SUMMER TRAINING REPORT

ON

GAMES ON C++

Submitted in the partial fulfillment of the requirements for the award of degree

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

Submitted By:

Student Name: Aman Garg

Roll No.: 35314802716

Semester: 5th

Batch: 5-C-6

Maharaja Agrasen Institute of technology, PSP area,
Sector – 22, Rohini, New Delhi – 110085
GGSIP University

ACKNOWLEDGEMENT

First and foremost, I Thank the Almighty God for sustaining the enthusiasm with which I plunged into this endeavor.

I avail this Opportunity to express my profound sense of sincere and deep gratitude to many people who are responsible for the knowledge and experience I have gained during the Project Work.

I have great pleasure in expressing my deep sense of gratitude to guide

Mr. Ankush singla (Coding Ninjas) for his valuable and prompt guidance without which this project would not have been a successful one. I extend My overwhelming gratitude to **Mrs. Namita Gupta (HOD CSE MAIT)** for her valuable guidance and meticulous supervision during the preparation of this Project Report.

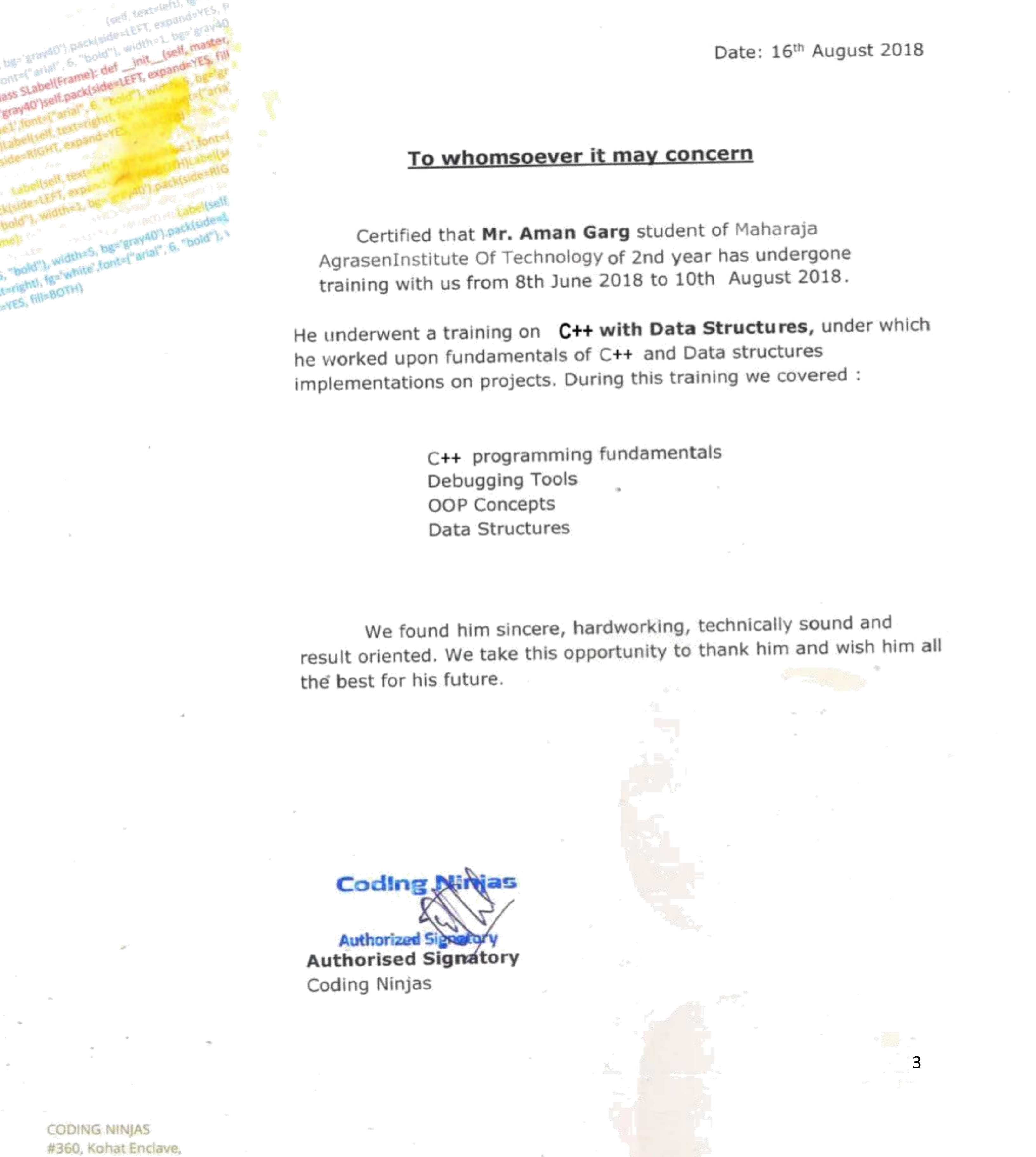
My hearty and inevitable thanks to all the respondents who helped me to bring out the project in a successful manner. Last but not the least I extend my gratitude towards my parents, faculties and friends who extended their wholehearted support towards the successful completion of this Project Work.

Thank you

Aman Garg

(35314802716)

CERTIFICATE



Date: 16th August 2018

To whomsoever it may concern

Certified that **Mr. Aman Garg** student of Maharaja AgrasenInstitute Of Technology of 2nd year has undergone training with us from 8th June 2018 to 10th August 2018.

He underwent a training on **C++ with Data Structures,** under which he worked upon fundamentals of C++ and Data structures implementations on projects. During this training we covered :

C++ programming fundamentals
Debugging Tools
OOP Concepts
Data Structures

We found him sincere, hardworking, technically sound and result oriented. We take this opportunity to thank him and wish him all the best for his future.

Coding Ninjas
Authorized Signatory

Authorised Signatory
Coding Ninjas

CODING NINJAS
#360, Kohat Enclave,

DECLARATION GIVEN BY THE STUDENT

I hereby declare that the project work entitled "**GAMES ON C++ AND DATA STRUCTURE CONCEPTS"** submitted to the **MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY**, is a record of an original work done by me under the guidance of Ankush singla

Faculty Member and this project work has not performed the basis for the award of any Degree or diploma/ associateship/fellowship and similar project if any.

…………………………….

Aman Garg (35314802716)

PREFACE

This is the report of the project "**GAMES ON C++ AND DATA STRUCTURE CONCEPTS**" developed by Aman Garg, pre-final year student of Bachelor of Technology in Computer Science Engineering at Maharaja Agrasen Institute Of Technology, Delhi during his training at coding Ninjas.

In this project we have used coding blocks, turbo c++, these are some IDE for coding. In these IDE'S we can only code in c or c++ language

The objective of this training is to gain practical knowledge in the field of coding by making some cool real life mini projects that will help us to build a simple yet an effective code and help in achieving what we want.

It basically starts with very basic language i.e. 'c' with ide turbo c++ which is the old ide used for coding in c language and it teaches us how to set it up and code simple programs and make mini projects on them.

After that it teaches us the latest variations in c language i.e. c++ which is the modified version of c, that provides security and introduces a new concept of OOPS. In this we also learn concept of polymorphism, pointers, strings, variables etc.

As no learning is complete without a taste of the application. After the course completion, it has undergone a live project.

About Organization

Codingninjas.in is an online or offline learning platform. It is aimed at professional adults. Unlike academic MOOC programs driven by traditional collegiate coursework, Coding ninja's provides a platform for experts of any kind to create courses which can be offered to the public, different courses having different fee and it also depends on which course you chose whether online or offline. Coding ninja's provides tools which enable users to create a course, promote it and earn money from student tuition charges.

No Coding ninja's courses are currently credentialed for college credit; students take courses largely as a means of improving job-related skills. Some courses generate credit toward technical certification. Coding ninjas has made a special effort to attract corporate trainers seeking to create coursework for employees of their company.

Coding Ninjas serves as a platform that allows instructors to build online courses on topics of their choosing. Using coding ninjas course development tools they can upload video, PowerPoint presentations, audio and live classes to create courses. Instructors can also engage and interact with users via online discussion boards.

Coding ninjas offers paid courses, whether you chose it as online or offline depending upon your choice.

The quality of course content and problems on the super awesome "CodeZen" helped to ace the coding rounds in various interviews. Teaching Assistant support was amazing as they were available most of the time and we used to get our doubts resolved within few hours. In addition the faculty was very supportive and I could come at the center anytime for doubts or any other help.

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Introduction to elements of training

During my training period, I worked on the following technologies:

1) Strings
2) Arrays
3) Pointers
4) Recursion
5) Linkedlist
6) Trees
7) Hashmaps
8) Graphs
9) Dynamic programming

1) Strings

C++ has in its definition a way to represent **sequence of characters as an object of class**. This class is called std:: string. String class stores the characters as a sequence of bytes with a functionality of allowing **access to single byte character**.

Operations on strings

Input Functions

1. getline() :- This function is used to **store a stream of characters** as entered by the user in the object memory.

2. push_back() :- This function is used to **input** a character at the **end** of the string.

3. pop_back() :- Introduced from C++11(for strings), this function is used to**delete the last character** from the string.

2) Arrays

C++ provides a data structure, **the array**, which stores a fixed-size sequential collection of elements of the same type. An array is used to store a collection of data, but it is often more useful to think of an array as a collection of variables of the same type.

Instead of declaring individual variables, such as number0, number1, ..., and number99, you declare one array variable such as numbers and use numbers[0], numbers[1], and ..., numbers[99] to represent individual variables. A specific element in an array is accessed by an index.

All arrays consist of contiguous memory locations. The lowest address corresponds to the first element and the highest address to the last element.

2) Pointers

C++ pointers are easy and fun to learn. Some C++ tasks are performed more easily with pointers, and other C++ tasks, such as dynamic memory allocation, cannot be performed without them.

As you know every variable is a memory location and every memory location has its address defined which can be accessed using ampersand (&) operator which denotes an address in memory.

A pointer is a variable whose value is the address of another variable. Like any variable or constant, you must declare a pointer before you can work with it. The general form of a pointer variable declaration is

```
type *var-name;
```

Here, type is the pointer's base type; it must be a valid C++ type and var-name is the name of the pointer variable. The asterisk you used to declare a pointer is the same asterisk that you use for multiplication.

3) Recursion

The process in which a function calls itself directly or indirectly is called recursion and the corresponding function is called as recursive function. Using recursive algorithm, certain problems can be solved quite easily. Examples of such problems are Towers of Hanoi (TOH), Inorder/Preorder/Postorder Tree Traversals, DFS of Graph, etc.

What is base condition in recursion?

In recursive program, the solution to base case is provided and solution of bigger problem is expressed in terms of smaller problems.

```
int fact(int n)
{
   if (n < = 1) // base case
      return 1;
   else
      return n*fact(n-1);
}
```

In the above example, base case for n < = 1 is defined and larger value of number can be solved by converting to smaller one till base case is reached

4) Linked list

A linked list is a data structure that can store an indefinite amount of items. These items are connected using pointers in a sequential manner.There are two types of linked list; singly-linked list, and doubly-linked list. In a singly-linked list, every element contains some data and a link to the next element. On the other hand, every node in a doubly-linked list contains some data, a link to the next node and a link to the previous node.

The elements of a linked list are called the **nodes**. A node has two fields i.e. **data** and **next**. The data field contains the data being stored in that specific node. It cannot just be a single variable. There may be many variables presenting the **data** section of a node. The **next** field contains the address of the next node. So this is the place where the link between nodes is established.

About C++ Language

C++ is an Object Oriented Programming Language that is powerful, efficient and compact. It includes concepts like Polymorphism, Dynamic Binding, Data hiding, Operator Encapsulation and Inheritance C++ is an updated version of the popular C language. It's enhanced to be object-oriented and functions as a high-level computer programming language. Our C++ classes online & C++ offline classes curriculum is designed to make students proficient in programming. They will be solving approximately 250 - 300 problems throughout the course which will enhance their programming skills and knowledge of data structures.

Data structures are the core of real world projects and thus are the hot topic for tech interviews. Efficient data structures form the basis for designing efficient algorithms and software. This C++ training module covers in depth implementations and applications of various important and interesting data structures. C++ is one of the most popular languages primarily utilized with system/application software, drivers, client-server applications and embedded firmware.

The main highlight of C++ is a collection of predefined classes, which are data types that can be instantiated multiple times. The language also facilitates declaration of user-defined classes. Classes can further accommodate member functions to implement specific functionality. Multiple objects of a particular class can be defined to implement the functions within the class. Objects can be defined as instances created at run time. These classes can also be inherited by other new classes which take in the public and protected functionalities by default.

C++ includes several operators such as comparison, arithmetic, bit manipulation and logical operators. One of the most attractive features of C++ is that it enables the overloading of certain operators such as addition.

Introduction

“GAME CENTER” has been designed to remove the boredom in the lives of students and give them a relief after a lot of studies. This project has been developed for fun and as a part of computer science project.

The game center has the following games:-

□ Dot Matrix game

□ Puzzle

□ Push box

□ Maze

□ Tam bola

□ Cross and knots

□ C++ quiz

Problem, description and solutions

We have tried to create those games which are generally played manually in an attempt to make it easier for the player to play those games and to prevent any form of cheating.

For example-

1. Tam bola which is a very popular game played in homes and at parties, has been developed on computer to prevent the quarrels that arise in it when the number of players becomes large. As the number of players increase it becomes difficult to monitor the true winner. In such a case it becomes necessary to take the help of medium like computer.

