Project 1

<Hide And Seek>

CSC-5 46687

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Introduction

Title: Hide and Seek

The project is a simple one-player hide-and-seek game.

In the game, the user is introduced to a board of nine slots and will have to guess which one is the correct slot that the machine is hiding.

Summary

Project Size: Around 350 lines. However, a lot of these lines were redundant to display the board initially and after each user's attempt. These lines can be cleaned up once we introduce functions and arrays so the codes will be much cleaner.

The number of variables: about 15

The project took about two days to code and a few days to produce the idea. I did not have much problem with coding after having steps laid out and pseudocode written.

The player will have three rounds and as many attempts as it takes to find the hiding spot. After the player is done with all three rounds, the program will also announce how many attempts the average attempts per round it took for player to guess correctly.

The project can be further expanded into project 2 as we introduce another player and let the players compete to see who wins with fewer attempts on average to locate the hiding slot.

Pseudocodes

Initialize

Ask the user whether they want to start the game

If the player inputs no, exit program

If the player inputs something other than yes or no, display error message and restarts

If the player inputs yes, start the game

    Generate a random number as the hiding spot

Ask the user to guess until they find the correct hiding spot

If guess does not match hide, ask user to try again. Display updated board (replace the number guessed slot with ‘X’

If guess match hide, user wins. Display updated board (replace the number guessed slot with ‘O’) and let the player know they succeeded. Start next round.

Repeat for three rounds and store the number of player’s attempts in each round onto a file with the player’s name

