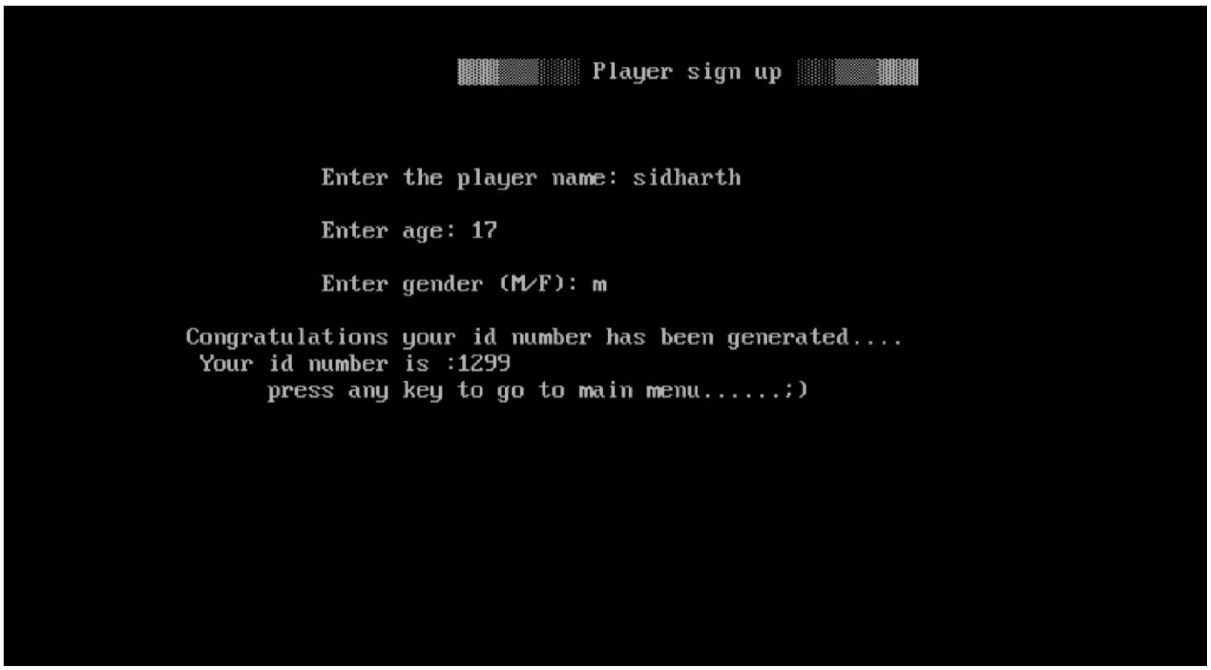
```
  };
cleardevice();
closegraph();
p.addscore(point1);
updateboard(p);
point1=point2=0;
life1=life2=3;
mainmenu();
}

/*============================================================*/
/*                          MAIN FUNCTION                     */
/*============================================================*/
void main()
{
 _setcursortype(_NOCURSOR);
coverpage();
  _setcursortype(_NOCURSOR);
mainmenu();
gameplatform();
closegraph();
}
```