2. Cross and knots which has been played for a long time has been included in this project.

3. Dot matrix game which involves making of boxes is a very common paper pen game which is popular among students, but here the problem was making of a big grid in case of a big game. This problem is efficiently solved by this program where user can make grids according to their choice.

Source Code

```
#include<conio.h>
#include<stdio.h>
#include<process.h>
#include<stdlib.h>
#include<ctype.h>
#include<string.h>
#include<fstream.h>
#include<dos.h>
class menu_pointr
{
        public:
        int menu_pointer(int game);
        void menu(int point);
};

void menu_pointr :: menu(int point)
{


        int s;
        for(s=0;s<4;s++)
        {
                gotoxy(26,s+16);
                cout<<"  ";
        }
        gotoxy(26,point+16);
        cout<<"Í>";
}
int menu_pointr :: menu_pointer(int game)
{
   float ascii,point=0;
   char ch;
```

```
    int s;
    gotoxy(1,1);
    cout<<"\n   ************************************************************************";
    for(s=0;s<5;s++)
    {
        if(s==2)
        switch(game)
        {
                case 1: cout<<"\n   **\t\t\t      TICK TACK GAME\t\t\t\t **";
                        cout<<"\n   **\t\t\t      ¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬\t\t\t\t   **";
                        break;
                case 2: cout<<"\n   **\t\t         WELCOME TO THE C++ QUIZ              \t\t **";
                        cout<<"\n   **\t\t~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ \t\t
**";
                        break;
                case 3: cout<<"\n   **\t\t\t\tDOT MATRIX GAME\t\t\t\t **";
                        cout<<"\n   **\t\t\t\t¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬\t\t\t\t **";
                        break;
                case 4: cout<<"\n   **\t\tWELCOME TO THE MAGNIFICIENT GAME OF
TAMBOLA!! \t\t **";
                        cout<<"\n   **\t\t~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ \t\t
**";
                        break;
                case 5: cout<<"\n   **\t\t\t\tNO.PUZZULE GAME\t\t\t\t **";
                        cout<<"\n   **\t\t\t\t¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬ \t\t\t  **";
                        break;

        }
        cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    }
    cout<<"\n   **\tThis is a ";
    switch(game)
    {
        case 1: cout<<"Tick Tack Game ";
                break;
        case 2: cout<<" C++ Quiz Game ";
                break;
        case 3: cout<<"Dot Matrix Game";
                break;
        case 4: cout<<"Game Of Tambola";
                break;
        case 5: cout<<"No.Puzzule game";
                break;
    }
    cout<<" It is a very good game.You will like   **";
    cout<<"\n   **\tit very much . The game is a open licence game registered by ng  **\n
**\tgames\t\t\t\t\t\t\t\t **";
    cout<<"\n   **\t\t\t\t\t\t\t\t\t **\n   **\t\t\t\t  MENU\t\t\t\t\t **";
    cout<<"\n   **\t\t\t\t ~~~~~~\t\t\t\t\t **";
    cout<<"\n   **\t\t\t    1).Start game\t\t\t\t **";
    cout<<"\n   **\t\t\t    2).Rules\t\t\t\t\t **";
    cout<<"\n   **\t\t\t    3).About the game.\t\t\t\t **";
    cout<<"\n   **\t\t\t    4).Exit\t\t\t\t\t **";
```

```
    for(s=0;s<3;s++)
    {
        cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    }
    cout<<"\n   ************************************************************************";
    while(1)
    {
        menu(point);
        while((ch=getch())==0);
        ascii=ch;
        if(ch=='P'||ch=='M'||ch=='s'||ch=='d')
          point=point+1;
        if(ch=='H'||ch=='K'||ch=='w'||ch=='a')
          point=point-1;
        if(point==4)
          point=0;
        if(point<0)
          point=3;
        if(ascii==13)
        break;
    }
    return (point+1);
}

class dotmatrix_game:public menu_pointr
{
char turn,player[2][25],mat[200][200];
int b,ply1,ply2,x,y,escape;
public:
void outcum(char mat[200][200]);
int check(char mat[200][200],char turn);
int game();
void running();
void display(int i);
void mat_pointer(int &point2,int &point,int i);
};
void dotmatrix_game::display(int i)
{
        int j;
        gotoxy(1,1);
        cout<<"  ";
        for(j=0;j<strlen(player[0]);j++)
        cout<<player[0][j];cout<<"'s points = "<<ply1<<"\n";
        cout<<"  ";
        for(j=0;j<strlen(player[1]);j++)
        cout<<player[1][j];cout<<"'s points = "<<ply2<<"\n";
        cout<<"\n\t\t\t      DOT BOARD\n";
        cout<<"\t\t\t      ¬¬¬¬¬¬¬¬¬¬\n\n";
        outcum(mat);
        if(i%2==0)
        {
              cout<<"\n\n\n";
              cout<<"  ";
```

```
                for(j=0;j<strlen(player[0]);j++)
                cout<<player[0][j];cout<<"'s turn";
                turn=player[0][0];
        }
        else
        {
                cout<<"\n\n\n";
                cout<<"  ";
                for(j=0;j<strlen(player[1]);j++)
                cout<<player[1][j];cout<<"'s turn";
                turn=player[1][0];
        }
}

void dotmatrix_game::mat_pointer(int &point2,int &point,int i)
{
   float ascii;
   char ch;
   while(1)
   {
        display(i);
        while((ch=getch())==0);
        ascii=ch;
        if(ch=='P'||ch=='s')
          {point=point+1;
          if(point%2==0)
          point2--;
          else
          point2++;
          }
        if(ch=='H'||ch=='w')
          {point=point-1;
          if(point%2==0)
          point2--;
          else
          point2++;
          }
        if(ch=='M'||ch=='d')
          point2=point2+2;
        if(ch=='K'||ch=='a')
          point2=point2-2;
        if(point>b-2)
          {point=0;
           point2--;
          }
        if(point<0)
          {point=b-2;
          point2--;
          }
        if(point2>b-2&&point%2==0)
          point2=1;
        if(point2>b-2&&point%2!=0)
          point2=0;
        if(point2<0&&point%2==0)
          point2=b-3;
        if(point2<0&&point%2!=0)
          point2=b-2;
        if(ascii==13||ascii==27||ch=='e')
        break;
    }
    if(ascii==27||ch=='e')
    escape=1;
}
int dotmatrix_game::game()
{
        x=0;
        y=1;
        int r=0;
        start:
        clrscr();
        r=menu_pointer(3);
        gotoxy(1,23);
        switch(r)
        {
        case 2 : cout<<"\n\n   The rules of the game are simple you have to make as many boxes as";
                 cout<<"\n   possibe with your name the person who will put the last line  of the";
                 cout<<"\n   box will get his symbol in that box.To make a line you have to selct";
                 cout<<"\n   position and press enter\n";
                 getch();
                 goto start;
        case 3 : cout<<"\n\n   The game is made by Aman garg \n   It is tested by Aman garg. ";
                 cout<<"\n   The game is made for fun and as a part of the computer project.\n   The
difficulty";
                 cout<<" level of";
                 cout<<" the game is null so play it and \n   enjoy";
                 getch();
                 goto start;
        case 4 : return 0;
        case 1 :running();
                break;
        }
        if(escape==1)
        goto start;
        cout<<"\n     Thank you for playing the game!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!";
        cout<<"\n     Winning or losing is not the main thing the main thing is the that you PLAY";
        getch();
        return 0;

}
void dotmatrix_game::running()
{
        int i=0,j=0,alph[2],numb[2],flag=0;
        char pt[2][2];
        ply1=0;ply2=0;
        escape=0;
        clrscr();
        cout<<"\nEnter the name of the player one = ";
        gets(player[0]);
    r   cout<<"\nEnter the name of the player two = ";
        gets(player[1]);
        cout<<"\nEnter the size of the cube board ";
        cin>>b;
        b=2*b;
        player[0][0]=toupper(player[0][0]);
        player[1][0]=toupper(player[1][0]);
        clrscr();
        for(i=0;i<b-1;i=i+2)
        {
            for(j=0;j<b-1;j++,j++)
                {
                    mat[i][j]='*';
                }
        }
        for(i=0;i<b-1;i=i+2)
        {
                for(j=1;j<b-1;j++,j++)
                {
                    mat[i][j]=' ';
                }
        }
        for(i=1;i<b-1;i++,i++)
        {
                for(j=0;j<b-1;j++)
                {
                    mat[i][j]=' ';
                }
        }
        int k=0;
        k=((b-1)*(b-1))/2;
        for(i=0;i<k;i++)
        {
                clrscr();
                gotoxy(53,2);
                cout<<"  Input 0 to go back to menu \n\n";
                mat_pointer(y,x,i);
                if(escape==1)
                goto end;
                if(mat[x][y]==' ')
                {
                    if(x%2==0)
                    mat[x][y]='-';
                    else
                    mat[x][y]='|';
                }
                else
                {
                cout<<"\nThe place is not empty ";
                i--;
                getch();
```

```
                }
                flag=check(mat,turn);
                if(flag==1)
                {
                        i--;
                        k--;
                }
        }
        clrscr();
        if(ply1>ply2)
        {       cout<<"\n\t";
                for(j=0;j<strlen(player[0]);j++)
                cout<<player[0][j];cout<<" won by "<<ply1-ply2<<" points ";
        }
        else if(ply2>ply1)
        {       cout<<"\n\t";
                for(j=0;j<strlen(player[1]);j++)
                cout<<player[1][j];cout<<" won by "<<ply2-ply1<<" points ";
        }
        else
        cout<<"\n\tIt was a tie";
        cout<<"\n\n";
        end:
}


void dotmatrix_game::outcum(char mat[200][200])
{
        int i=0,j=0,k=0;
        char a=65;
        cout<<"\n\t\t ";
        for(k=10;k>b/2;k--)
        cout<<"  ";
        for(i=0;i<b/2;i++)
        cout<<"  "<<i+1;
        cout<<"\n";
        for(i=0;i<b-1;i++)
        {
                cout<<"\n\t\t";
                for(k=10;k>b/2;k--)
                cout<<"  ";
                for(j=0;j<b-1;j++)
                {
                        if(i%2==0)

                        {
                                if(j==0)
                                {
                                        cout<<a<<"  ";
                                        a++;
                                }
                                if(j%2==0)
                                cout<<mat[i][j];
```

```
                                        else {
                                        if(x==i&&y==j)
                                        cout<<"##";
                                        else
                                        cout<<mat[i][j]<<mat[i][j];}
                                }
                                else
                                {
                                        if(j==0)
                                        cout<<"   ";
                                        if(j%2==0)
                                        {if(i==x&&j==y)
                                         cout<<"#";
                                        else
                                        cout<<mat[i][j];
                                        }
                                        else cout<<mat[i][j]<<mat[i][j];
                                }
                        }
                }

}
int dotmatrix_game::check(char mat[200][200],char turn)
{
        int i=0,j=0,flag=0;
        for(i=0;i<b;i++)
        {
                for(j=1;j<b;j++)
                {
                        if(mat[i][j]=='-'&&mat[i+1][j-1]=='|'&&mat[i+2][j]=='-
'&&mat[i+1][j+1]=='|'&&mat[i+1][j]==' ')
                        {
                                mat[i+1][j]=turn;
                                flag=1;
                                if(turn==player[0][0])
                                ply1++;
                                else if(turn==player[1][0])
                                ply2++;
                        }
                }
        }
        if(flag==1)
        return 1;
        else
        return 0;
}


//It is a simple quiz based on th C++ curriculum chapters which are in CBSE
class cquiz : public menu_pointr
{
 int i;
 char player_name[80];
 char question;
 int answer;
 public:
 int quiz();
 int ques_pointer();
 void choice(int point);
};
void cquiz :: choice(int point)
{
        gotoxy(1,3);
        cout<<"  ";
        cout<<"\n  ";
        cout<<"\n  ";
        cout<<"\n  ";
        switch(point)
        {
                case 0: gotoxy(1,3);
                        cout<<"##";
                        break;
                case 1: gotoxy(1,4);
                        cout<<"##";
                        break;
                case 2: gotoxy(1,5);
                        cout<<"##";
                        break;
                case 3: gotoxy(1,6);
                        cout<<"##";
                        break;
        }
}
int cquiz :: ques_pointer()
{
   float ascii,point=0;
   char ch;
   while(1)
   {
        choice(point);
        while((ch=getch())==0);
        ascii=ch;
        if(ch=='P'||ch=='s')
          point=point+1;
        if(ch=='H'||ch=='w')
          point=point-1;
        if(point==4)
          point=0;
        if(point<0)
          point=3;
        if(ascii==13)
        break;
   }
   return (point+1);
}
```

```
int cquiz::quiz()
{
 start:
 clrscr();
 i=0;
 int s,ch;
 ch=menu_pointer(2);
  //a lot of jump statements have been used to change the control the flow of
  //program and reduce unexpected errors.
 gotoxy(1,25);
 switch(ch)
 {
  case 1:goto start2;
  case 2:cout<<"   The rules of the game are very simple. It is just an individual quiz   "<<endl;
             cout<<"   test in which an individual has to answer basic C++ questions. If he   "<<endl;
             cout<<"   answers all answers correctly he is declared winner else he is a loser."<<endl;
             getch();
             goto start;
  case 3:cout<<"   The game is made by Aman Garg association of programmers for   "<<endl;
             cout<<"   people to increase their knowledge about C++ through the medium of games"<<endl;
             getch();
             goto start;
  case 4:return 0;
 };
 start2:
 clrscr();
 cout<<"WELCOME TO THE C++ QUIZ"<<endl;
 cout<<"Enter your name:";
 gets(player_name);
 cout<<"Options to all the questions are (a/b/c/d)"<<endl;
 clrscr();
 cout<<"Q1: Constructors when declared can _______________"<<endl;
 cout<<"\n    a:have a return type                  \n    b:can't have a return type"<<endl;
 cout<<"    c:may or may not have a return type   \n    d:None of the above"<<endl;
 answer=ques_pointer();
 gotoxy(1,8);
 if(answer==2)
 {
  cout<<"The answer is correct"<<endl;
  i++;
 }
 else
 {
  cout<<"The answer is wrong"<<endl;
  cout<<"The correct answer is option (b)"<<endl;
 };
 getch();
 clrscr();
 cout<<"Q2: What happens when no default constructor is given by the user?"<<endl;
 cout<<"\n    a:Constructor is not created " <<endl;
 cout<<"    b:Object is created without constructor"<<endl;
 cout<<"    c:Object is created with a constructor with the help of compiler"<<endl;
 cout<<"    d:None of the above"<<endl;
```

```
answer=ques_pointer();
gotoxy(1,8);
if(answer==3)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (c)"<<endl;
};
getch();
clrscr();
cout<<"Q3: Destructors  _______________"<<endl;
cout<<"\n    a:can be overloaded               \n    b:can't be overloaded"<<endl;
cout<<"    c:depends on the condtion          \n    d:None of the above"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==2)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (b)"<<endl;
};
getch();
clrscr();
cout<<"Q4: Which of the/these functions aren't inherited?"<<endl;
cout<<"\n    a:Constructor and destructor       \n    b:assignment operator"<<endl;
cout<<"    c:friend functions and friend classe \n    d:All of the above"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==4)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (d)"<<endl;
};
getch();
clrscr();
cout<<"Q5: Significance of colon(:) symbol is"<<endl;
cout<<"\n    a:used after labels      "<<endl;
cout<<"    b:just an unary operator"<<endl;
cout<<"    c:shows the relationship of derived class to base class"<<endl;
cout<<"    d:None of the above"<<endl;
```

```
answer=ques_pointer();
gotoxy(1,8);
if(answer==3)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (c)"<<endl;
};
getch();
clrscr();
cout<<"Q6: Why cables in ethernet cable 'Twisted'?"<<endl;
cout<<"\n    a:ethernet cables are also called as twisted pair cables"<<endl;
cout<<"    b:To increase the transmission speed"<<endl;
cout<<"    c:None of the above "<<endl;
cout<<"    d:To reduce the crosstalk"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==4)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (d)"<<endl;
};
getch();
clrscr();
cout<<"Q7: From where does the coaxial cable got its name?"<<endl;
cout<<"\n    a:when it was discovered"<<endl;
cout<<"    b:from the name of a scientist"<<endl;
cout<<"    c:because it contains two conductors parallel to each other"<<endl;
cout<<"    d:None of the above"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==3)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (c)"<<endl;
};
getch();
clrscr();
cout<<"Q8:Popular softwares used for video conferencing is/are- "<<endl;
```

```
cout<<"\n    a:TCP Cam              \n    b:Ekiga"<<endl;
cout<<"    c:Skype                \n    d:All of the above"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==4)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (d)"<<endl;