Access the file to get the numbers of attempts of each round

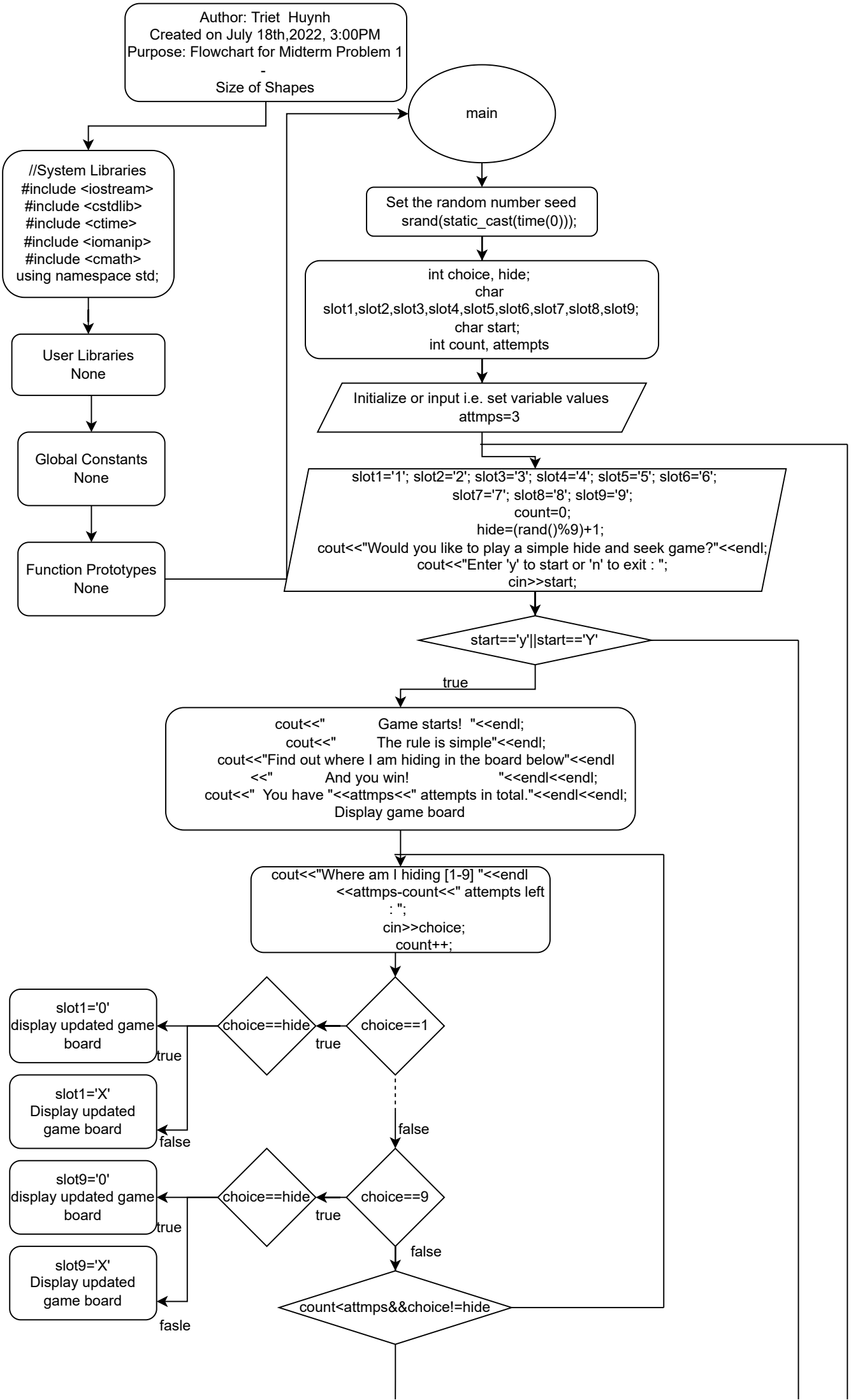
Find the average of attempts per round

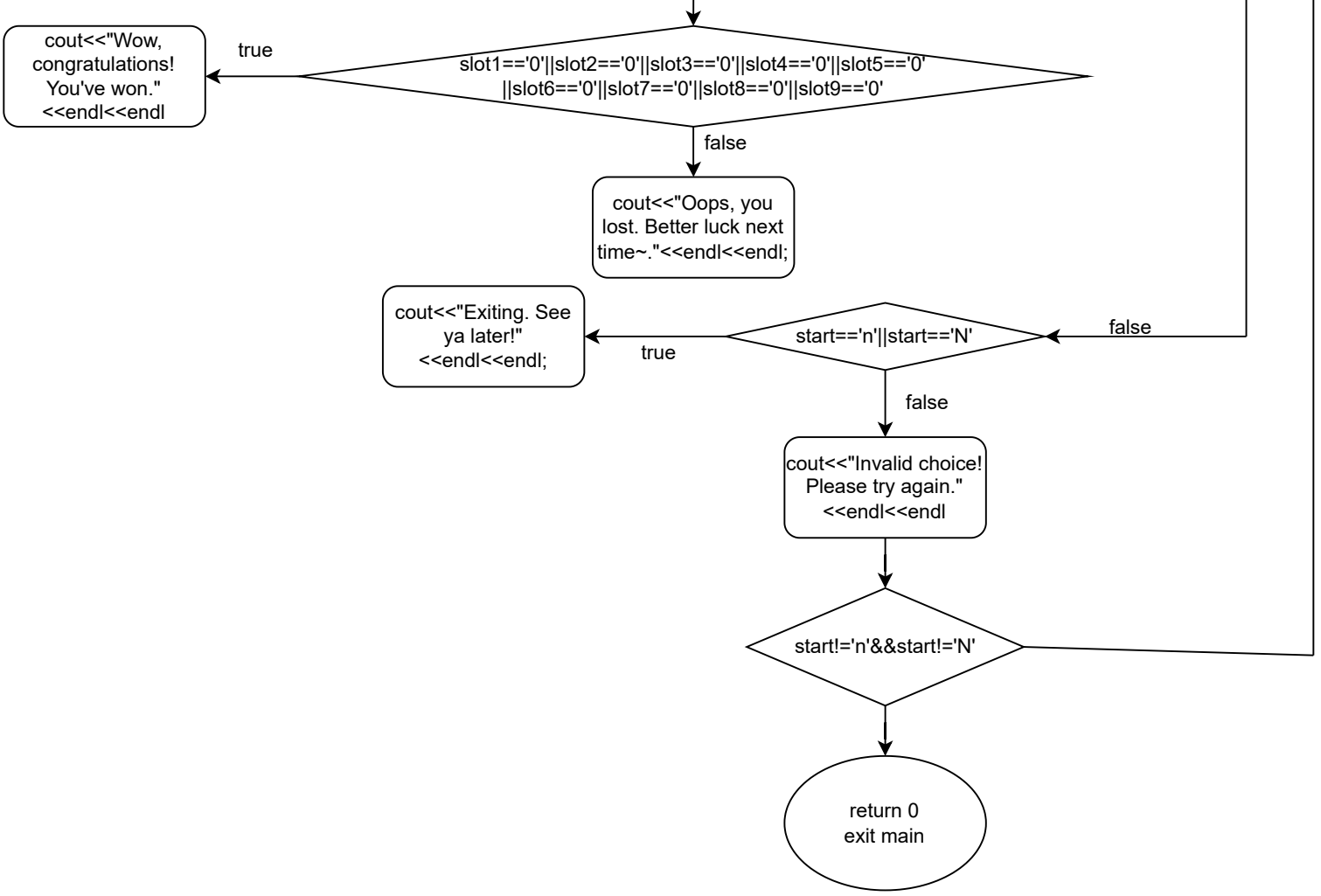
Display results

Ask the user whether they want to start the game again.

Cross Reference for Project 1

Chapter	Section	Topic	Where Line #"s	Pts	Notes
2	2	cout	55-69,71-73,79-88,93-101,109-117,122-130,etc		
	3	libraries	9-14	8	iostream, iomanip, cmath, cstdlib, fstream, string, ctime
	4	variables/literals	30-40		No variables in global area, failed project!
	5	Identifiers	30-40		
	6	Integers	29,34,35	3	
	7	Characters	32,33	3	
	8	Strings	39	3	
	9	Floats No Doubles	37,38	3	Using doubles will fail the project, floats OK!
	10	Bools	40	4	
	11	Sizeof *****			
	12	Variables 7 characters or less			All variables <= 7 characters
	13	Scope ***** No Global Variables			
	14	Arithmetic operators	53,63,372		
	15	Comments 20%+	29-40,42,50,92,106,367,375,377,381	5	Model as pseudo code
	16	Named Constants			All Local, only Conversions/Physics/Math in Global area
	17	Programming Style ***** Emulate			Emulate style in book/in class repositiory
3	1	cin	46,50,84		
	2	Math Expression	53,63,372		
	3	Mixing data types ****			
	4	Overflow/Underflow ****			
	5	Type Casting	372	4	
	6	Multiple assignment *****			
	7	Formatting output	373	4	
	8	Strings	39,51,367	3	
	9	Math Library	372	4	All libraries included have to be used
	10	Hand tracing ******			
4	1	Relational Operators			
	2	if	361	4	Independent if
	4	If-else	47, 379	4	
	5	Nesting	37, 361	4	
	6	If-else-if	47, 377	4	
	7	Flags *****			
	8	Logical operators	47,53,361,377,382	4	
	11	Validating user input	47, 377, 379	4	
	13	Conditional Operator		4	
