**PROJECT 1**

**SNAKE AND LADDER**

**GAME**

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**Date: 04/14/18**

INTRODUCTION

Title: Snake and Ladder Game

Snake and ladder board games can be played by many people. It is just a turned-based board game with numbers from 1 to 100. Some numbers may have ladders pointing up to a greater number and some numbers may have snake pointing to lower numbers. A player should roll the dice (1 – 6) and based on the dice output should move his pointer to the number on the board. Each players aim is to reach the end of the board game (100). Snakes are the road blockers which will drop the users pointer to a lower number. Ladders are the stepping stone to reach greater height number. It can be played by two or multiple user game.

Rules

1. Any number of players may participate in a game of Snake and Ladders.
2. Play takes place on a Snake and ladders board where the spaces are numbered from 1-100. The structure and layout of the board may or may not correspond to the conventional board, but the numbers will be in a logically coherent arrangement for themselves.
3. The positions and effects of snakes and ladders will be consistent. For example, all spaces in a column might be the feet of ladders and might move the player by ten spaces each ladder. Similarly, mouths of snakes might be those spaces whose digits add up to eight and landing on these spaces might send the players back fifteen spaces.

(Terms such as 'up', 'down', 'forward' and 'back', may or may not be true in a directional sense, but they will be true in a numerical sense.)

1. Each player starts off the board at space 0.
2. Roll the dice per player and follow the squares as indicated on the number of the dice. When a player lands on a snake or ladder, however, certain actions must be taken place.
3. If a player lands on a snake's head, his or her pointer slides down at the snake's tail.
4. If a player lands on a square that is at the base of a ladder, his or her pointer moves at the top of the ladder and continues from there.
5. The first player who reaches at the top 100 he or she win the game.