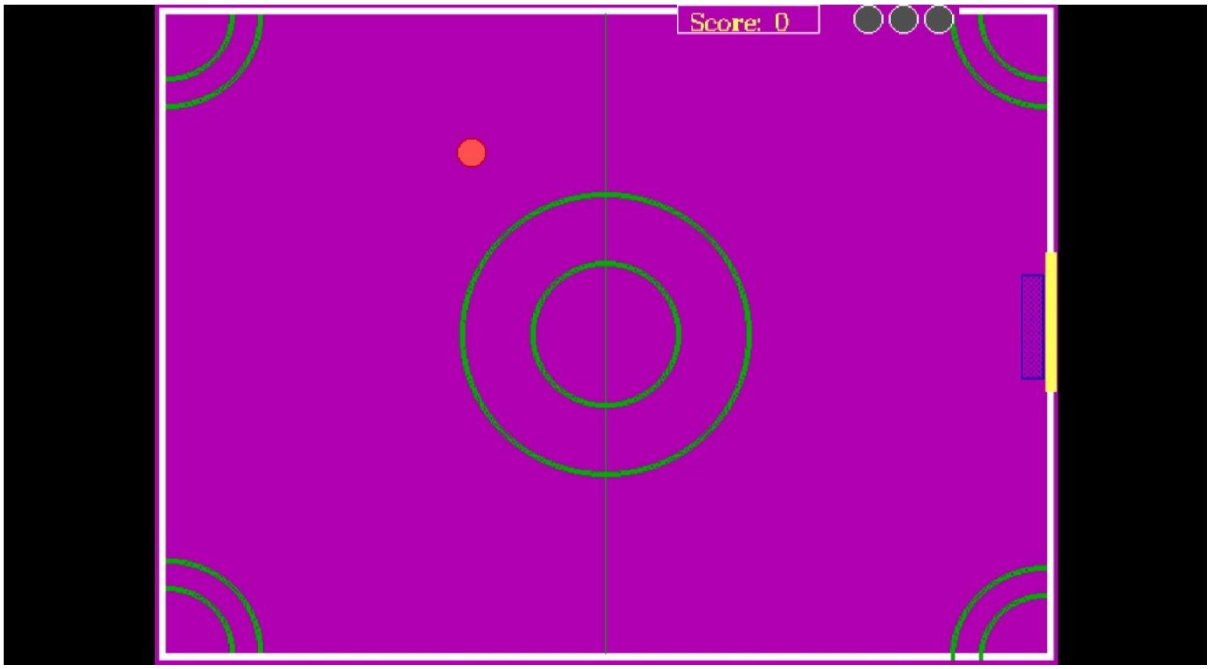
SCREENSHOTS

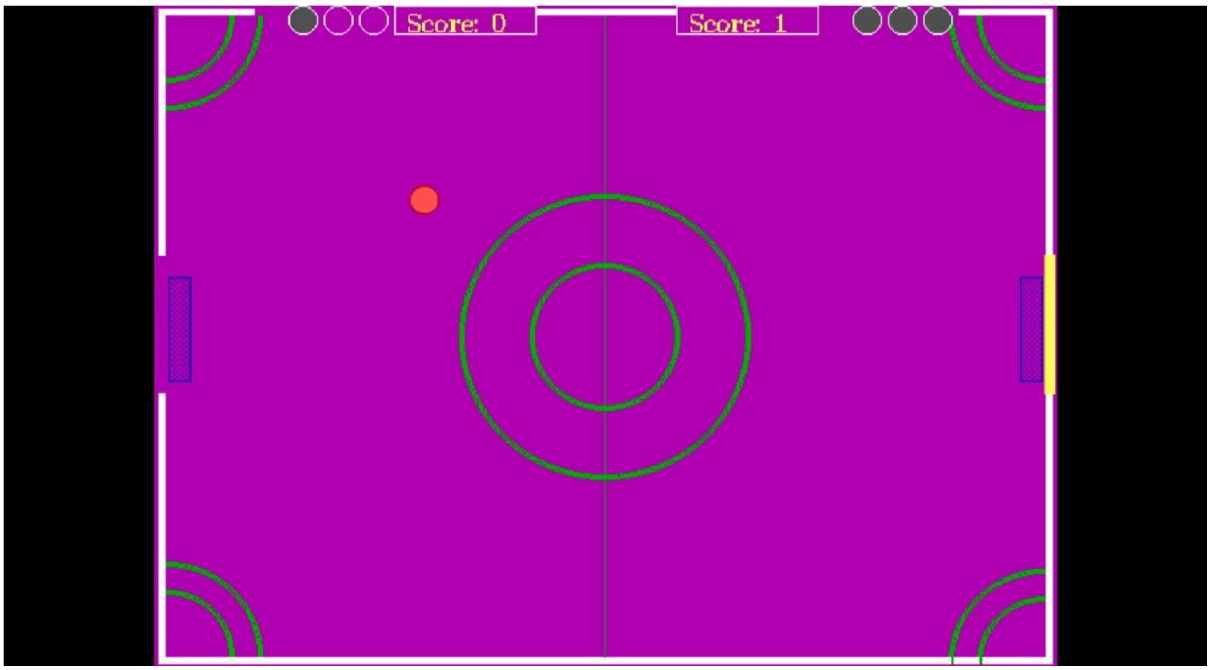


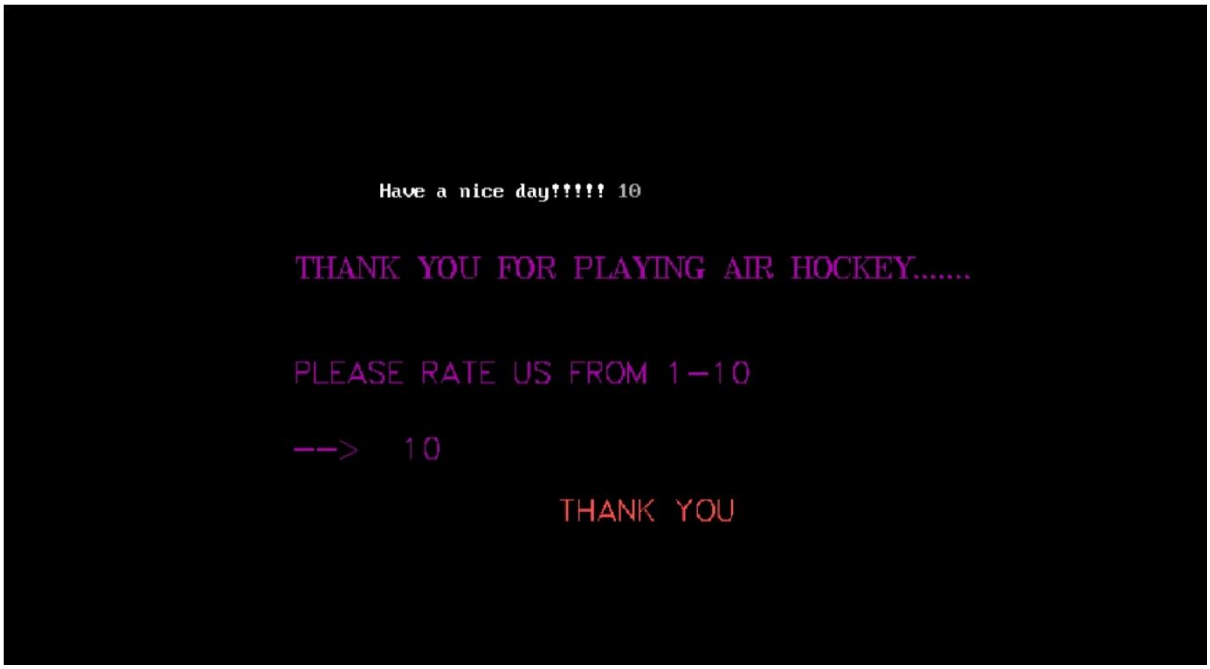

Do you have an account?