};
getch();
clrscr();
cout<<"Q9: IP address is a  _______________ address"<<endl;
cout<<"\n    a:32 bit             \n    b:64 bit"<<endl;
cout<<"    c:8 bit              \n    d:16 bit"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==1)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (a)"<<endl;
};
getch();
clrscr();
cout<<"Q10: Which of these are firewall techniques"<<endl;
cout<<"\n    a:Packet Filter             \n    b:Application Gateway"<<endl;
cout<<"    c:Circuit-Level gateway      \n    d:All of the above"<<endl;
answer=ques_pointer();
gotoxy(1,8);
if(answer==4)
{
 cout<<"The answer is correct"<<endl;
 i++;
}
else
{
 cout<<"The answer is wrong"<<endl;
 cout<<"The correct answer is option (d)"<<endl;
};
cout<<endl;
cout<<"Your points are:"<<i<<endl;
int len;
len=strlen(player_name);
if(i==10)
```

```
 {cout.write(player_name,len);
  cout<<" is a CHAMPION!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!";}
 else
 {cout.write(player_name,len);
 cout<<" is a loser !!  LEARN SOMETHING !!!! ";}
 getch();
 return 0;
}

class tictactoe : public menu_pointr
{
int ply1,ply2;
char mat[3][3];
int flag,j,i,flag2,turn,t,x,y,q,escape;
public:
int check(char mat[3][3]);
void outcum(char mat[3][3],int x,int y);
int game();
void running();
void mat_pointer(int &point2,int &point);
void display(int point,int point2);
void ques(int point2);
int ques_pointer();
};
void tictactoe::display(int point,int point2)
{
        gotoxy(1,1);
        cout<<"\n   Player one's pts = "<<ply1;
        cout<<"\n   Player two's pts = "<<ply2;
        cout<<"\n\n\t\t\t\tCHECKBOARD\n";
        cout<<"\t\t\t  ¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬\n\n";
        outcum(mat,point,point2);
        if(turn%2==0)
        cout<<"\n\n   Player one's turn";
        else
        cout<<"\n\n   Player two's turn";
}
int tictactoe::game()
{
        int r=0;
        start:
        clrscr();
        r=menu_pointer(1);
        gotoxy(1,23);
        switch(r)
        {
                case 2 : cout<<"\n\n   The rules of the game are simple you have to make a line of
three\n";
                        cout<<"   in a row or coloum or digonal O or X. To put O or X go to the
respective\n";
                        cout<<"   position to enter and press enter. ";
                        getch();
                        goto start;
```

```
                    case 3 : cout<<"\n\n   The game is made by Aman garg. It is tested by Aman garg. It is sold\n   and registered by A.G. games";
                              cout<<" The game made for fun and as a part of the \n   computer project. The difficulty level of";
                              cout<<"the game is null so play it and \n   have fun";
                              getch();
                              goto start;
                    case 4 : return 0;
                    case 1 : running();
                               break;
          }
          if(escape==1)
          goto start;
          return 0;
}
void tictactoe::running()
{
          ply1=0,ply2=0;
          escape=0;
          start:
          q='n';
          flag=0,j=0,i=0,flag2=0,turn=0,t=0,x=0,y=0;
          clrscr();
          cout<<"This is a O and X game";
          for(i=0;i<3;i++)
          for(j=0;j<3;j++)
          {
                    mat[i][j]=' ';
          }
          clrscr();
          for(j=0;j<9;j++)
          {
                    mat_pointer(x,y);
                    if(escape==1)
                    goto end;
                    if(turn%2==0&&mat[y][x]==' ')
                     {
                              mat[y][x]='O';
                     }
                    else if(turn%2!=0&&mat[y][x]==' ')
                     {
                              mat[y][x]='X';
                     }
                    else
                    {
                              cout<<"\nThis location is not empty ";
                              getch();
                              j--;
                              turn--;
                    }
                    flag=check(mat);
                    if(flag==1)
                    {
                        clrscr();
                        if(turn%2==0)
                        {
                                flag2=1;
                        }
                        break;
                }
                else
                clrscr();
                turn++;
        }
        if(flag==1)
        {
                if(flag2==1)
                {
                        cout<<"\n   Player one won \n";
                        ply1++;
                }
                else
                {
                        cout<<"\n   Player two won \n";
                        ply2++;
                }
        }
        if(flag!=1)
        {

                cout<<"\n   No one won \n";
        }
        outcum(mat,4,4);
        getch();
        q=ques_pointer();
        if(q==1)
        {
                flag=0;
                goto start;
        }
        else
        {
                clrscr();
                if (ply1>ply2)
                cout<<"\n    Player one won by "<<ply1-ply2<<" points ";
                else if(ply2>ply1)
                cout<<"\n    Player two won by "<<ply2-ply1<<" points ";
                else
                cout<<"\n    It was a tie between player one and two. ";
        }
        cout<<"\n\n    Thank you for playing Aman gargs game";
        getch();
        end:
}
void tictactoe::outcum(char mat[3][3],int x,int y)
{
   int i,j;
   for(i=0;i<3;i++)
   {   cout<<"\t\t\t\t" ;
          for(j=0;j<3;j++)
          {
             if(x==i&&y==j)
             cout<<'#';
             else
             cout<<mat[i][j];
             if(j<2)cout<<" | ";
          }
          if(i<2)cout<<"\n\t\t\t\t--|---|--\n";
   }
}
int tictactoe::check(char mat[3][3])
{
   int i,j,flag=0;
   for(i=0;i<3;i++)
   {
          if(mat[i][0]==mat[i][1]&&mat[i][1]==mat[i][2]&&mat[i][1]!=' ')
          flag=1;
          if(mat[0][i]==mat[1][i]&&mat[1][i]==mat[2][i]&&mat[1][i]!=' ')
          flag=1;
   }
   if(mat[0][0]==mat[1][1]&&mat[1][1]==mat[2][2]&&mat[1][1]!=' ')
   flag=1;
   if(mat[0][2]==mat[1][1]&&mat[1][1]==mat[2][0]&&mat[1][1]!=' ')
   flag=1;
   if(flag==1)
   return 1;
   else
   return 0;
}

void tictactoe::mat_pointer(int &point2,int &point)
{
    float ascii;
    char ch;
    while(1)
    {
          display(point,point2);
          while((ch=getch())==0);
          ascii=ch;
          if(ch=='P'||ch=='s')
            point=point+1;
          if(ch=='H'||ch=='w')
            point=point-1;
          if(ch=='M'||ch=='d')
            point2=point2+1;
          if(ch=='K'||ch=='a')
            point2=point2-1;
          if(point==3)
            point=0;
```

```
        if(point<0)
          point=2;
        if(point2==3)
          point2=0;
        if(point2<0)
          point2=2;
        if(ascii==13||ascii==27||ch=='e')
        break;
    }
    if(ascii==27||ch=='e')
    escape=1;
}

void tictactoe :: ques(int point2)
{
                int s;
                gotoxy(9,8);
                cout<<"\n\n\tDo you want to play again ?????\n\t";
                switch(point2)
                {
                        case 0:gotoxy(12,12);
                        cout<<"Yes * \t\t\tNo  ";
                        break;
                        case 1:gotoxy(12,12);
                        cout<<"Yes \t\t\tNo *";
                        break;
                }
}

int tictactoe :: ques_pointer()
{
    float ascii,point2=0;
    char ch;
    while(1)
    {
        ques(point2);
        while((ch=getch())==0);
        ascii=ch;
        if(ch=='K'||ch=='H'||ch=='s'||ch=='a')
          point2=point2-1;
        if(ch=='M'||ch=='P'||ch=='w'||ch=='d')
          point2=point2+1;
        if(point2==2)
          point2=0;
        if(point2<0)
          point2=1;
        if(ascii==13)
        break;
    }
    return (point2+1);
}

class puzzule : public menu_pointr
```

```
{
int mat[5][4];
int x,y,win,randm,a[19];
public:
void outcum();
void initialize_mat();
int random_no_generate();
int game();
void running();
void mat_pointer();
void display();
int check();
};

void puzzule::initialize_mat()
{
        int i,j;
        for(i=0;i<20;i++)
        {
                a[i]=i;
        }
        for(i=0;i<5;i++)
        for(j=0;j<4;j++)
        mat[i][j]=random_no_generate();
}
int puzzule::random_no_generate()
{
        int temp;
        start:
        randm=random(20);
        if(a[randm]==-1)
        goto start;
        temp=a[randm];
        a[randm]=-1;
        return temp;
}

void puzzule::display()
{
        gotoxy(1,1);
        outcum();
}
int puzzule::game()
{
        int r=0;
        start:
        clrscr();
        r=menu_pointer(6);
        gotoxy(1,23);
        switch(r)
        {
                case 2 : cout<<"\n\n   The rules of the game are simple you have to arrange all the no in
\n";
```

```
                        cout<<"   accending order and you can do that by changing boxes positions only
boxes \n";
                        cout<<"   on the side of blank cell can be moved. once all boxes are arranged you
win. ";
                        getch();
                        goto start;
                case 3 : cout<<"\n\n   The game is made by Aman garg. It is tested by Aman garg. It is
sold\n   and registered by A.G. games";
                        cout<<" The game made for fun and as a part of the \n   computer project. The
difficulty level of";
                        cout<<"the game is null so play it and \n   have fun";
                        getch();
                        goto start;
                case 4 : return 0;
                case 1 : running();
                         break;

        }
        if(win==0)
        goto start;
        return 0;
}
void puzzule::running()
{
        clrscr();
        win=0;
        x=0,y=0;
        initialize_mat();
        mat_pointer();
        display();
        if(win==1)
        {
        cout<<"\n\n\n    You have won the game \n    You are great puzzule solver";
        cout<<" Thank you for playing Aman Gargs game";
        getch();
        }
}
void puzzule::outcum()
{
   int i,j;
   cout<<"\n\t";
   for(i=0;i<30;i++)
   cout<<' ';
   for(i=0;i<5;i++)
   {
        cout<<"\n\t";
        for(j=0;j<4;j++)
        {
                if(y==i&&x==j)
                cout<<"       ";
                else
                cout<<"*-----*";
        }
        cout<<"\n\t";
        for(j=0;j<4;j++)
        {
                if(y==i&&x==j)
                cout<<"       ";
                else
                cout<<"|     |";
        }
        cout<<"\n\t";
        for(j=0;j<4;j++)
        {
           if(y==i&&x==j)
           cout<<"       ";
           else
           {
                if(mat[i][j]<10)
                cout<<"|  "<<mat[i][j]<<"  |";
                else
                cout<<"| "<<mat[i][j]<<"  |";
           }
        }
        cout<<"\n\t";
        for(j=0;j<4;j++)
        {
                if(y==i&&x==j)
                cout<<"       ";
                else
                cout<<"|     |";
        }
        cout<<"\n\t";
        for(j=0;j<4;j++)
        {
                if(y==i&&x==j)
                cout<<"       ";
                else
                cout<<"*-----*";
        }
   }
   cout<<"\n\t";
   for(i=0;i<30;i++)
   cout<<' ';
   for(i=0;i<25;i++)
   {
        gotoxy(38,3+i);
        cout<<"";
   }
}

void puzzule::mat_pointer()
{
    float ascii;
    char ch;
    int i,j,p;
    for(i=0;i<5;i++)
    for(j=0;j<4;j++)
    if(mat[i][j]==0)
    {
        y=i;
        x=j;
        break;
    }
    while(1)
    {
        p=check();
        if(p)
        break;
        display();
        while((ch=getch())==0);
        ascii=ch;
        if((ch=='P'||ch=='s')&&y!=0)
        {
            mat[y][x]=mat[y-1][x];
            mat[y-1][x]=0;
            y=y-1;
        }
        if((ch=='H'||ch=='w')&&y!=4)
        {
            mat[y][x]=mat[y+1][x];
            mat[y+1][x]=0;
            y=y+1;
        }
        if((ch=='M'||ch=='d')&&x!=0)
        {
            mat[y][x]=mat[y][x-1];
            mat[y][x-1]=0;
            x=x-1;
        }
        if((ch=='K'||ch=='a')&&x!=3)
        {
            mat[y][x]=mat[y][x+1];
            mat[y][x+1]=0;
            x=x+1;
        }
        if(ascii==13||ascii==27||ch=='e')
        break;
    }
    if(p==1)
    win=1;
}

int puzzule::check()
{
        int i=0,j=0,k=0,flag=0;
        for(i=0;i<5;i++)
        {
            for(j=0;j<4;j++)
```

```
                        {
                                    if(mat[i][j]==0)
                                    continue;
                                    k++;
                                    if(mat[i][j]!=k)
                                    {
                                                flag=0;
                                                break;
                                    }
                                    else
                                    flag=1;
                        }
                        if(flag==0)
                        break;
            }
            return flag;
}

class tambola : public menu_pointr
{
static int chance;//this has been used to count the number of chances taken
                        //to complete the game b/w the players.
int c[400],players,i,j,k,a[100][10][10],num[100];
char player_name[100][80];
public:
void assign();
void competition();
void tickets(int t);
int play();
void announcer_display();
void announcer();
int realtime_play();
void tikets_of_players(int t);
};

int tambola::chance=0;

void tambola::assign()
{
//this is used for assigning the values to the array which is used later for
//storing temp values and checking whether a number is repeated or not.
for(i=0;i<400;i++)
{
 c[i]=0;
};

};

void tambola::competition()
{
//Actually in this game only the main game proceedes because it does most of
//the checking work and calls various functions for the required purpose.
//Apart from that it also accesses player ticket and name and modifies acc.
```

```
//to the rules of the game and keeps the game going on.
int f=0,p,flag=0,gamer=0;
do
{
 clrscr();
 gamer=realtime_play();//realtime play gives a non repeated random value(1-99)
 cout<<"\t\tThe announced number is"<<gamer<<endl;
 for(p=0;p<players;p++)
 {
  cout<<endl;
  cout<<"\tTicket of the player:";
  puts(player_name[p]);
  cout<<"\tis -->"<<endl;
  tikets_of_players(p);

  //loop for checking whether announced number is in ticket or not.
  for(i=0;i<3;i++)
  {
            for(j=0;j<11;j++)
            {
             if(
(i==0&&(j==0||j==2||j==4||j==6||j==8))||(i==2&&(j==0||j==2||j==4||j==6||j==8))||(i==1&&(j==1||j==3||j==
5||j==7)))
             {
              if(a[p][i][j]==gamer)
              {a[p][i][j]=0;}

             }
            }
  };

  getch();
 };

 int check=0;
 //loop for checking the winner of the game
 for(p=0;p<players;p++)
 {
  check=0;
  for(i=0;i<3;i++)
  {
   for(j=0;j<11;j++)
   {
    if(
(i==0&&(j==0||j==2||j==4||j==6||j==8))||(i==2&&(j==0||j==2||j==4||j==6||j==8))||(i==1&&(j==1||j==3||j==
5||j==7)))
     {
     if(a[p][i][j]==0)
     check++;
     if(check==14)
     {
      cout<<"Winner of the game is"<<endl;
      puts(player_name[p]);
      f=1;
     }
    }
   }
  }
 };
 chance++;
 cout<<"The chance is:"<<chance<<endl;
}while(f!=1);

};//end of function


void tambola::tikets_of_players(int t=0)
{
//This function is responsible for displaying the tickets.
 for(i=0;i<3;i++)
 {
  cout<<"\t\t";
  for(j=0;j<11;j++)
  {
   if(
(i==0&&(j==0||j==2||j==4||j==6||j==8))||(i==2&&(j==0||j==2||j==4||j==6||j==8))||(i==1&&(j==1||j==3||j==
5||j==7)))
   {if(a[t][i][j]<10)
    cout<<" "<<a[t][i][j];
    else
    cout<<a[t][i][j];}
   else
   {cout<<"  ";}
  }
 cout<<endl;
 };
};


void tambola::announcer_display()
{
//this function displays the grid of numbers in which the game is played.
k=1;
for(i=0;i<9;i++)
{
 cout<<"                ";
 for(j=0;j<11;j++)
 {
  if(num[k]<10)
  cout<<num[k]<<"   ";
  else
  cout<<num[k]<<"  ";
  k++;
 }
 cout<<endl<<endl;
};
```

```
};

int tambola::realtime_play()
{
//this function evaluates carefully whether a number has been previously
//announced or not and then returns a value to be announced.
 int temp;
 i=0;
 start:
 i=0;
 temp=random(99)+1;
 while(c[i]!=0)
 {
  if(c[i]==temp)
  goto start;
  i++;
 };
 c[i]=temp;
 i=0;

 return (temp);
};

void tambola::announcer()
{
//it is responsible for assigning values.
 for(i=1;i<=99;i++)
 num[i]=i;
 assign();
};

int tambola::play()
{
//void main();
//the function which contains the welcome screen and which is responsible
//for starting the game of tambola and gives option from exiting as well.
 start:
 clrscr();
 int ch,s,flag=0,tic=0,player=0,i=0,j=0;
  ch=menu_pointer(4);
  //a lot of jump statements have been used to change the control the flow of
  //program and reduce unexpected errors.
 gotoxy(1,25);
 switch(ch)
 {
  case 1:goto start2;
            break;
  case 2:cout<<"   The rules of the game are very simple. The game is played in b/w the   "<<endl;
            cout<<"   the number of players you specify. In this game you just have to check "<<endl;
            cout<<"   which of the announced number matches your ticket number. The computer "<<endl;
            cout<<"   announces the number randomly and if any number matches your ticket it "<<endl;
            cout<<"   turns to 0 in the next turn automatically. The winner is the player    "<<endl;
            cout<<"   whose all numbers first become zero. Here you may be lucky if you have "<<endl;
```

