Question 1

#include <iostream> //allows input and output

#include <ctime> //use to generate seed for the generator

#include <cstdlib> //allow random number generation

using namespace std;//contains all class,objects and functions in c++ std lib for me to use

int main() // first function to be executed returns 0 if sucessfully executed

{

srand(time(0));//seed the generator to the current time object

int n1 = rand() % 31 + 10; //10 to 40 random number

int n2 = rand() % 31 + 10; //10 to 40 random number

int n3 = rand() % 31 + 10; //10 to 40 random number

int t1 = rand() % 41 + 5; //5 to 45 random number

int t2 = rand() % 41 + 5; //5 to 45 random number

int t3 = rand() % 41 + 5; //5 to 45 random number

cout << "Combo first number :" << n1 << endl; //outputs combo first number as string then followed by the n1 variable

cout << "Combo second number :" << n2 << endl; //outputs combo second number as string then followed by the n2 variable

cout << "Combo third number :" << n3 << endl; //outputs combo third number as string then followed by the n3 variable

cout << endl; //ends line

cout << "Tried first number :" << t1 << endl; //outputs tried first number as string then followed by the t1 variable

cout << "Tried second number :" << t2 << endl; //outputs tried second number as string then followed by the t2 variable

cout << "Tried third number :" << t3 << endl; //outputs tried third number as string then followed by the t3 variable

cout << endl; //ends line

if (t1 >= n1-2 && t1 <= n1-2 && t2 >= n2-2 && t2 <= n2-2 && t3 >= n3-2 && t3 <= n3-2) //self explanatory

{

cout << "Lock Opens" << endl; //output lock Opens

}

else

{

cout << "Unable to open" << endl; //output Unable to open

}

return 0;

}

Question2

#include <iostream> //allows input and output

#include <ctime> //use to generate seed for the generator

#include <cstdlib> //allow random number generation

using namespace std; //contains all class,objects and functions in c++ std lib for me to use

int main()

{

srand(time(0)); //seed the generator to the current time object

int act = rand() % 6 + 0; //range 0 to 5 random number

int lead = rand() % 11 + 0; //range 0 to 10 random number

int cgpa = rand() % 6 + 0; //range 0 to 5 random number

int att = rand() % 101 + 0; //range 0 to 100 random number

//self explanatory

if (cgpa >= 3 && att == 100 && act >= 2 && lead >= 7)

{

cout << "High Merit" << endl; //output Higher Merit

}

else if (cgpa >= 3 && att == 100 && act >= 1 && lead >= 3 && lead <= 6)

{

cout << "Medium Merit" << endl; //output Medium Merit

}

else if (cgpa >= 3 && att == 100)

{

cout << "Merit" << endl; //output Merit

}

else if (cgpa >= 2 && att == 100 && (act >= 2 || lead >= 1))

{

cout << "Participating Merit" << endl; //output Participating Merit

}

else

{

cout << "No Merit Award" << endl; //output No Merit Award

}

return 0;

}

Question 3

#include <iostream> //allows input and output

#include <ctime> //use to generate seed for the generator

#include <cstdlib> //allow random number generation

using namespace std; //contains all class,objects and functions in c++ std lib for me to use

int main() // first function to be executed returns 0 if sucessfully executed

{

srand(time(0)); //seed the generator to the current time object

int num[30]; //declare array with 30 elements

int counter = 0; //initialise counter integer variable

int counter2 = 0; //initialise counter2 integer variable

for (int i=0; i< 30; i++) //for loop format

{

num[i] = rand() % 41 + 20; //range from 20 to 60

if (num[i] <= 35)

{

counter ++;

}

else if (num[i] > 45)

{

counter2 ++;

}

}

cout << "There are " << counter << " numbers smaller than or equal to 35" << endl; //output string "There are " followed by variable counter then string " numbers smaller than or equal to 35"

cout << "There are " << counter2 << " numbers larger than 45" << endl; //output string "There are " followed by variable counter2 then string " numbers larger than 45"

return 0;

}

Question 4

#include <iostream> //allows input and output

#include <ctime> //use to generate seed for the generator

#include <cstdlib> //allow random number generation

using namespace std; //contains all class,objects and functions in c++ std lib for me to use

int main() // first function to be executed returns 0 if sucessfully executed

{

int num[10]; // creates array with 10 elements

srand(time(0)); //seed the generator to the current time object

//while loop to generate numbers for array

cout<<"Array: ";

int a = 0;

while(a<10)

{

num[a] = rand()% 50 + 1; //1-50 random number

cout<<num[a]<<"\t"; //cout each array element then tab it

a++;

}

cout<<endl; // endline

int z = rand()% 50 + 1; // 1-50 random number then put it in var z

cout<<"Value: "<<z<<endl; // output value string then var z

cout<<"Array: "; //output string array

int b = 0; //initialise b

while(b<10)

{

//replace the array element with -1 if it > z

if(num[b]>z) //if each element in num is more than z

num[b]=1; // each element of num array is set to 1

cout<<num[b]<<" "; //output each element of num array

b++; // increment b counter var

}

cout<<endl; //endline

return 0;

}

Question 5

#include <iostream> //allows input and output

#include <cstdlib> //allow random number generation

#include <ctime> //use to generate seed for the generator

using namespace std; //contains all class,objects and functions in c++ std lib for me to use

void generateRandomInput(int aaa[10]) //function with void means no return of values int aaa[10] is a array created INSIDE this function

{

for(int a=0; a<10; a++)

{

aaa[a]=rand()%25 + 1; //random generated 1 to 25

}

}

int countEven(int bbb[10]) // function with return type as integer and int bbb array is created inside function with 10 elements

{

int counter1=0;

for(int b=0; b<10; b++) //for loop

{

if(bbb[b]%2==0) //check for even number if its 0 then its even

counter1++;

}

return counter1; //return value of counter1

}

void printResult(int a, int b) //function with no return of values.int a and b is created in this function.