YES
NO
Please wait you will be directed to sign up page

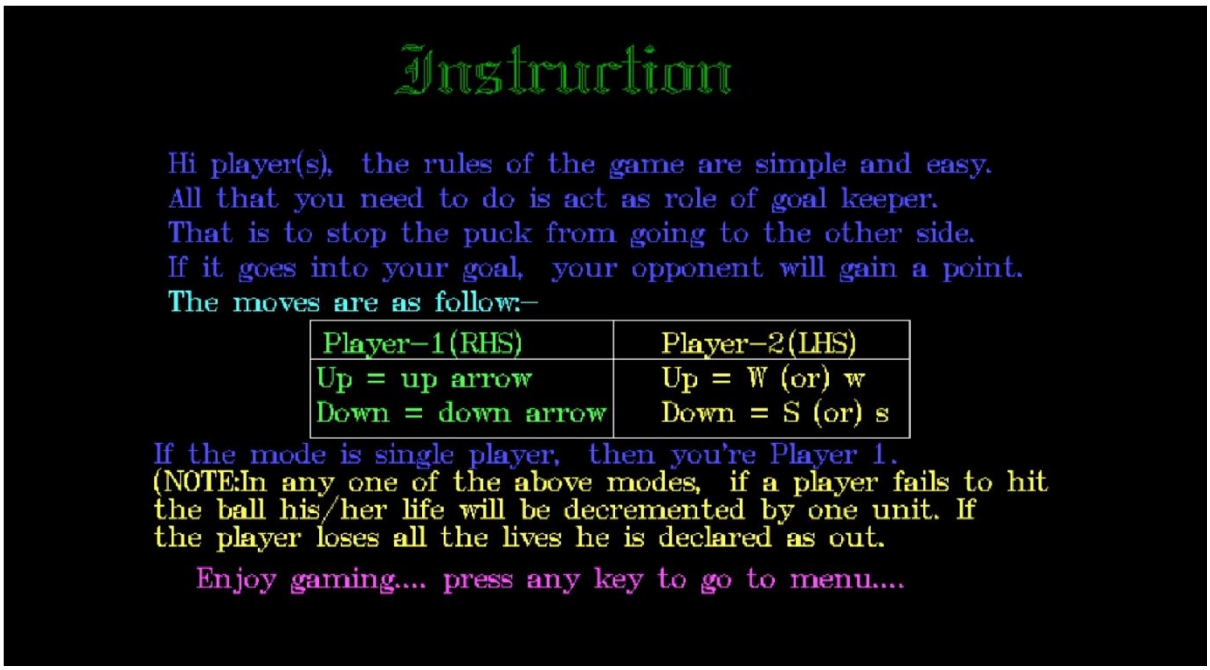

Player sign up
Enter the player name: sidharth
Enter age: 17
Enter gender (M/F): m
Congratulations your id number has been generated....
Your id number is :1299
press any key to go to main menu.....;)