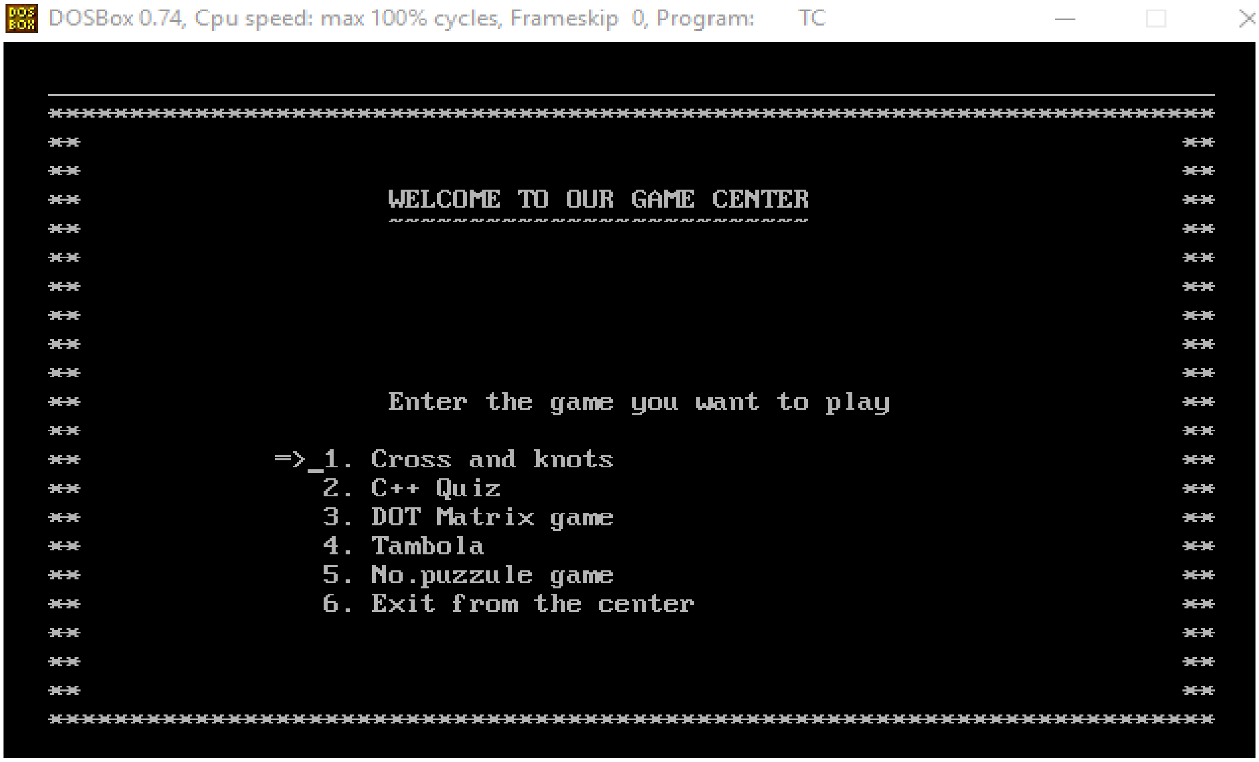
```
             cout<<"   same number multiple times on your ticket. If more than one player wins"<<endl;
             cout<<"   all those players are the winners of the game which means there can be "<<endl;
             cout<<"   a tie. "<<endl;
             getch();
             goto start;
             break;
  case 3:cout<<"   The game is made by Aman Garg association of programmers for   "<<endl;
             cout<<"   people to enjoy the traditional games like tambola on the computer.    "<<endl;
             getch();
             goto start;
             break;
  case 4:return 0;
 };
 start2:
 clrscr();
//the game starts from here.
 cout<<"The list of the numbers in which the tambola is going to be played is:-"<<endl;
 announcer();//does the initialization
 announcer_display();//displays the grid of numbers.

 cout<<"Enter the no. of the players:";
 cin>>players;
 tickets(players);//generates the ticket for players.
 for(i=0;i<players;i++)
 {
  cout<<"Enter the name of the player "<<i+1<<":";
  gets(player_name[i]);
 }

 //loop for giving player names and alloting tickets.
 for(tic=0;tic<players;tic++)
 {
  cout<<"The name of the player "<<tic+1<<":";
  puts(player_name[tic]);

  cout<<"The ";
  cout<<" ticket for the above player is:-"<<endl<<endl;
  for(i=0;i<3;i++)
  {
   cout<<"\t\t";
   for(j=0;j<11;j++)
   {
    if(
(i==0&&(j==0||j==2||j==4||j==6||j==8))||(i==2&&(j==0||j==2||j==4||j==6||j==8))||(i==1&&(j==1||j==3||j==
5||j==7)))
    {
     if(a[tic][i][j]<10)
     cout<<" "<<a[tic][i][j];
     else
     cout<<a[tic][i][j];
    }
    else
    {
```

```
    cout<<"  ";
    }
   }
   cout<<endl;
  }
  cout<<endl;
 };
 getch();
 competition();
 getch();
 chance=0;
 start3:
};

void tambola::tickets(int t)
{
/*this function is used to make the number of tickets required*/
 randomize();
 for(k=0;k<t;k++)
 {
  for(i=0;i<3;i++)
  {
   for(j=0;j<11;j++)
   {
    if(
(i==0&&(j==0||j==2||j==4||j==6||j==8))||(i==2&&(j==0||j==2||j==4||j==6||j==8))||(i==1&&(j==1||j==3||j==
5||j==7)) )
    {a[k][i][j]=random(99)+1;}
    else
    {a[k][i][j]=1; }
   }
  }
 };
};
void menu(int point)
{
             int s;
             for(s=0;s<6;s++)
             {
                          gotoxy(18,s+15);
                          cout<<"  ";
             }
             gotoxy(18,point+15);
             cout<<"Í>";
}
int menu_pointer()
{
     float ascii,point=0;
     char ch;
     int s;
     randomize();
     gotoxy(1,1);
     cout<<"\n  ______________________________________________________________________________";
    cout<<"\n   ***************************************************************************";
    for(s=0;s<4;s++)
    {
          if(s==2)
          {
                    cout<<"\n   **\t\t\tWELCOME TO OUR GAME CENTER \t\t\t **";
                    cout<<"\n   **\t\t\t~~~~~~~~~~~~~~~~~~~~~~~~~~ \t\t\t **";
          }
          if(s==2)
          cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
          cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    }
    cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    cout<<"\n   **\t\t\tEnter the game you want to play\t\t\t **";
    cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    cout<<"\n   **\t\t    1. Cross and knots            \t\t\t **";
    cout<<"\n   **\t\t    2. C++ Quiz                   \t\t\t **";
    cout<<"\n   **\t\t    3. DOT Matrix game            \t\t\t **";
    cout<<"\n   **\t\t    4. Tambola                    \t\t\t **";
  //  cout<<"\n   **\t\t    5. Maze Yfind game            \t\t\t **";
    cout<<"\n   **\t\t    5. No.puzzule game            \t\t\t **";
 //    cout<<"\n   **\t\t    7. Push box                   \t\t\t **";
//     cout<<"\n   **\t\t    8. Snake game                 \t\t\t **";
    cout<<"\n   **\t\t    6. Exit from the center       \t\t\t **";
    for(s=0;s<3;s++)
    {
          cout<<"\n   **\t\t\t\t\t\t\t\t\t **";
    }
    cout<<"\n   ***************************************************************************";
    while(1)
    {
          menu(point);
          while((ch=getch())==0);
          ascii=ch;
          if(ch=='P'||ch=='M'||ch=='s'||ch=='d')
            point=point+1;
          if(ch=='H'||ch=='K'||ch=='w'||ch=='a')
            point=point-1;
          if(point==6)
            point=0;
          if(point<0)
            point=5;
          if(ascii==13)
          break;
    }
    return (point+1);
}
void ques(int point2)
{
                    int s;
                    clrscr();
                    cout<<"\n\n\tDo you want to come again to the game center?????\n\t";
```

```
                switch(point2)
                {
                        case 0:cout<<"\n\t\tYes * \t\t\tNo";
                        break;
                        case 1:cout<<"\n\t\tYes \t\t\tNo *";
                        break;
                }
}

int ques_pointer()
{
    float ascii,point2=0;
    char ch;
    while(1)
    {
        ques(point2);
        while((ch=getch())==0);
        ascii=ch;
        if(ch=='K'||ch=='H'||ch=='w'||ch=='a')
          point2=point2-1;
        if(ch=='M'||ch=='P'||ch=='s'||ch=='d')
          point2=point2+1;
        if(point2==2)
          point2=0;
        if(point2<0)
          point2=1;
        if(ascii==13)
        break;
    }
    return (point2+1);
}
int main()
{

        dotmatrix_game s5;
        cquiz s2;
        tambola s3;
        tictactoe s8;
        maze s10;
        puzzule s12;
        pushbox s14;
        snake s16;
        int ch=0,i;
        int choice=1;
        do
        {
                clrscr();
                ch=menu_pointer();
                switch(ch)
                {
                        case 1:s8.game();
                                break;
                        case 2:s2.quiz();
                break;
            case 3:s5.game();
                break;
            case 4:s3.play();
                break;
            case 5:s12.game();
                break;
            case 6:goto end;
        }
        choice=ques_pointer();
    }while(choice==1);
    end:
    clrscr();
    cout<<endl<<endl;
    cout<<"\tThanks a lot for visiting our game center and playing our games"<<endl<<endl;
    cout<<"\tBest wishes for life from Aman ... !!!!!!!!!!!!!!!!!!!!"<<endl;
    getch();
    return 0;
}
```