**Cross Reference for Project 1**

**You are to fill-in with where located in code**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Chapter** |  | **Section** | **Topic** | **Where Line #''s** | **Pts** | **Notes** |
| 2 |  | 2 | cout | 96-114, 120-127, 130-137, 152, 154, 156, 162, 165,167, 170, 174, 181, 185, 192, 196, 198, 202, 222, 223, 226, 229, 230, 234, 238, 240, 250, 237, |  |  |
|  |  | 3 | libraries | 12-18 | 8 | iostream, iomanip, cmath, cstdlib, fstream, string, ctime |
|  |  | 4 | variables/literals | 26, 32, 38-43, 58-61, 143, 144, 210, 212, |  | No variables in global area, failed project! |
|  |  | 5 | Identifiers | 35, 158, 172, 194, |  |  |
|  |  | 6 | Integers | 26, 31, 38-42, 210, 212 | 3 |  |
|  |  | 7 | Characters | 58-61, 91, 116, 117, | 3 |  |
|  |  | 8 | Strings | 43, 237, | 3 |  |
|  |  | 9 | Floats No Doubles | 32 | 3 | Using doubles will fail the project, floats OK! |
|  |  | 10 | Bools | 69-84 | 4 |  |
|  |  | 11 | Sizeof \*\*\*\*\* |  |  |  |
|  |  | 12 | Variables 7 characters or less | 38-43 |  | All variables <= 7 characters |
|  |  | 13 | Scope \*\*\*\*\* No Global Variables |  |  |  |
|  |  | 14 | Arithmetic operators | 42, 58-60, 71-72, 227, 228 |  |  |
|  |  | 15 | Comments 20%+ | 7-10, 13-19, 38-40, 58, 59, 64, 73, 74, 78, 89, 116, 117, 120-128, 130-137, 139-141, 151, 161, 127, 128, 300, 301 | 5 | Model as pseudo code |
|  |  | 16 | Named Constants | 35 |  | All Local, only Conversions/Physics/Math in Global area |
|  |  | 17 | Programming Style \*\*\*\*\* Emulate | 1-10, 22-25, 28-30 |  | Emulate style in book/in class repository |
|  |  |  |  |  |  |  |
| 3 |  | 1 | cin | 152, 154, 162, 167, 198, 202, 240, |  |  |
|  |  | 2 | Math Expression | 42, 58-60, 71-72, 227, 228 |  |  |
|  |  | 3 | Mixing data types \*\*\*\* |  |  |  |
|  |  | 4 | Overflow/Underflow \*\*\*\* |  |  |  |
|  |  | 5 | Type Casting | 32, 40, 143, 209 | 4 |  |
|  |  | 6 | Multiple assignment \*\*\*\*\* |  |  |  |
|  |  | 7 | Formatting output | 100, 104, 108, 112 | 4 |  |
|  |  | 8 | Strings | 43, 143 | 3 |  |
|  |  | 9 | Math Library | 53, 54 ,59-61 | 4 | All libraries included have to be used |
|  |  | 10 | Hand tracing \*\*\*\*\*\* |  |  |  |
|  |  |  |  |  |  |  |
| 4 |  | 1 | Relational Operators | 47, 64-66, 78-80, 82, 92, |  |  |
|  |  | 2 | if | 47, 63, 76,78-80,89,171,187,193,,199, 234 | 4 | Independent if |
|  |  | 4 | If-else | 63-66, 82, | 4 |  |
|  |  | 5 | Nesting | 52-54, 203-204 | 4 |  |
|  |  | 6 | If-else-if | 64-68, 68-82 | 4 |  |
|  |  | 7 | Flags \*\*\*\*\* |  |  |  |
|  |  | 8 | Logical operators | 77, 83, 71 | 4 |  |
|  |  | 11 | Validating user input | 87, 93, 76 | 4 |  |
|  |  | 13 | Conditional Operator | 69 | 4 |  |
|  |  | 14 | Switch | 84, 245 | 4 |  |
|  |  |  |  |  |  |  |
| 5 |  | 1 | Increment/Decrement | 63-66, 78-81 | 4 |  |
|  |  | 2 | While | 87, 92, 156 | 4 |  |
|  |  | 5 | Do-while | 70, 87 | 4 |  |
|  |  | 6 | For loop | 234 | 4 |  |
|  |  | 11 | Files input/output both | 45-49, 207 | 8 |  |
|  |  | 12 | No breaks in loops \*\*\*\*\*\* |  |  | Failed Project if included |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| \*\*\*\*\*\* Not |  | required to | show | Total | 100 |  |

/\*

\* File: main.cpp

\* Author: Priya Lingam

\* Created on April 15th, 2018, 9:45 AM

\* Purpose: Snake and Ladder design board game

\*/

//This is snakes and ladder Game project.

//This program will display snakes and ladder Board games.

//It will take two player names.

//Gives you winner of the Game by using Random numbers.

//System Libraries

#include<iostream> //I/O Library -> cout,endl

#include <iomanip> //Format Library

#include <cstdlib>//Rand/Srand

#include <ctime> //Time

#include <fstream> //File i/o

#include<string>

using namespace std;//namespace I/O stream library created

//User Libraries

//Global Constants

//Math, Physics, Science, Conversions, 2-D Array Columns

int randomnum(int &, fstream &);

//Function Prototypes

//Execution Begins Here!

int main(int argc, char\*\* argv) {

float num;

//set the random number seed

srand(static\_cast<unsigned int>(time(0)));

//Declare Variable

int h1,h4,h9,h21; //h represents the top ladder

int t17,t54,t34,t62; //t represents the tail of the snake

int board; //On the board there is up to 100 numbers

int p1\_score=0.0f,p2\_score=0.0f;

int dice=rand()%6+1;

string cont;

fstream file;

file.open("Snake and Ladder",ios::out);

if(!file) cout<<"Uh uh!!!!\n";

file<<"Hiiiiiii"<<endl;

file<<"Enjoy your day"<<endl;

//Initialize

board =10;//0;

h1=h4=h9=h21=0;

t17=t54=t34=t62=0;

