Mini Project Title	GUESS THE NUMBER – A Game

Abstract

The "GUESS THE NUMBER" game is a classic and simple yet entertaining project implemented using C++. The objective of this mini-project is to develop a console-based game where the computer generates a random number within a specified range, and the player attempts to guess that number within a limited number of attempts based on the level they choose.

Introduction

In this game, the computer generates a secret number in the range of 1 to 100, and the player has to guess it. The game has three difficulty levels. A player's chances of guessing are limited by the level they choose. The easy level gives the player 10 chances to guess the secret number, the medium level 7 chances, whereas the difficult level only offers 5 chances.
During the game, a player tells the computer his assumption about a number, and the computer tells if the player is correct. If his number is less or more than the secret number, the computer informs the player, and the player tries again.

The player can also end the game at any time.

Project Objectives

The "Guess the Number" is an entertaining game that lets the user interact with the computer by playing against it. It also serves as an engaging project for beginners to practice their C++ programming skills while enjoying a fun and interactive gaming experience. Through this project, learners can enhance their understanding of basic programming concepts and gain practical experience in software development.

Methodology / Algorithm / Flowchart

Step 1: Generate a Random Secret Number Between 1 & 100

No function in C++ generates a random function in a given range. Therefore, we will use the rand() function. We will need the cstdlib library to use rand(). The formula to generate a random function within a range is randomNumber = (rand() % (upper-lower) + 1) Let's say we wish to generate a number between 1 and 100, so upper equals 100, and lower equals 1. So, the formula becomes randomNumber = (rand() % (100-1) + 1)

Now, every time we run the program, the computer generates the same random number as the secret number, making it quite repetitive, and boring and this one-time game loses its essence.

To generate different random numbers each time the program runs, we will use the srand(time(0)) function. This function changes the seed each time the program runs. time(0) returns the number of seconds that the system clock shows. Since we will be using the time function, we will have to include the ctime library.

Step 2: Ask the User to Select the Level of Difficulty

While loops let us implement a menu-driven program in which the player can select the degree of difficulty. The user can press 1 to select the easy level, 2 for medium, and 3 for the difficulty level.

Step 3: Determine the Number of Chances the Player has Based on the Level of Difficulty

When the player selects the easy level, he gets 10 chances to guess the secret number. With medium, he has 7 chances while with hard, he has 5.

Step 4: Check Whether the Entered Number is Equal to the Secret Number

Using the if-else construct, we will check if the entered number matches the secret number.

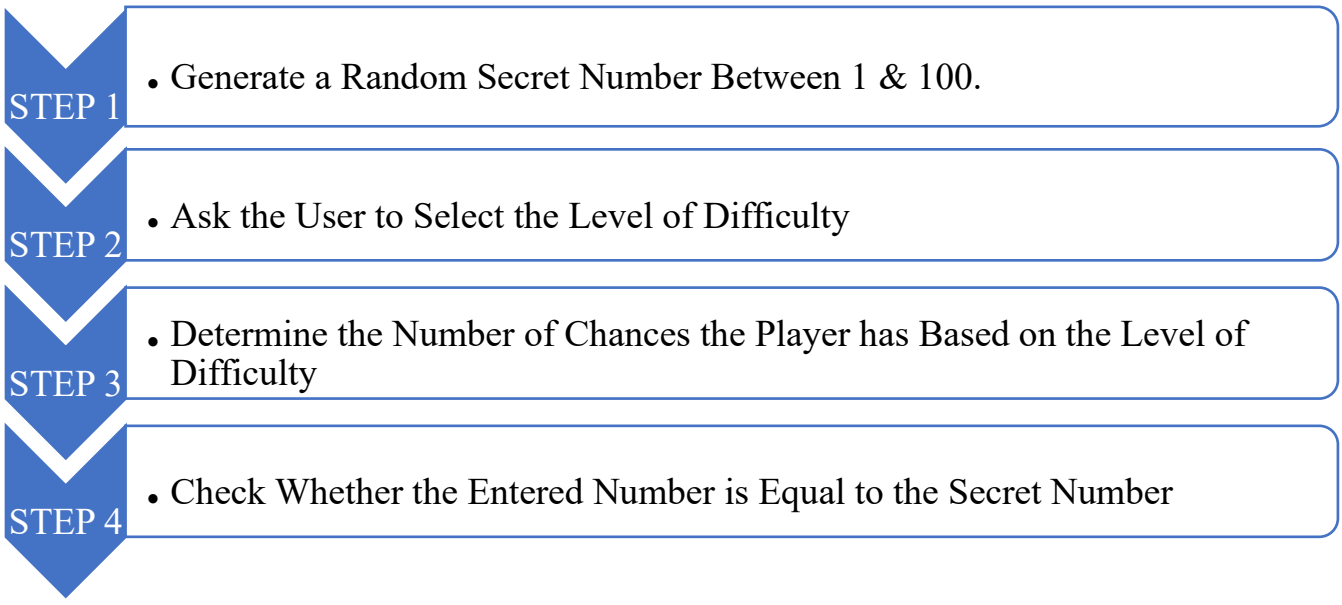
As the player is granted 10 chances at the easy level, we will iterate from 1 to 10 to determine if the entered number matches the actual secret number. Since the player has only seven choices in level medium, we iterate from 1 to 7 to check if the number matches the secret number. We will iterate from 1 to 5 if the player selects hard level since there are only 5 choices.