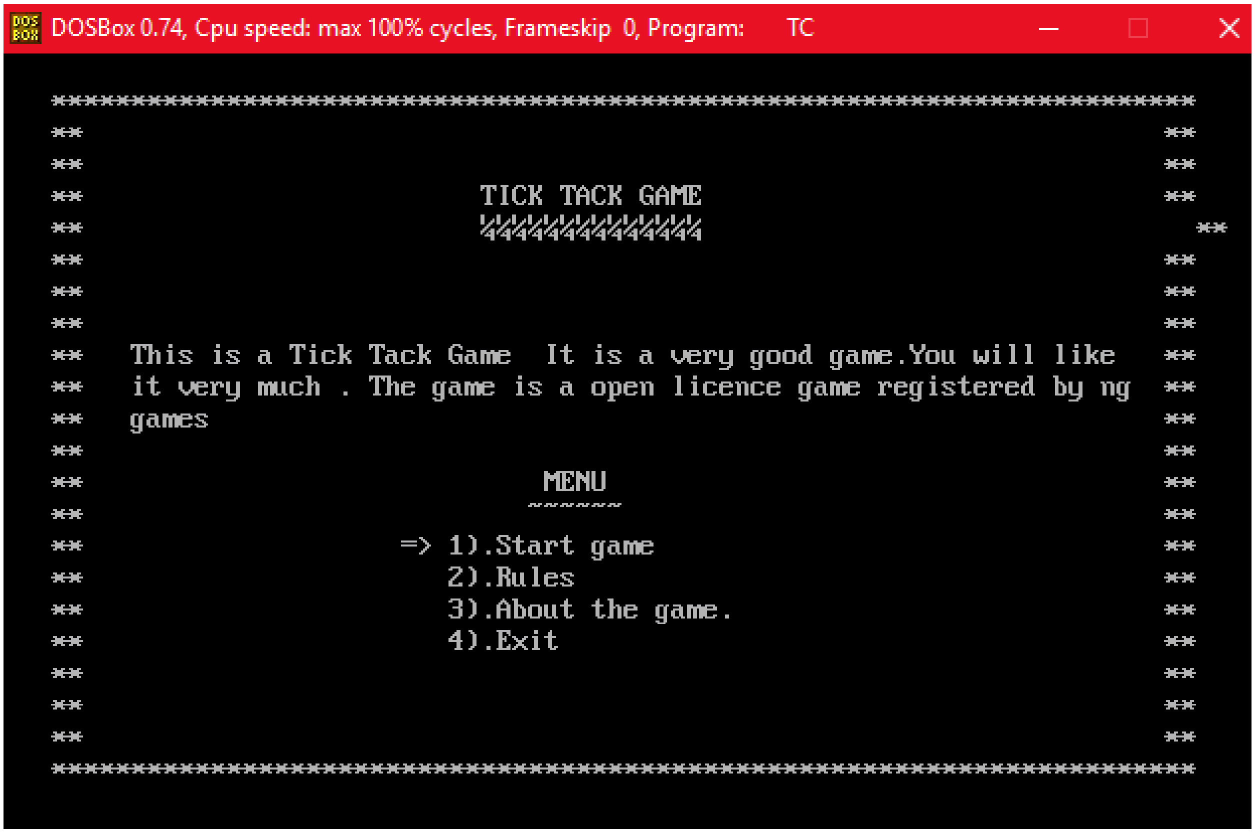
Screenshots

1) Home page


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

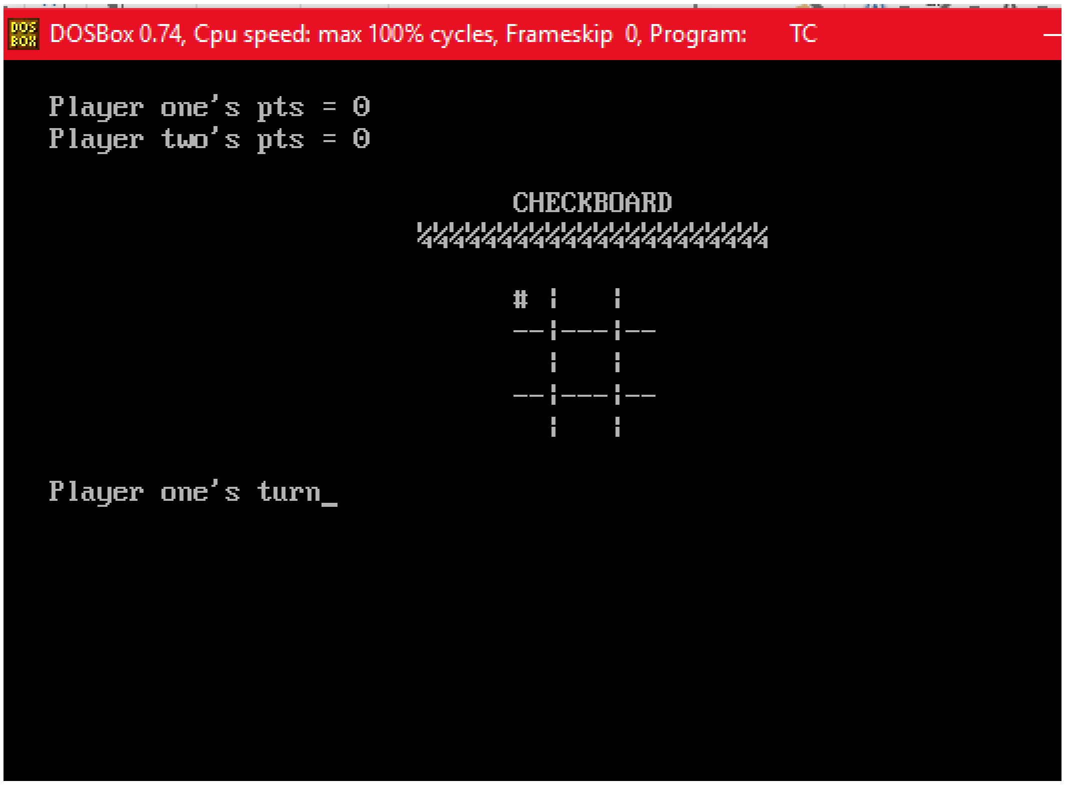
```
________________________________________________________________________
************************************************************************
**                                                                    **
**                                                                    **
**                   WELCOME TO OUR GAME CENTER                       **
**                   ~~~~~~~~~~~~~~~~~~~~~~~~~~                       **
**                                                                    **
**                                                                    **
**                                                                    **
**                                                                    **
**                                                                    **
**                   Enter the game you want to play                  **
**                                                                    **
**            =>_1. Cross and knots                                   **
**               2. C++ Quiz                                          **
**               3. DOT Matrix game                                   **
**               4. Tambola                                           **
**               5. No.puzzule game                                   **
**               6. Exit from the center                              **
**                                                                    **
**                                                                    **
**                                                                    **
************************************************************************
```

2) Tic tac toe intro page


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

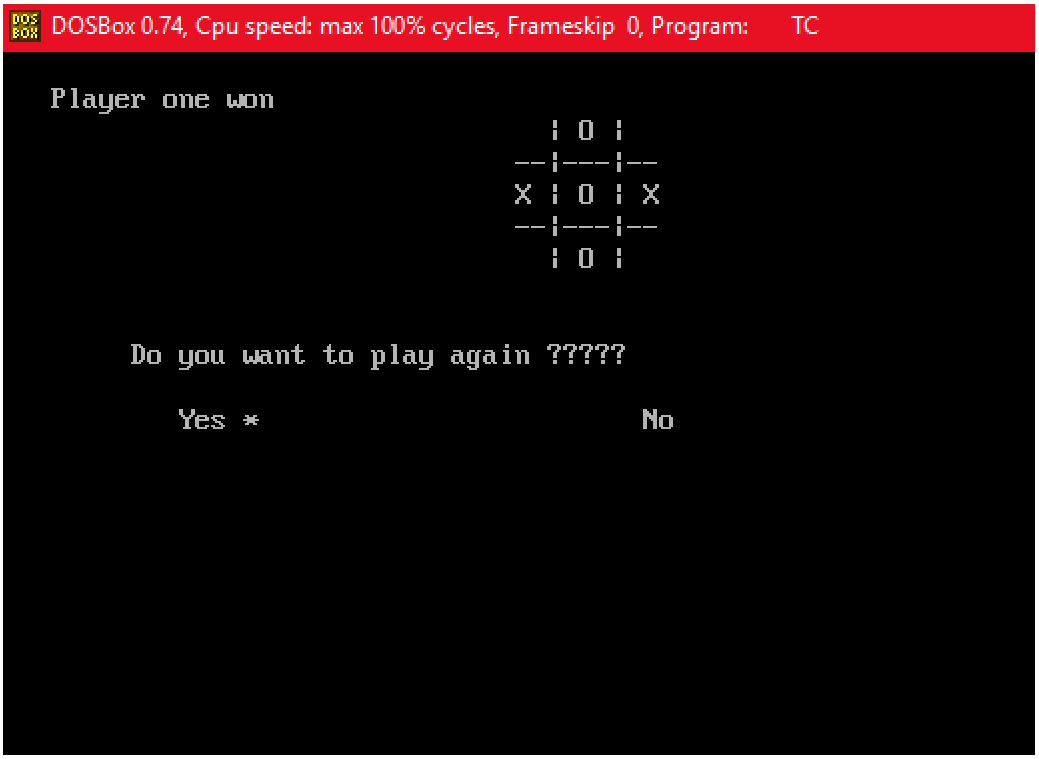
```
************************************************************************
**                                                                    **
**                                                                    **
**                         TICK TACK GAME                             **
**                         ¼¼¼¼¼¼¼¼¼¼¼¼¼¼                               **
**                                                                    **
**                                                                    **
**                                                                    **
**   This is a Tick Tack Game  It is a very good game.You will like  **
**   it very much . The game is a open licence game registered by ng  **
**   games                                                            **
**                                                                    **
**                             MENU                                   **
**                            ~~~~~~                                  **
**                    => 1).Start game                                **
**                       2).Rules                                     **
**                       3).About the game.                           **
**                       4).Exit                                      **
**                                                                    **
**                                                                    **
**                                                                    **
************************************************************************
```