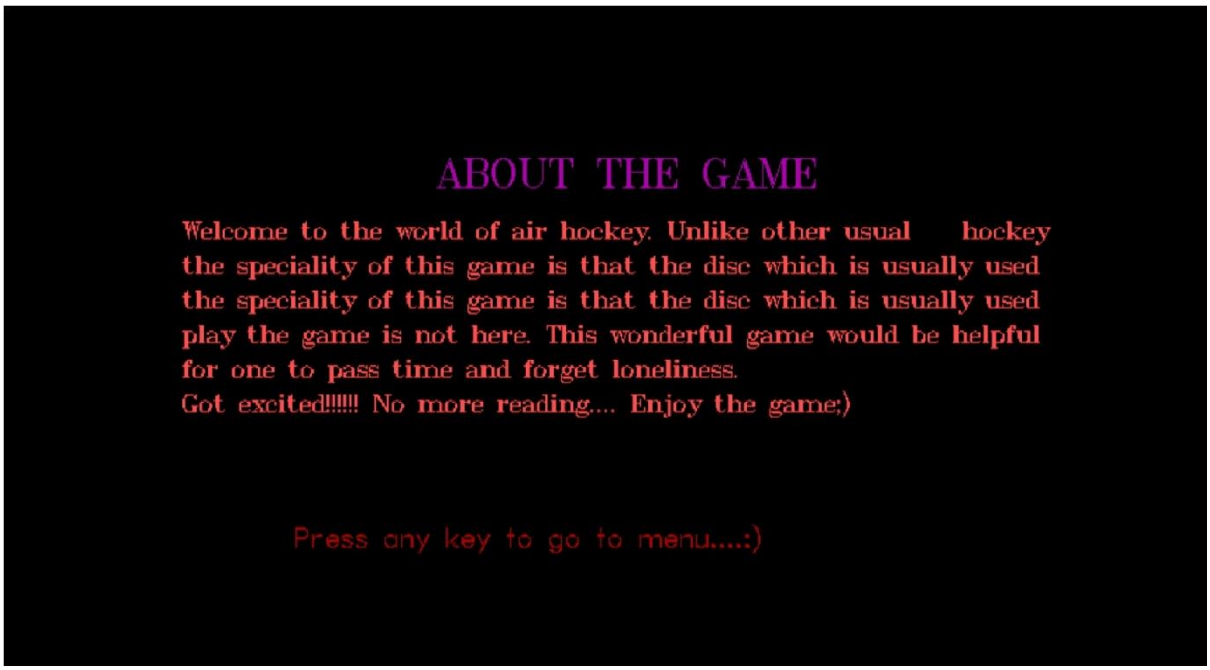

Let's Start Playing! #GameIn C++
--> Start game
Difficulty: Easy

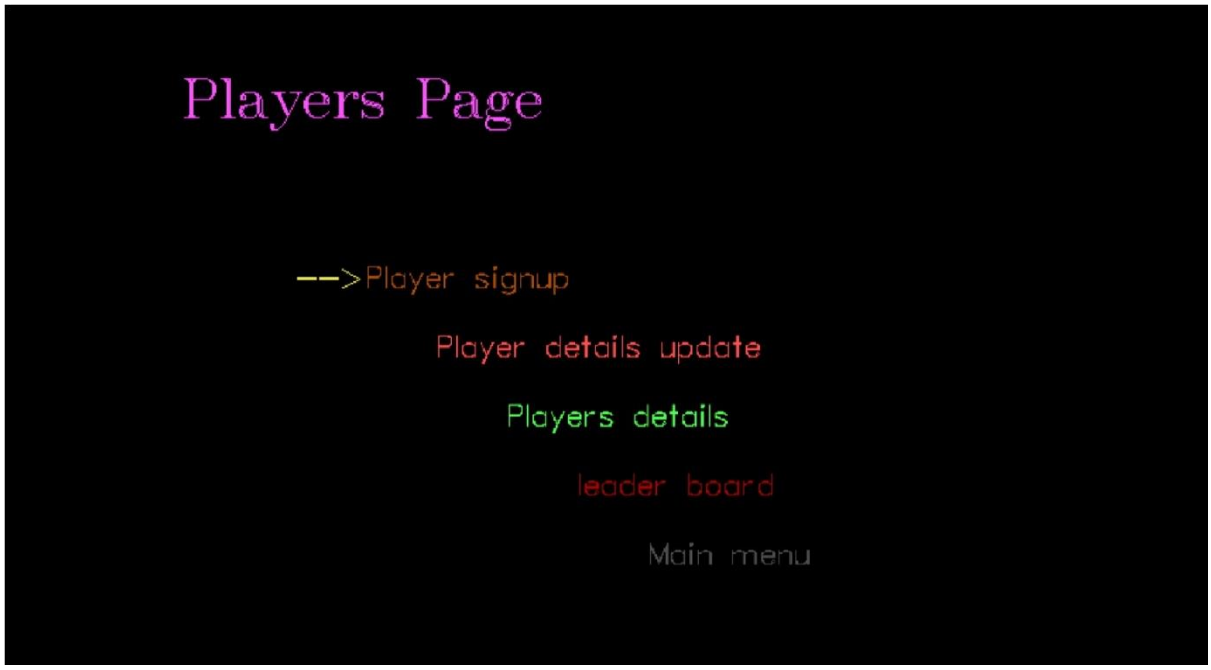

Score: 0


Score: 0
Score: 1

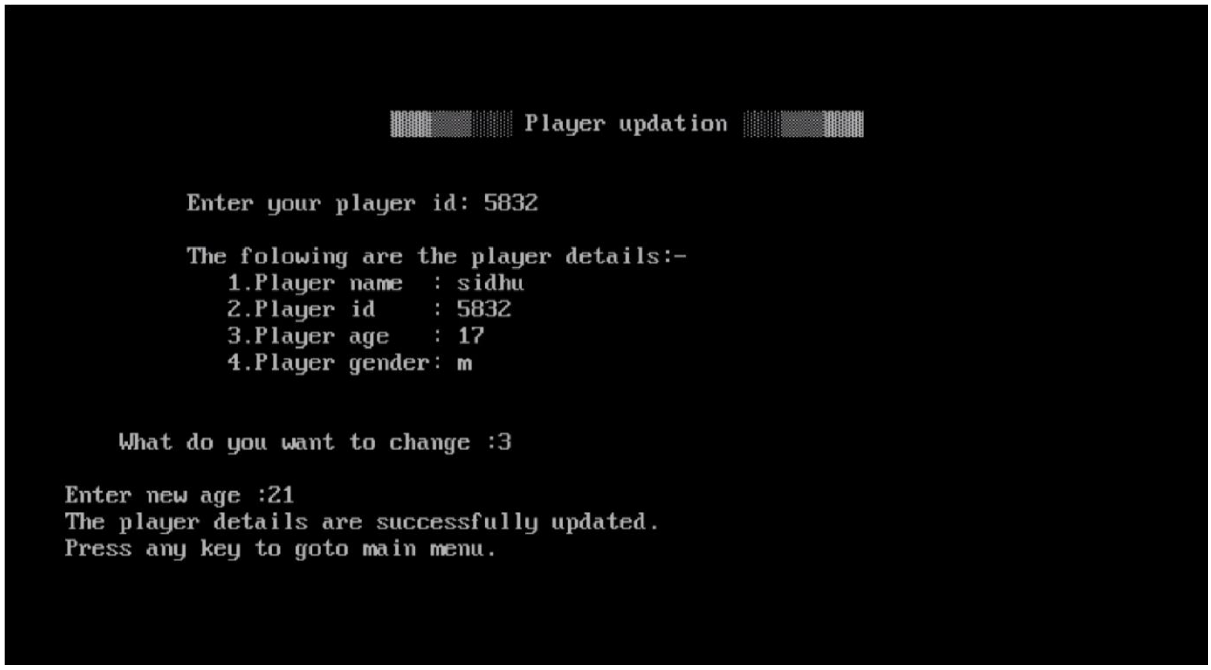

Have a nice day!!!!! 10
THANK YOU FOR PLAYING AIR HOCKEY.....
PLEASE RATE US FROM 1-10
--> 10
THANK YOU

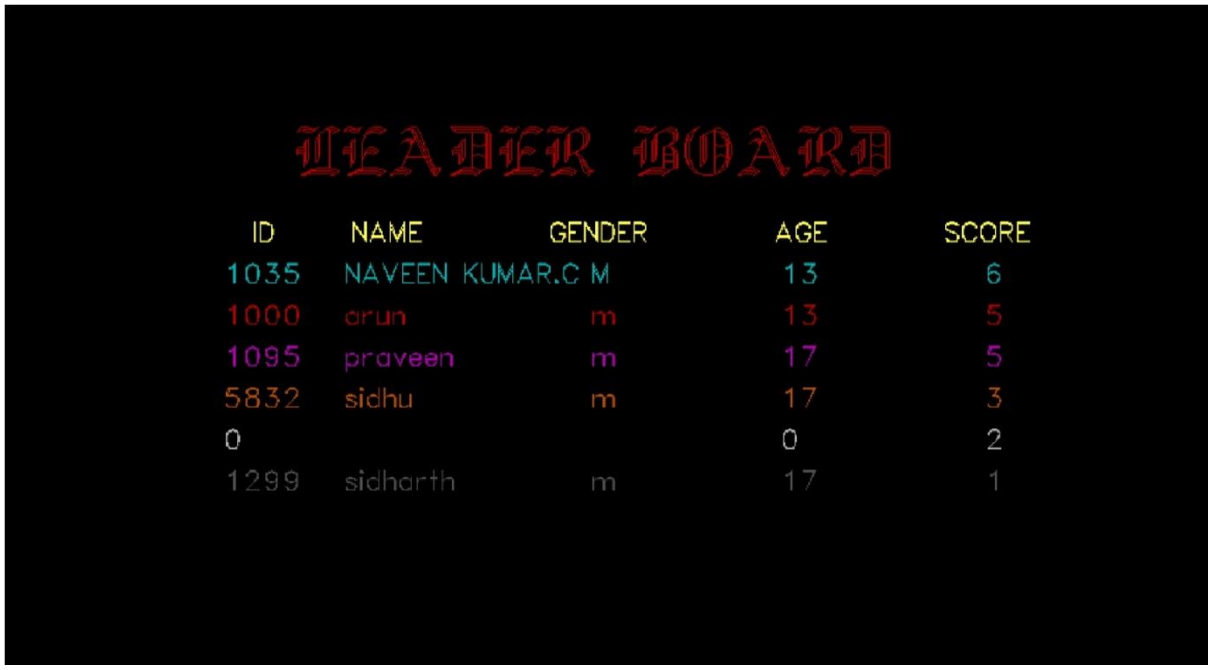

Instruction
Hi player(s), the rules of the game are simple and easy.
All that you need to do is act as role of goal keeper.
That is to stop the puck from going to the other side.
If it goes into your goal, your opponent will gain a point.
The moves are as follow:-
Player-1(RHS)
Player-2(LHS)
Up = up arrow
Down = down arrow
Up = W (or) w
Down = S (or) s
If the mode is single player, then you're Player 1.
(NOTE:In any one of the above modes, if a player fails to hit the ball his/her life will be decremented by one unit. If the player loses all the lives he is declared as out.
Enjoy gaming.... press any key to go to menu....


ABOUT THE GAME
Welcome to the world of air hockey. Unlike other usual hockey
the speciality of this game is that the disc which is usually used
the speciality of this game is that the disc which is usually used
play the game is not here. This wonderful game would be helpful
for one to pass time and forget loneliness.
Got excited!!!!!! No more reading.... Enjoy the game;)