//Check the statistics

char dice1=rand()%6+1;//[1,6]

char dice2=rand()%6+1;//[1,6]

char sum=dice1+dice2;

char cntThrw=1;

if(h1==38)h1++;

else if(h4==14)h4++; // if your position is on the num 4 you will climb up on the num 14

else if(h9==7)h9++;

else if(h21==34)h21++;

else{

bool rollAgn;

do{

rollAgn=true;

dice1=rand()%6+1;//[1,6]

dice2=rand()%6+1;//[1,6]

char t17=dice1+dice2;

t17++;

if(t17==7){

rollAgn=false;

if(t54==38)t54++; //if your position is on the num 54 you will slide down on the num 344

if(t34==23)t34++;

if(t62==33)t62++;

}else if(h1==t17){

rollAgn=false;

switch(sum){

}

}

} while(rollAgn);

}

if (h21>t17)h4=t17; //If you are on h4 it increases your position

char play = 'y';

while(play=='y')

{

//Beginning of the game

cout<<endl;

cout<<endl;

cout<<"========================================= "<<endl;

cout<<endl;

cout<< setw(30) <<"SNAKE AND LADDER GAME" <<endl;

cout<<endl;

cout<<"======================================== "<<endl;

cout<<endl;

cout<< setw(30) << "Designed by Priya Lingam" <<endl;

cout<<endl;

cout<<"======================================== "<<endl;

cout<<endl;

cout<< setw(30) << "Lets Begin the GAME" <<endl;

cout<<endl;

cout<<"======================================= "<<endl;

cout<<endl;

cout<< setw(30) << "Have Fun!" <<endl;

cout<<endl;

cout<<"======================================= "<<endl;

char L1, L4, L9, L21, L28, L51, L71, L80;//Ladder is at the postion

char S17, S54, S62, S87, S93, S95, S98;//Sanke is at the postion

//Points on the Ladder number

cout<<"When you are at the position of L1=L38" <<endl; //you will climb at the number 38

cout<<"When you are at the position of L1=L14" <<endl; //you will climb at the number 14

cout<<"When you are at the position of L1=L31" <<endl; //you will climb at the number 31

cout<<"When you are at the position of L1=L44" <<endl; //you will climb at the number 42

cout<<"When you are at the position of L1=L84" <<endl; //you will climb at the number 84

cout<<"When you are at the position of L1=L67" <<endl; //you will climb at the number 67

cout<<"When you are at the position of L1=L91" <<endl; //you will climb at the number 91

cout<<"When you are at the position of L1=L100" <<endl; //you will climb at the number 100

//Points on the Snake number

cout<<"When you are at the position of S17=S7" <<endl; //you will slide down at the number 7

cout<<"When you are at the position of S54=S34" <<endl; //you will slide down at the number 34

cout<<"When you are at the position of S62=S19" <<endl; //you will slide down at the number 19

cout<<"When you are at the position of S64=S60" <<endl; //you will slide down at the number 60

cout<<"When you are at the position of S87=S24" <<endl; //you will slide down at the number 24

cout<<"When you are at the position of S93=S73" <<endl; //you will slide down at the number 73

cout<<"When you are at the position of S95=S75" <<endl; //you will slide down at the number 75

cout<<"When you are at the position of S98=S79" <<endl; //you will slide down at the number 79

//If there is no snake or ladder from cell i, then move[i] is -1

// Otherwise move[i] contains cell to which snake or ladder at i

// takes to.

int i;

string pl1,pl2;

//Each player takes turns to roll the dice

srand (time(0));

//Output the results

//Each player puts their counter on the space that says "start here"

cout<<"enter the name of player 1"<<endl;

cin>>pl1;

cout<<"enter the name of the player 2 "<<endl;

cin>>pl2;

cout<<"the position of player1 and player2 is 0 initially"<<endl;

while(p1\_score<100.0f && p2\_score<100.0f)