3) (a) Tic Tac Toe Gameplay1


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

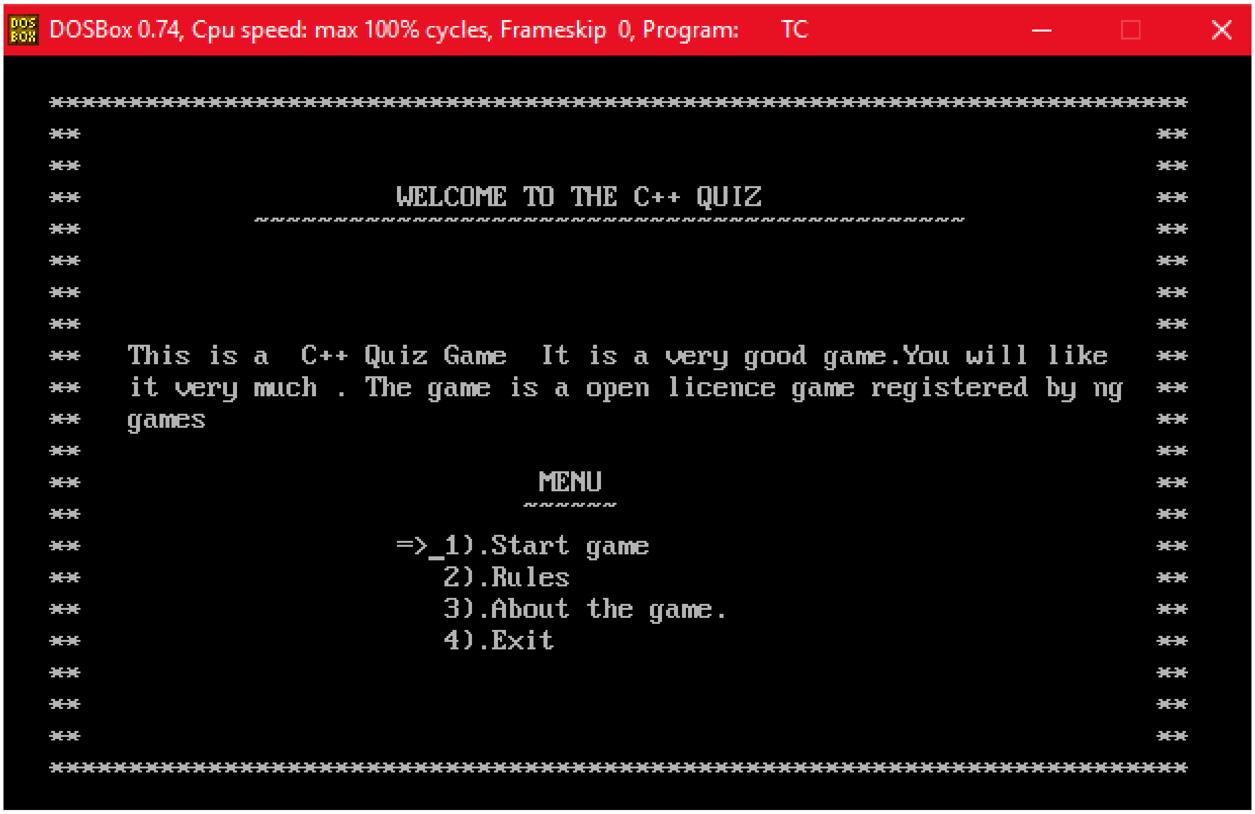
```
Player one’s pts = 0
Player two’s pts = 0

                           CHECKBOARD
                     ¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼

                           # ¦   ¦
                           --¦---¦--
                             ¦   ¦
                           --¦---¦--
                             ¦   ¦


Player one’s turn_
```

3(b) Tic Tac Toe Gameplay2


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

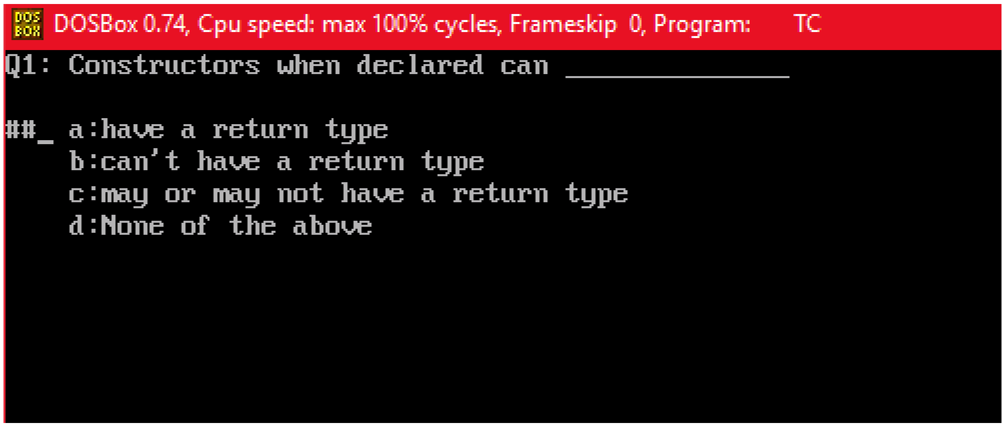
```
Player one won
                                ¦ O ¦
                              --¦---¦--
                              X ¦ O ¦ X
                              --¦---¦--
                                ¦ O ¦



     Do you want to play again ?????

        Yes *                            No
```

4) C++ Quiz Intro Page


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

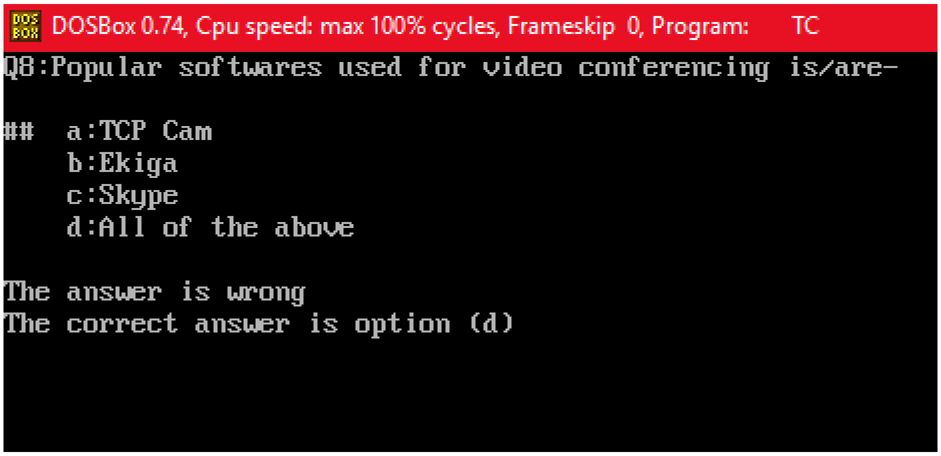
```
************************************************************************
**                                                                    **
**                                                                    **
**                    WELCOME TO THE C++ QUIZ                         **
**          ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~             **
**                                                                    **
**                                                                    **
**                                                                    **
**   This is a  C++ Quiz Game  It is a very good game.You will like   **
**   it very much . The game is a open licence game registered by ng  **
**   games                                                            **
**                                                                    **
**                             MENU                                   **
**                            ~~~~~~                                  **
**                    =>_1).Start game                                **
**                       2).Rules                                     **
**                       3).About the game.                           **
**                       4).Exit                                      **
**                                                                    **
**                                                                    **
**                                                                    **
************************************************************************
```

5) (a) C++ Quiz Gameplay 1


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

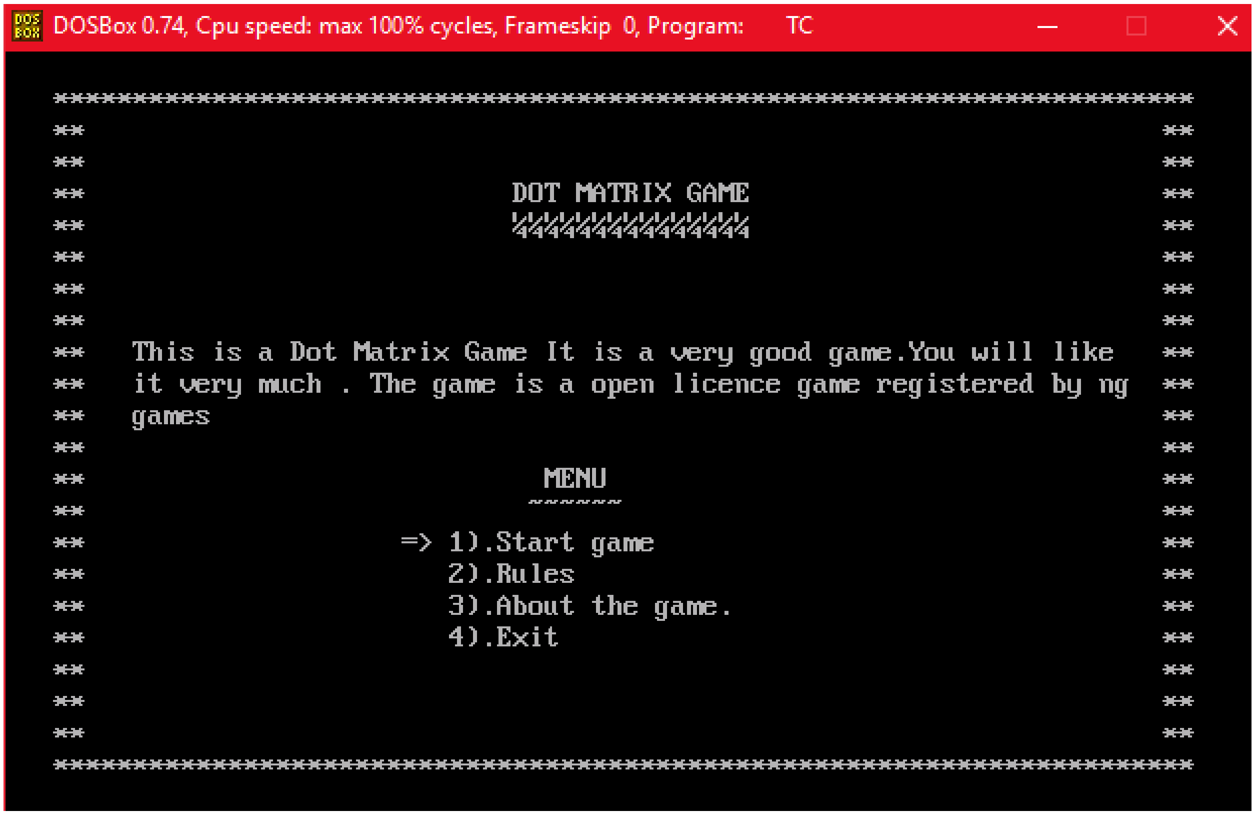
```
Q1: Constructors when declared can ______________

##_ a:have a return type
    b:can't have a return type
    c:may or may not have a return type
    d:None of the above
```

(b) C++ Quiz Gameplay2


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

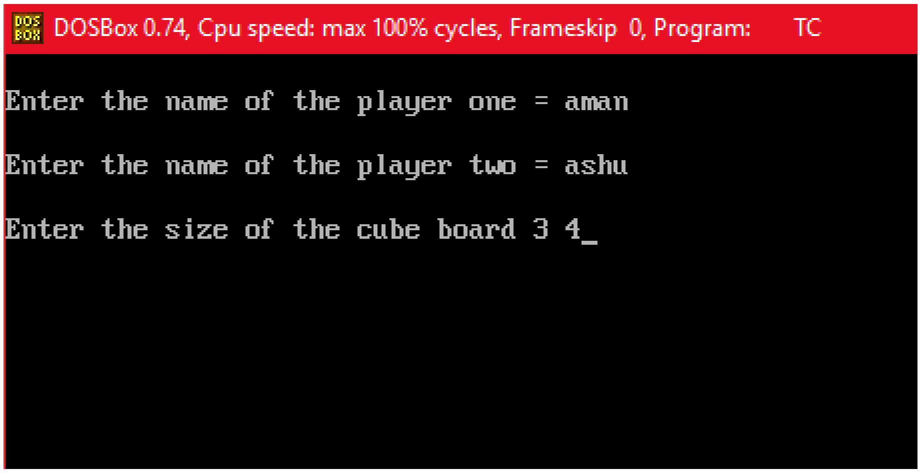
```
Q8:Popular softwares used for video conferencing is/are-

##  a:TCP Cam
    b:Ekiga
    c:Skype
    d:All of the above

The answer is wrong
The correct answer is option (d)
```