	14	Switch	86	4	
5	1	Increment/Decrement	53	4	
	2	While	370	4	
	5	Do-while	43,82	4	
	6	For loop	53	4	
	11	Files input/output both	51,367, 368, 369	8	
	12	No breaks in loops ******			Failed Project if included
****** Not required to show			Total	100	


Author: Triet Huynh
Created on July 18th,2022, 3:00PM
Purpose: Flowchart for Midterm Problem 1
-
Size of Shapes
main
//System Libraries
#include <iostream>
#include <cstdlib>
#include <ctime>
#include <iomanip>
#include <cmath>
using namespace std;
User Libraries
None
Global Constants
None
Function Prototypes
None
Set the random number seed
srand(static_cast(time(0)));
int choice, hide;
char
slot1,slot2,slot3,slot4,slot5,slot6,slot7,slot8,slot9;
char start;
int count, attempts
Initialize or input i.e. set variable values
attmps=3
slot1='1'; slot2='2'; slot3='3'; slot4='4'; slot5='5'; slot6='6';
slot7='7'; slot8='8'; slot9='9';
count=0;
hide=(rand()%9)+1;
cout<<"Would you like to play a simple hide and seek game?"<<endl;
cout<<"Enter 'y' to start or 'n' to exit : ";
cin>>start;
start=='y'||start=='Y'
true
cout<<" Game starts! "<<endl;
cout<<" The rule is simple"<<endl;
cout<<"Find out where I am hiding in the board below"<<endl
<<" And you win! "<<endl<<endl;
cout<<" You have "<<attmps<<" attempts in total."<<endl<<endl;
Display game board
cout<<"Where am I hiding [1-9] "<<endl
<<attmps-count<<" attempts left
: ";
cin>>choice;
count++;
choice==1
true
choice==hide
true
slot1='0'
display updated game
board
slot1='X'
Display updated
game board
false
false
choice==9
true
choice==hide
true
slot9='0'
display updated game
board
slot9='X'
Display updated
game board
fasle
false
count<attmps&&choice!=hide