{

//Move your counter forward the number of spaces shown on the dice.

cout<<pl1<<" It is your turn press any key to play "<<endl;

cin>>cont;

randomnum(p1\_score, file);

cout<<"your score is "<<p1\_score<<endl;

cout<<pl2<<" It is your turn press any key to play"<<endl;

cin>>cont;

randomnum(p2\_score, file);

cout<<"your score is "<<p2\_score<<endl;

}

if(p1\_score>p2\_score)

{

cout<<endl;

cout<<"congratulations " << pl1 << " you have won the game"<<endl;

cout << endl;

cout<<"========================================"<<endl;

cout<<endl;

cout<<" End of the Project! "<<endl;

cout<<"========================================"<<endl;

cout<<endl;

}

if(p2\_score>p1\_score)

{

cout<<endl;

cout<<"congratulations " << pl2 << " you have won the game"<<endl;

cout<<endl;

cout<<"========================================"<<endl;

cout<<endl;

cout<<" End of the Project! "<<endl;

cout<<"========================================"<<endl;

cout<<endl;

}

if(p1\_score==p2\_score)

{

cout<<"match is draw"<<endl;

}

cout << "Play again? (y/n)";

cin >> play;

if(play!='y' && play!='n')

{

cout<<"Please enter y or n." << endl;

cin>>play;

}

p1\_score=0.0f;

p2\_score=0.0f;

}

file.close();

}

int randomnum(int &score, fstream &file)

{

int dice;

dice=rand()%6+1;

score=dice+score;

//If your counter lands on the head of a snake, you must slide down to the

//bottom of the snake.

//Output Variables

cout<<"You got "<<dice<<" Point !! "<<endl;

cout<<"Now you are at position "<<score<<endl;

if(dice==6)

{

cout<<"Roll again"<<endl;

dice=rand()%6+1;

score=dice+score;

cout<<"You got "<<dice<<" Point !! "<<endl;

cout<<"Now you are at position "<<score;

}

if(dice==5)

{

cout<<"You have 3 turns to roll higher than a 3"<<endl;

for(int i=0;i<3;i++)

{

string cont;

cout<<"Roll: "<<i+1<<endl;

dice=rand()%6+1;

cout<<dice;

cin>>cont;

if(dice>3)

break;

}

}

switch(score) {

case 17 :score=7;

cout<<"you ran into a snake!"<<endl;

break;

case 54 :score=34;

cout<<"you ran into a snake!"<<endl;

break;

case 62 :score=19;

cout<<"you ran into a snake!"<<endl;

break;

case 64 :score=60;

cout<<"you ran into a snake!"<<endl;

break;

case 87 :score=24;

cout<<"you ran into a snake!"<<endl;

break;

case 93 :score=73;

cout<<"you ran into a snake!"<<endl;

break;

case 95 :score=75;

cout<<"you ran into a snake!"<<endl;

break;

case 98 :score=79;

cout<<"you ran into a snake!"<<endl;

break;

case 55 :score=7;

cout<<"you ran into a snake!"<<endl;

break;

case 52 :score=11;

cout<<"you ran into a snake!"<<endl;

break;

case 48 :score=9;

cout<<"you ran into a snake!"<<endl;

break;

case 46 :score=5;

cout<<"you ran into a snake!"<<endl;

break;

case 44 :score=22;

cout<<"you ran into a snake!"<<endl;

//If your counter lands at the bottom of a ladder, you can move up to the

//top of the ladder.

break;

case 8 :score=26;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 1 :score=38;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 4 :score=14;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 9 :score=31;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 21 :score=42;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 51 :score=67;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 71 :score=91;

cout<<"luckyyy boy u got ladder"<<endl;

break;

case 28 :score=84;

cout<<"luckyyy boy u got ladder"<<endl;

//The first player to get to the space that says 'home' is the winner.

break;

case 80 :score=100;

cout<<"luckyyy boy u got ladder"<<endl;

}

return score;

}