6) Dot Matrix Intro Page


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

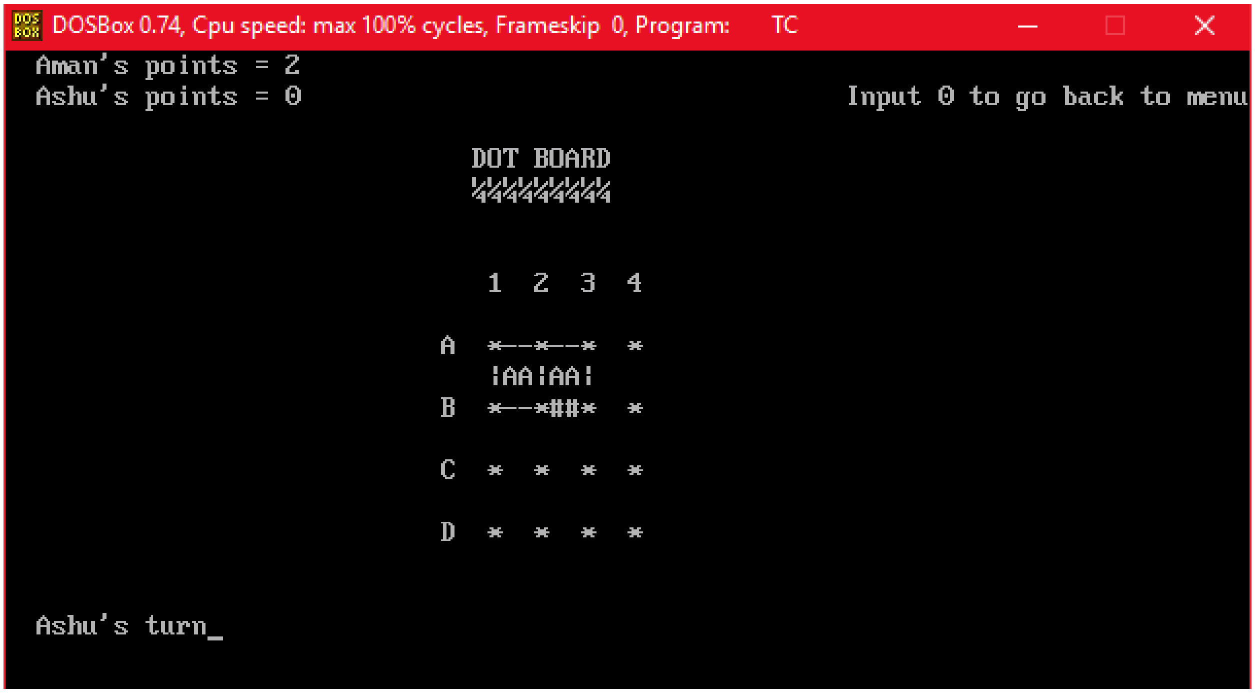
```
************************************************************************
**                                                                    **
**                                                                    **
**                           DOT MATRIX GAME                          **
**                           ¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼                          **
**                                                                    **
**                                                                    **
**                                                                    **
**   This is a Dot Matrix Game It is a very good game.You will like   **
**   it very much . The game is a open licence game registered by ng  **
**   games                                                            **
**                                                                    **
**                             MENU                                   **
**                            ~~~~~~                                  **
**                    => 1).Start game                                **
**                       2).Rules                                     **
**                       3).About the game.                           **
**                       4).Exit                                      **
**                                                                    **
**                                                                    **
**                                                                    **
************************************************************************
```

7) (A) Dot Matrix Gameplay1


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

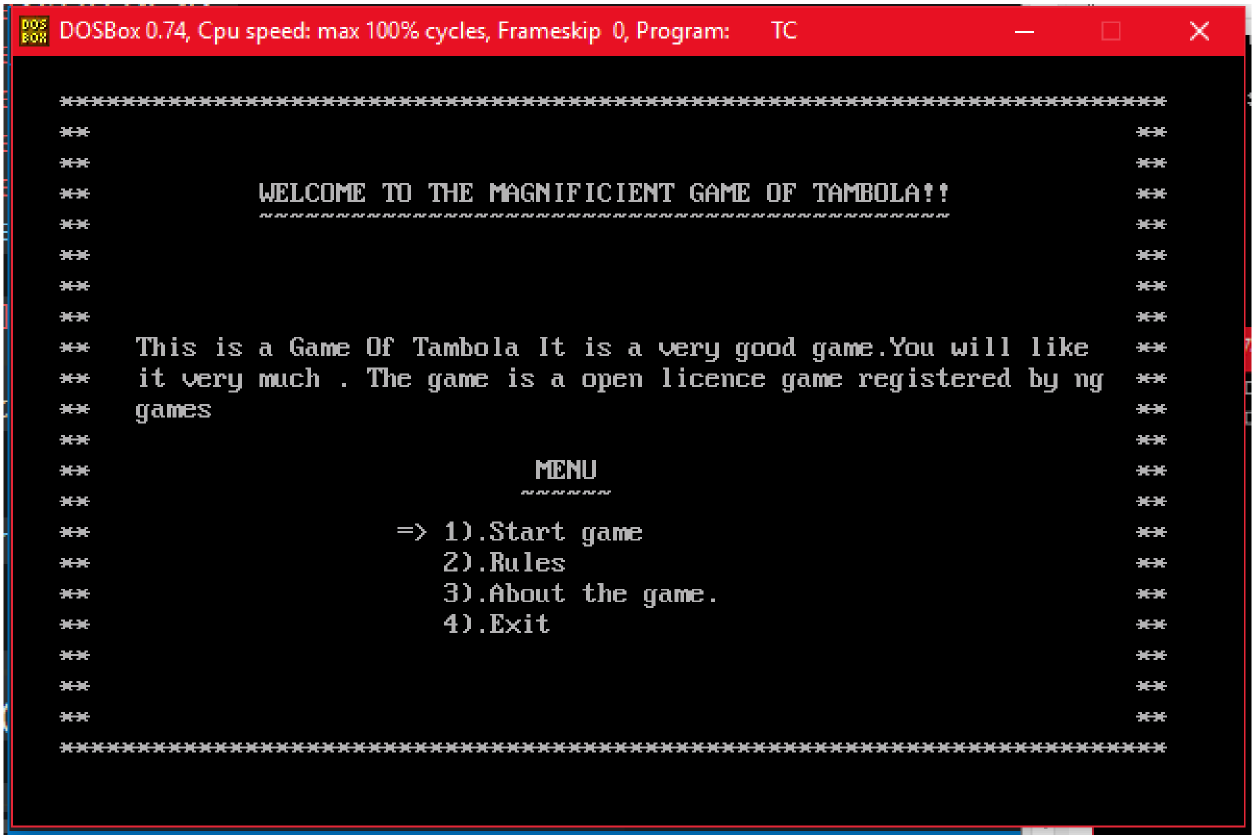
```
Enter the name of the player one = aman

Enter the name of the player two = ashu

Enter the size of the cube board 3 4_
```

(b) Dot Matrix Gameplay2


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

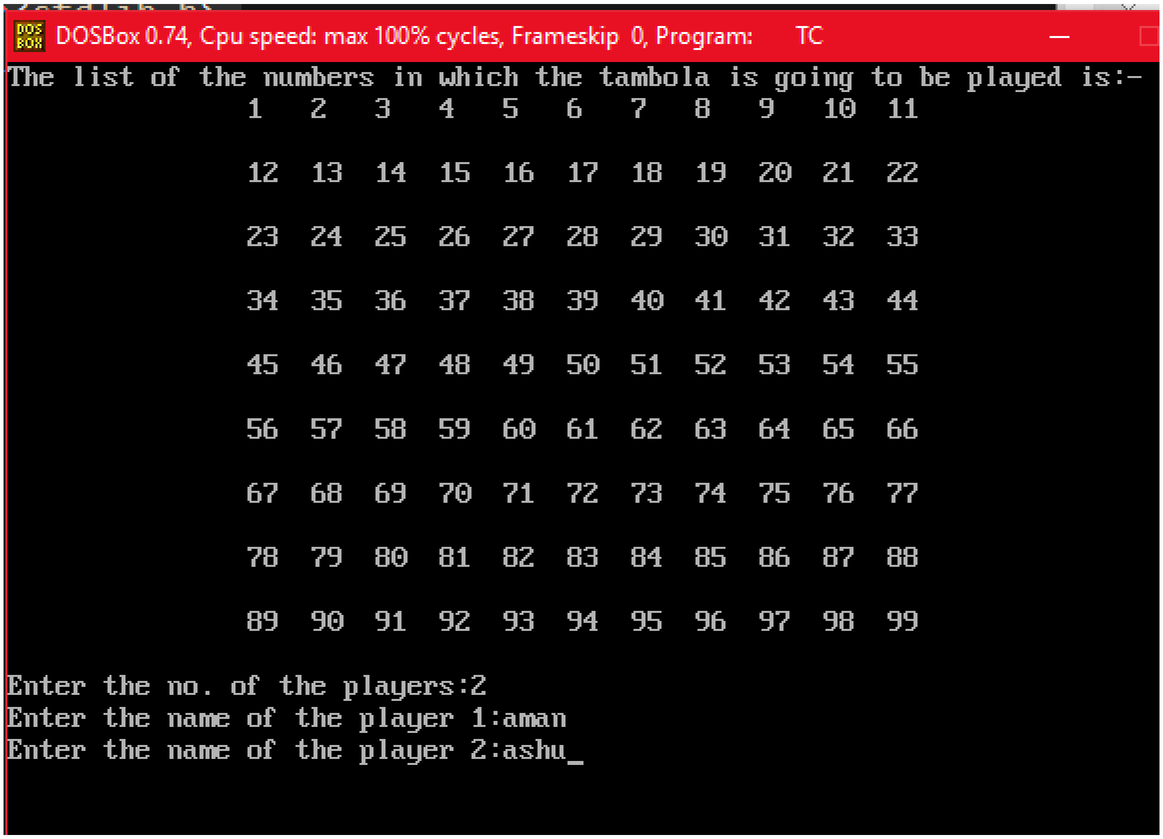
```
  Aman's points = 2
  Ashu's points = 0                                   Input 0 to go back to menu

                              DOT BOARD
                              ¼¼¼¼¼¼¼¼¼


                               1  2  3  4

                            A  *--*--*  *
                               ¦AA¦AA¦
                            B  *--*##*  *

                            C  *  *  *  *

                            D  *  *  *  *


  Ashu's turn_
```

8) Tambola Intro Page


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

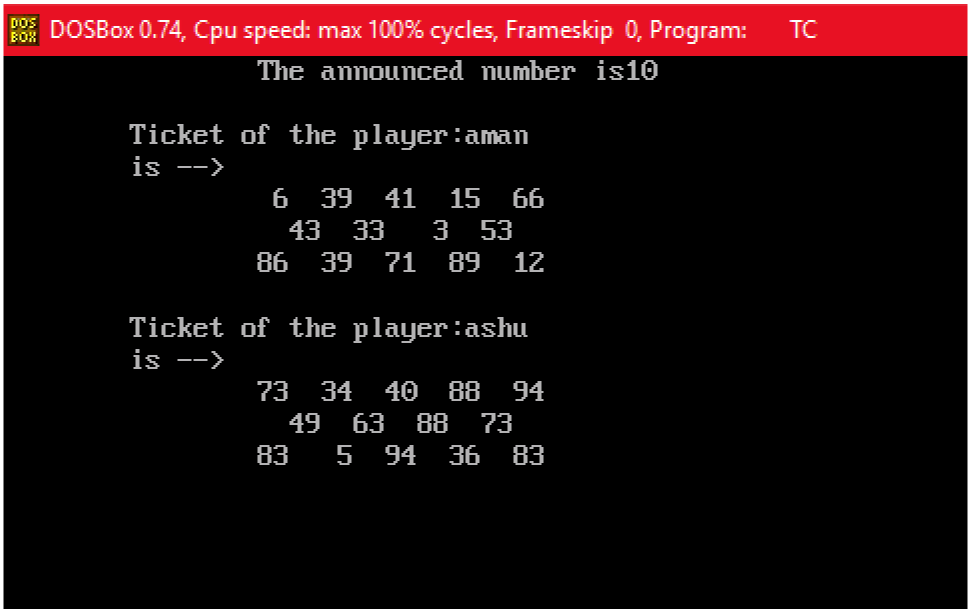
```
************************************************************************
**                                                                    **
**                                                                    **
**           WELCOME TO THE MAGNIFICIENT GAME OF TAMBOLA!!            **
**           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~            **
**                                                                    **
**                                                                    **
**                                                                    **
**   This is a Game Of Tambola It is a very good game.You will like  **
**   it very much . The game is a open licence game registered by ng  **
**   games                                                            **
**                                                                    **
**                             MENU                                   **
**                            ~~~~~~                                  **
**                    => 1).Start game                                **
**                       2).Rules                                     **
**                       3).About the game.                           **
**                       4).Exit                                      **
**                                                                    **
**                                                                    **
**                                                                    **
************************************************************************
```