{

if(a>b)

cout<<"First Array"<<endl;

else if(a<b)

cout<<"Second Array"<<endl;

else

cout<<"Tie"<<endl;

}

int main() // first function to be executed returns 0 if sucessfully executed

{

int array1[10]; //declare integer array of 10 elements

int array2[10];//declare integer2 array of 10 elements

srand(time(0));//seed the generator to the current time object

generateRandomInput(array1);//passes array1 to generateRandomInput function

generateRandomInput(array2);//passes array2 to generateRandomInput function

//counting....

int n1 = countEven(array1); //passess array1 to countEven function and when it returns the value of type integer stores it in n1 integer variable.

int n2 = countEven(array2); //passess array2 to countEven function and when it returns the value of type integer stores it in n2 integer variable.

printResult(n1, n2);//passes n1 and n2 to printResult function

return 0;

}

Question 6

#include <iostream> //allows input and output

#include <cstdlib> //allow random number generation

#include <ctime> //use to generate seed for the generator

#include <windows.h> //windows.h is needed for the timer sleep function

#include <string> //allow use of strings datatype

using namespace std; //contains all class,objects and functions in c++ std lib for me to use

int aaa[6][6]; //global var cos define outside of functions

int currentplayer = 0; //the currentplayer in play

bool stoptimer = false;

int player1\_num = 0; //number of pieces this player has dropped

int player2\_num = 0; //number of pieces this player has dropped

void initializeGameBoard()

{

//output of connect4 all -1

for(int a=0; a<6; a++)

{

for(int b=0; b<6; b++)

{

aaa[b][a]=-1;

cout<<aaa[b][a]<<" ";

}

cout<<endl;

}

cout << endl;

}

void displayboard() //to display and keep updating the board void means no return of values

{

for(int a=0; a<6; a++)

{

for(int b=0; b<6; b++)

{

cout<<aaa[b][a]<<" ";

}

cout<<endl;

}

}

int whogofirst(int x)

{

//decide who go first

int gofirst = rand() % 2 + 1; // 1 to 2 random number

currentplayer = gofirst;

return gofirst;

}

void checkwho(int player,int b,int a)

{

//check if this dude won

//check for 4 x horizontal or vertical

if (aaa[b][a] == player && aaa[b+1][a] == player && aaa[b+2][a] == player && aaa[b+3][a] == player)

{

//player variable won

stoptimer = true;

cout << "player: "<< player << "won" << endl;

}

else if (aaa[b][a] == player && aaa[b][a+1] == player && aaa[b][a+2] == player && aaa[b][a+3] == player)

{

//player variable won

stoptimer = true;

cout << "player: "<< player << "won" << endl;

}

}

void dropPiece(int player) // recieves player var so u knw which player 1 or 2 is currently making the move

{

cout << "Player: " << player << " makes a move" << endl;

int x = rand() % 6 + 0; //0 to 5 random number

int y = 0;

//check if y is occuppied

for (int i=5; i>=0; i--)

{

//check if its empty from bottom

if (aaa[x][i] == -1) // if its empty -1 is empty

{

aaa[x][i] = player;

checkwho(player,x,y); // checkwho won send player which is the current player,x and y are coordinates of the array.

if (player == 1)

{

player1\_num += 1;

cout << "Player 1 dropped: " << player1\_num << "pieces" << endl;

}

else if (player == 2)

{

player2\_num += 1;

cout << "Player 2 dropped: " << player2\_num << "pieces" << endl;

}

break; //so it doesnt replace everything in that column

}

else

{

//if column full

//player ends turn

}

}

displayboard(); // call to show updated board again

}

int main()

{

srand((unsigned int) time(NULL)); //unsigned int so it doesnt give me any warning.

initializeGameBoard(); //call this function to display gameboard

int gofirst = whogofirst(0); //calls whogofirst function and passes 0 there.returns with a random generated number 1 to 2 and store in gofirst var.

dropPiece(gofirst);//calls dropPiece function and pass gofirst there.

//timer

while (stoptimer == false)

{

Sleep(1000); //1000 is 1 sec

//do this

if (gofirst == 1) //if the first player go first then 2nd player shld be making move now

{

dropPiece(2);

currentplayer = 2;

gofirst = 0;

}

else if (gofirst == 2) // vice versa

{

dropPiece(1);

currentplayer = 1;

gofirst = 0;

}

else if (gofirst == 0)

{

if (currentplayer == 1) //after 1st phase of who go first randomly.2nd turn onwards will be from here.

{

dropPiece(2);

currentplayer = 2;

}

else

{

dropPiece(1);

currentplayer = 1;

}

}

}

return 0;

}