cout<<"Wow, congratulations! You've won." <<endl<<endl
true
slot1=='0'||slot2=='0'||slot3=='0'||slot4=='0'||slot5=='0' ||slot6=='0'||slot7=='0'||slot8=='0'||slot9=='0'
false
cout<<"Oops, you lost. Better luck next time~."<<endl<<endl;
cout<<"Exiting. See ya later!" <<endl<<endl;
true
start=='n'||start=='N'
false
false
cout<<"Invalid choice! Please try again." <<endl<<endl
start!='n'&&start!='N'
return 0
exit main

Codes:

```
/*
* File:   main.cpp
* Author: Triet Huynh
* Created on July 20th, 2022, 10:30 AM
* Purpose: Project 1_Simple Hide and Seek game in a 9 slots board for 1 player
*/

//System Libraries
#include <iostream>  //I/O Library
#include <cstdlib>   //Random Function Library
#include <ctime>     //Time Library
#include <iomanip>   //Formatting Library
#include <cmath>     //math library
#include <fstream>   //file stream
using namespace std;

//User Libraries

//Global Constants, no Global Variables are allowed
//Math/Physics/Conversions/Higher Dimensions - i.e. PI, e, etc...

//Function Prototypes

//Execution Begins Here!
int main(int argc, char** argv) {
    //Set the random number seed
    srand(static_cast<unsigned int>(time(0)));
```

```
//Declare Variables
int choice,     //player's guess
      hide;   //where the object is hiding
char slot1,slot2,slot3,slot4,slot5,slot6,slot7,slot8,slot9; //slot on board
char start;     //user choice to start or quit the game
int rounds;      //3 rounds in total
int attmps,   //number of attempts it took for user to find the right spot
      temp; //temporary value to hold number of attempts in each round
float atmpSum,//total amount of tries in all 3 rounds
      atmpAvg;//average number of attempts it takes for player to succeed per round
string plyer;      //player's name
bool win;         //true if player guess correctly, false otherwise

//Initialize or input i.e. set variable values
do{
   cout<<"Would you like to play a simple hide and seek game?"<<endl;
   cout<<"Enter 'y' to start or 'n' to exit : ";
   cin>>start;
if(start=='y'||start=='Y'){
   cout<<"           Game starts!  "<<endl<<endl;
   cout<<"Enter player's name: ";
   cin>>plyer; //get player's name
   ofstream outputFile(plyer);
   atmpSum=0;
   for(rounds=0;rounds<3;rounds++){
      slot1='1';
      slot2='2';
      slot3='3';
      slot4='4';
```

```
slot5='5';
slot6='6';
slot7='7';
slot8='8';
slot9='9';
hide=(rand()%9)+1;
win=0;
attmps=0;
temp=0;
cout<<endl<<"         The rule is simple"<<endl;
cout<<"Find out where I am hiding in the board below"<<endl
   <<"            And you win!                    "<<endl<<endl;
//display table
cout<<"\t    |    |    "<<endl;
cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
cout<<"\t_____|_____|_____"<<endl;
cout<<"\t    |    |    "<<endl;
cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
cout<<"\t_____|_____|_____"<<endl;
cout<<"\t    |    |    "<<endl;
cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
cout<<"\t    |    |    "<<endl<<endl;

cout<<"Round "<<rounds+1<<endl;
do{
   cout<<"Where am I hiding [1-9] : ";
   cin>>choice;
   attmps++;
   switch (choice){
```

```
case 1:{
   if(choice==hide)
   {
      win=1;
      slot1='0';
      //display updated table
      cout<<"\t    |    |    "<<endl;
      cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
      cout<<"\t_____|_____|_____"<<endl;
      cout<<"\t    |    |    "<<endl;
      cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
      cout<<"\t_____|_____|_____"<<endl;
      cout<<"\t    |    |    "<<endl;
      cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
      cout<<"\t    |    |    "<<endl<<endl;
      break;
   }else
   {
      slot1='X';
      //display updated table
      cout<<"\t    |    |    "<<endl;
      cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
      cout<<"\t_____|_____|_____"<<endl;
      cout<<"\t    |    |    "<<endl;
      cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
      cout<<"\t_____|_____|_____"<<endl;
      cout<<"\t    |    |    "<<endl;
      cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
      cout<<"\t    |    |    "<<endl<<endl;
```

```
            break;
        }
    }
case 2:{
    if(choice==hide)
        {
            win=1;
            slot2='0';
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t    |    |    "<<endl<<endl;
            break;
        }else
        {
            slot2='X';
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
```

```
        cout<<"\t    |    |    "<<endl<<endl;
        break;
      }
   }
case 3:{
   if(choice==hide)
      {
        win=1;
        slot3='0';