9) (A) Tambola Gameplay1


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

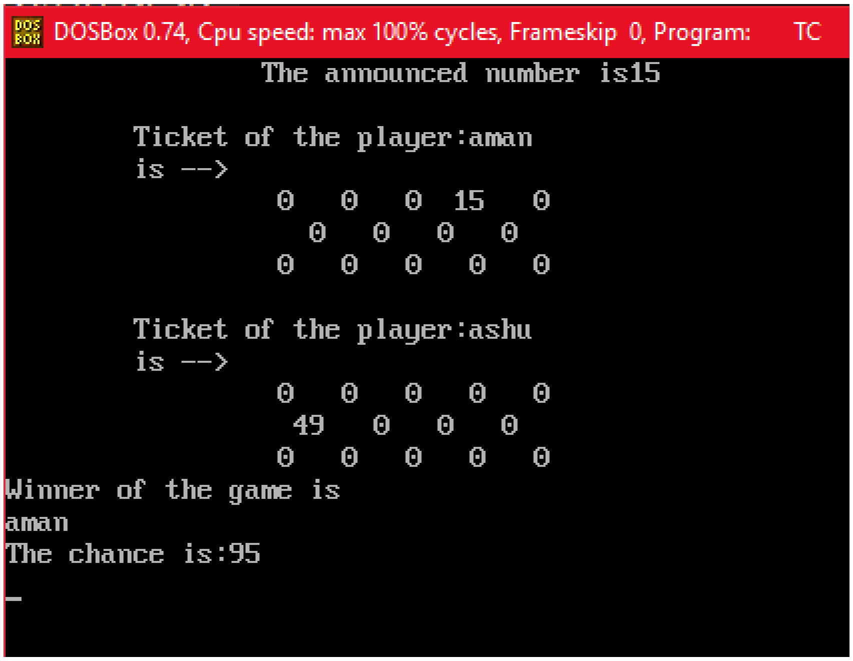
```
The list of the numbers in which the tambola is going to be played is:-
               1   2   3   4   5   6   7   8   9   10  11

               12  13  14  15  16  17  18  19  20  21  22

               23  24  25  26  27  28  29  30  31  32  33

               34  35  36  37  38  39  40  41  42  43  44

               45  46  47  48  49  50  51  52  53  54  55

               56  57  58  59  60  61  62  63  64  65  66

               67  68  69  70  71  72  73  74  75  76  77

               78  79  80  81  82  83  84  85  86  87  88

               89  90  91  92  93  94  95  96  97  98  99

Enter the no. of the players:2
Enter the name of the player 1:aman
Enter the name of the player 2:ashu_
```

(B) Tambola Gameplay2


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

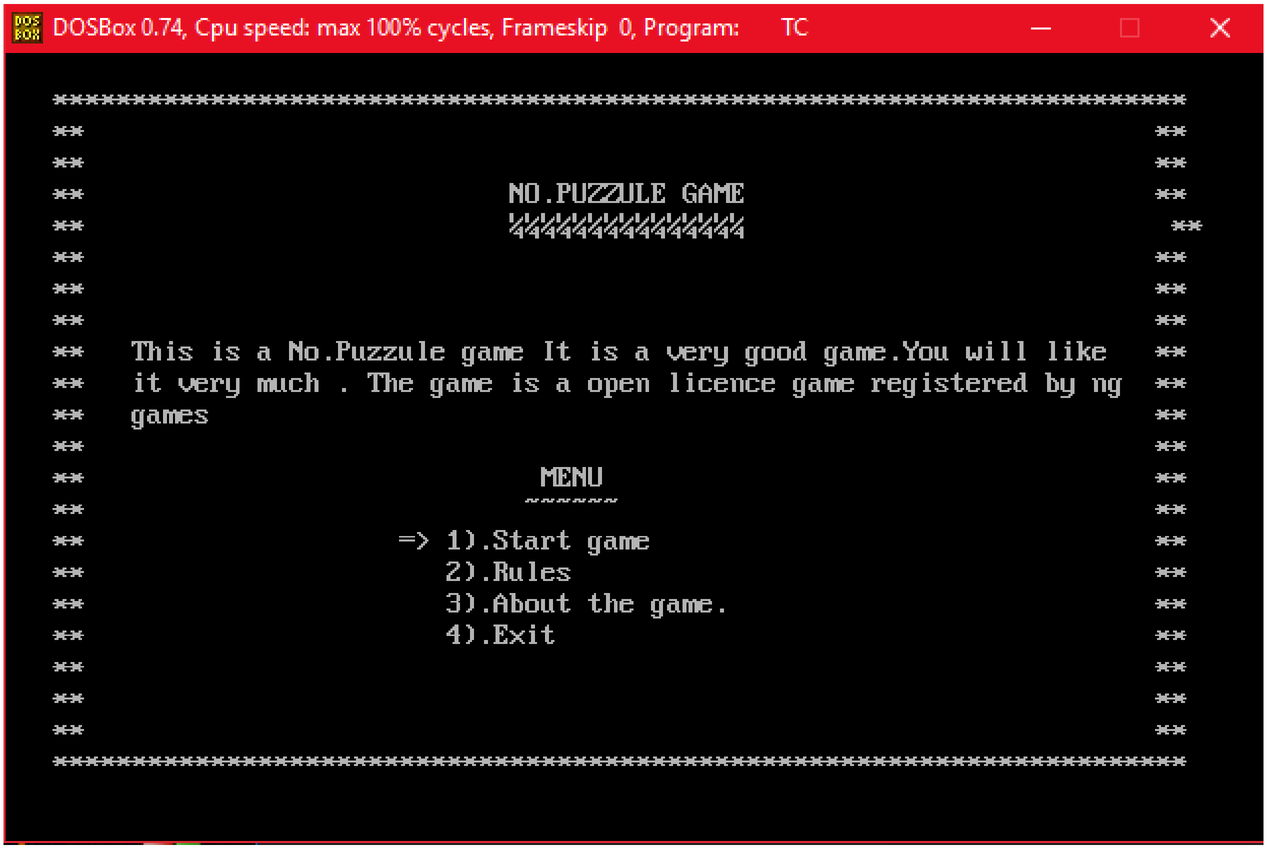
```
                The announced number is10

        Ticket of the player:aman
        is -->
                 6   39  41  15  66
                  43  33   3  53
                86   39  71  89  12

        Ticket of the player:ashu
        is -->
                73   34  40  88  94
                  49  63  88  73
                83    5  94  36  83
```

(C) Tambola Gameplay3


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

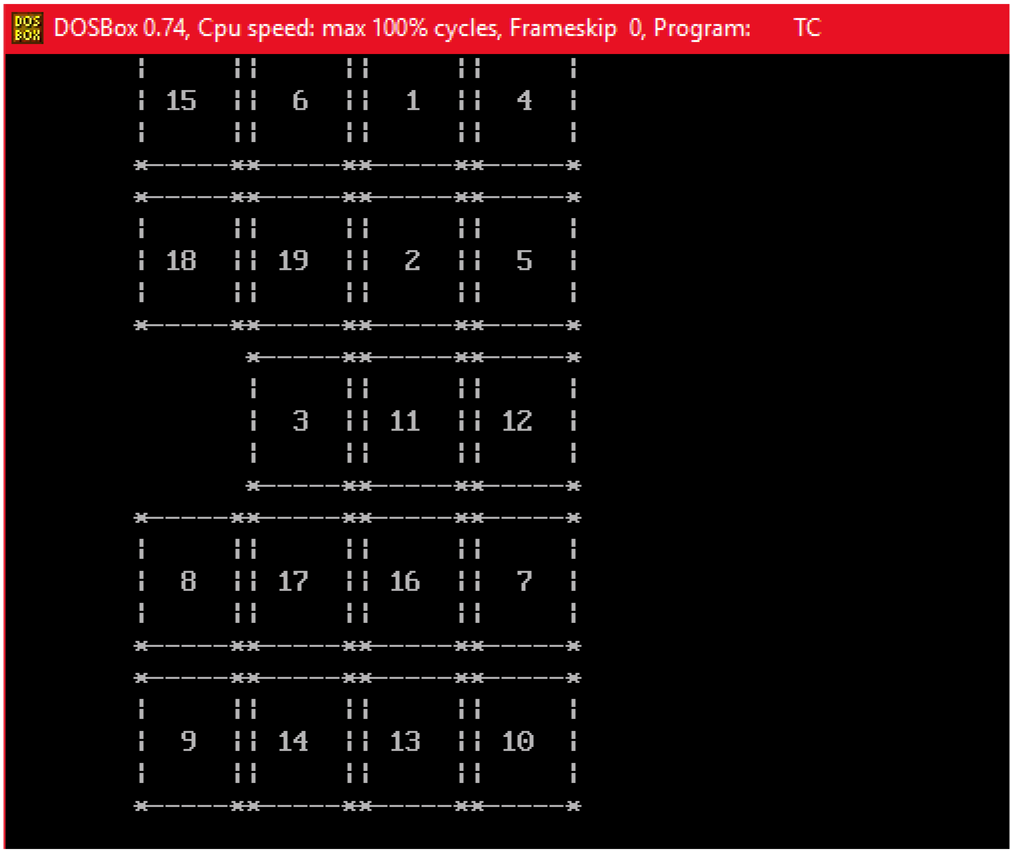
```
                The announced number is15

        Ticket of the player:aman
        is -->
                 0   0   0  15   0
                   0   0   0   0
                 0   0   0   0   0

        Ticket of the player:ashu
        is -->
                 0   0   0   0   0
                  49   0   0   0
                 0   0   0   0   0
Winner of the game is
aman
The chance is:95
_
```

10) No. Puzzle Game Intro Page


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

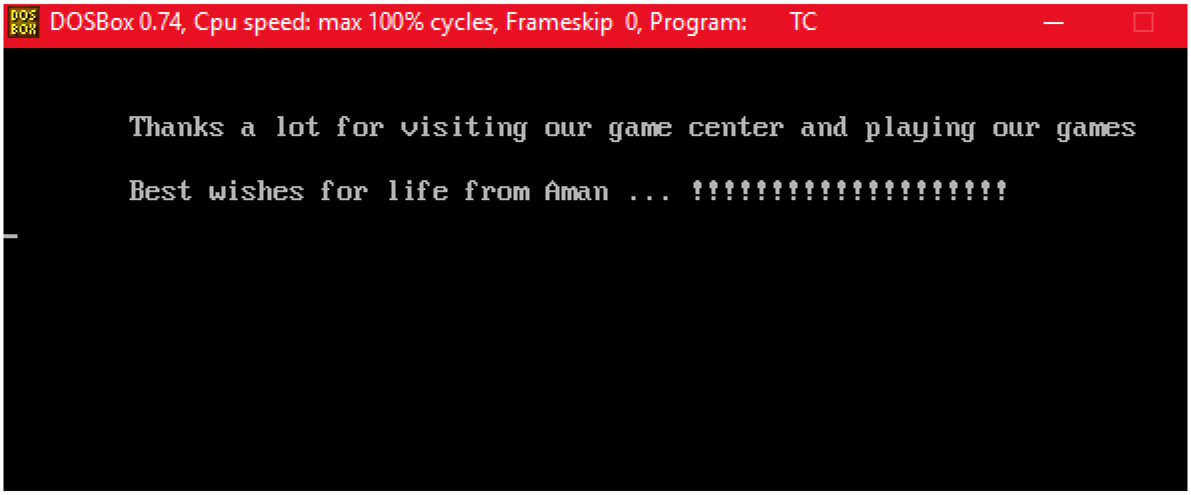
```
   ************************************************************************
   **                                                                    **
   **                                                                    **
   **                         NO.PUZZULE GAME                            **
   **                         ¼¼¼¼¼¼¼¼¼¼¼¼¼¼¼                             **
   **                                                                    **
   **                                                                    **
   **                                                                    **
   **   This is a No.Puzzule game It is a very good game.You will like   **
   **   it very much . The game is a open licence game registered by ng  **
   **   games                                                            **
   **                                                                    **
   **                              MENU                                  **
   **                             ~~~~~~                                 **
   **                     => 1).Start game                               **
   **                        2).Rules                                    **
   **                        3).About the game.                          **
   **                        4).Exit                                     **
   **                                                                    **
   **                                                                    **
   **                                                                    **
   ************************************************************************
```

11) No. Puzzle Game Gameplay 1


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

```
 ¦     ¦¦     ¦¦     ¦¦     ¦
 ¦ 15  ¦¦  6  ¦¦  1  ¦¦  4  ¦
 ¦     ¦¦     ¦¦     ¦¦     ¦
 *-----**-----**-----**-----*
 *-----**-----**-----**-----*
 ¦     ¦¦     ¦¦     ¦¦     ¦
 ¦ 18  ¦¦ 19  ¦¦  2  ¦¦  5  ¦
 ¦     ¦¦     ¦¦     ¦¦     ¦
 *-----**-----**-----**-----*
        *-----**-----**-----*
        ¦     ¦¦     ¦¦     ¦
        ¦  3  ¦¦ 11  ¦¦ 12  ¦
        ¦     ¦¦     ¦¦     ¦
        *-----**-----**-----*
 *-----**-----**-----**-----*
 ¦     ¦¦     ¦¦     ¦¦     ¦
 ¦  8  ¦¦ 17  ¦¦ 16  ¦¦  7  ¦
 ¦     ¦¦     ¦¦     ¦¦     ¦
 *-----**-----**-----**-----*
 *-----**-----**-----**-----*
 ¦     ¦¦     ¦¦     ¦¦     ¦
 ¦  9  ¦¦ 14  ¦¦ 13  ¦¦ 10  ¦
 ¦     ¦¦     ¦¦     ¦¦     ¦
 *-----**-----**-----**-----*
```

12) Post Credits After Games Are Over


DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Program: TC

```
Thanks a lot for visiting our game center and playing our games

Best wishes for life from Aman ... !!!!!!!!!!!!!!!!!!!!!
```

Conclusions

- Through this project we were able to gain knowledge of various games and represent them in a graphical manner in a C++.
- The main challenge in this project was to make it user interactive and while doing so implement these features using OOPS concepts. From classes to inheritance, every OOPS feature has been utilized to make the project easy to maintain and reduce errors.
- Various data structures have been utilized to store the real-time data generated by the user while playing the game.
- Our objective of learning something new and creating something which can be used in our day to day life was met by this project.

References

1) E-Balaguru Swami

2) Data structures by Ellis Horowitz and Sartaj Sahni

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