Press any key to go to menu....:)


Players Page
-->Player signup
Player details update
Players details
leader board
Main menu


PLAYER DETAILS
SCORE CARD
Score 1 : 3
Score 2 : 0
Score 3 : 0
Player ID : 5832
Player name : sidhu
Player gender : Male
Player age : 17
Press any key to gotomainmenu...;)


Player updation
Enter your player id: 5832
The folowing are the player details:-
1.Player name : sidhu
2.Player id : 5832
3.Player age : 17
4.Player gender: m
What do you want to change :3
Enter new age :21
The player details are successfully updated.
Press any key to goto main menu.


LEADER BOARD
ID NAME GENDER AGE SCORE
1035 NAVEEN KUMAR.C M 13 6
1000 arun m 13 5
1095 praveen m 17 5
5832 sidhu m 17 3
0 0 2
1299 sidharth m 17 1

CONCLUSION

We learnt about gaming through games downloaded from the app store. Some games of our particular interests include: action games, racing games, strategic games, arcade games, logic games, puzzle games, and etc. Our game has many of the features we have come to love in the game. Once we had started the project we kept thinking of the many unique features we could add. The gift of our teacher proved to be helpful and we gleaned a lot of useful information from our respected ma'am. The Air Hockey game is inspired by a common childhood pastime of playing the early version of the game. We wanted to create a character and add more dimension to this original and nostalgic game. All of team members had their own unique input and we wanted to add all the opinions of our team members in our program. The game Air Hockey has many additional and inventive qualities that you won't see in other games. We realized through the course of the program that we had not realized the huge task that we had undertaken. Each time we wrote a function we would encounter countless errors and realized that writing code for a program is not as easy as it seems. Once we had the ball rolling, we chased to implement other functions and integrate all the functions adds a whole. We used this insightful knowledge and realized that with teamwork we could reach new heights and achieve our true potential. The zeal we had for our game was palpable.

MERITS AND DEMERITS

Merits:-

- ✓ *The game gives the opportunity for the player to play in single player mode, which is not possible in real life.*
- ✓ *The leaderboard in the program creates a competitive spirit in the minds of the player.*
- ✓ *Since the program is broken down into various modules the compilation speed is increased and crashing of program is avoided.*

Demerits:-

- ♠ *C++ lacks the finer details which can bring out the program even better.*
- ♠ *The resolution of the screen is very low.*