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
        cout<<"\t    |    |    "<<endl<<endl;
        break;
      }else
      {
        slot3='X';
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
```

```
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t     |     |     "<<endl<<endl;
            break;
        }
}
case 4:{
    if(choice==hide)
        {
            win=1;
            slot4='0';
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t     |     |     "<<endl<<endl;
            break;
        }else
        {
            slot4='X';
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
```

```
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t    |    |    "<<endl<<endl;
            break;
        }
}
case 5:{
    if(choice==hide)
        {
            win=1;
            slot5='0';
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t    |    |    "<<endl<<endl;
            break;
        }else
        {
            slot5='X';
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |    |    "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
```

```
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t     |     |     "<<endl<<endl;
            break;
        }
}
case 6:{
    if(choice==hide)
        {
            win=1;
            slot6='0';
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t     |     |     "<<endl<<endl;
            break;
        }else
        {
            slot6='X';
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
```

```
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t     |     |     "<<endl<<endl;
            break;
        }
}
case 7:{
    if(choice==hide)
        {
            win=1;
            slot7='0';
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t     |     |     "<<endl<<endl;
            break;
        }else
        {
            slot7='X';
            cout<<"\t     |     |     "<<endl;
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
```

```
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
        cout<<"\t    |    |    "<<endl<<endl;
        break;
      }
}
case 8:{
   if(choice==hide)
      {
        win=1;
        slot8='0';
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
        cout<<"\t    |    |    "<<endl<<endl;
        break;
      }else
      {
        slot8='X';
        cout<<"\t    |    |    "<<endl;
        cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
```

```
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t     |     |     "<<endl;
        cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t     |     |     "<<endl;
        cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
        cout<<"\t     |     |     "<<endl<<endl;
        break;
      }
}
case 9:{
   if(choice==hide)
      {
        win=1;
        slot9='0';
        cout<<"\t     |     |     "<<endl;
        cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t     |     |     "<<endl;
        cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
        cout<<"\t_____|_____|_____"<<endl;
        cout<<"\t     |     |     "<<endl;
        cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
        cout<<"\t     |     |     "<<endl<<endl;
        break;
      }else
      {
        slot9='X';
        cout<<"\t     |     |     "<<endl;
```

```
            cout<<"\t  "<<slot1<<"  |  "<<slot2<<"  |  "<<slot3<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |     |     "<<endl;
            cout<<"\t  "<<slot4<<"  |  "<<slot5<<"  |  "<<slot6<<"  "<<endl;
            cout<<"\t_____|_____|_____"<<endl;
            cout<<"\t    |     |     "<<endl;
            cout<<"\t  "<<slot7<<"  |  "<<slot8<<"  |  "<<slot9<<"  "<<endl;
            cout<<"\t    |     |     "<<endl<<endl;
            break;
          }
      }
      }
   }while(choice!=hide);
   if(win==1){
   cout<<"Success!"<<endl;
   cout<<"It took you "<<attmps<<" attempts in round "<<rounds<<endl;
   }
   outputFile<<attmps<<endl;
}
outputFile.close();
ifstream inputFile;
inputFile.open(plyer);  //create a file with player's name and store attempts
while(inputFile>>temp){
   atmpSum+=temp;
}
inputFile.close();
atmpAvg=static_cast<float>(atmpSum)/3.0;
cout<<fixed<<showpoint<<setprecision(2);
cout<<plyer<<" take an average "<<atmpAvg<<" attempts to finish the game."<<endl<<endl;
```

```
    }else if(start=='n'||start=='N'){   //quits game
        cout<<"Exiting. See ya later!"<<endl<<endl;
    }else{                          //invalid input
        cout<<"Invalid choice! Please try again."<<endl<<endl;
    }
    }while(start!='n'&&start!='N');
    //Exit stage right or left!
    return 0;
}
```