We will display that the secret number is smaller than the chosen number if the entered number is smaller than the secret number. Whenever the entered number exceeds the secret number, we will display that the secret number is greater, which serves as a hint for the player. We will also display the number of choices left.

Once the number entered matches the secret number, the player will be notified that he has won. The game ends if the player cannot guess the number and he or she has no more choices left. This terminates the game.

Program and Input Data

```
#include <cstdlib>
```




```
#include <ctime>
```

```
#include <iostream>
using namespace std; int
main()
{ cout << "\n\t\t\tWelcome to GuessTheNumber game!"
<< endl;     cout << "You have to guess a number between
1 and 100. "
            "You'll have limited choices based on the "
            "level you choose. Good Luck!"
         << endl;       while (true) {
cout << "\nEnter the difficulty level: \n";
cout << "1 for easy!\t";         cout << "2 for
medium!\t";         cout << "3 for
difficult!\t";         cout << "0 for ending the
game!\n" << endl;

        // select the level of difficulty
int difficultyChoice;         cout << "Enter
the number: ";         cin >>
difficultyChoice;

        // generating the secret number
srand(time(0));         int secretNumber = 1 +
(rand() % 100);         int playerChoice;



     //Determining if the number is odd or even if
(secretNumber%2==0){           cout<<"The number
is EVEN"<<endl;

           }
         else if (secretNumber%2==1){
    cout<<"The number is ODD"<<endl;
```

```
            }

        // Difficulty Level:Easy         if
(difficultyChoice == 1) {             cout << "\nYou have 10
choices for finding the "                     "secret
number between 1 and 100.";             int choicesLeft =
10;             for (int i = 1; i <= 10; i++) {

                // prompting the player to guess the secret
                // number                  cout << "\n\nEnter
the number: ";                 cin >> playerChoice;

                // determining if the playerChoice matches
// the secret number                 if (playerChoice ==
secretNumber) {                     cout << "Well played!
You won, "
                          << playerChoice
                          << " is the secret number" << endl;
cout << "\t\t\t Thanks for playing...."
                          << endl;                      cout
<< "Play the game again with "
                             "us!!\n\n"
<< endl;                      break;

                }                 else {
cout << "Nope, " << playerChoice
<< " is not the right number\n";                     if
(playerChoice > secretNumber) {
cout << "The secret number is "
                                "smaller than the number "
                                "you have chosen"
                             << endl;
```

```
                    }                    else {
cout << "The secret number is "
                                "greater than the number "
                                "you have chosen"
                             << endl;
                    }                    choicesLeft--;
cout << choicesLeft << " choices left. "
                         << endl;                    if
(choicesLeft == 0) {                         cout <<
"You couldn't find the "
"secret number, it was "
                             << secretNumber
<< ", You lose!!\n\n";                          cout <<
"Play the game again to "
                                "win!!!\n\n";
                    }
                }
            }
        }

        // Difficulty level : Medium
else if (difficultyChoice == 2) {
cout << "\nYou have 7 choices for finding the
"                    "secret number between
1 and 100.";             int choicesLeft = 7;
for (int i =
1; i <= 7; i++) {

                // prompting the player to guess the secret
                // number                  cout << "\n\nEnter
the number: ";                 cin >> playerChoice;
```

```
                // determining if the playerChoice matches
// the secret number                 if (playerChoice ==
secretNumber) {                     cout << "Well played!
You won, "
                          << playerChoice
                          << " is the secret number" << endl;
cout << "\t\t\t Thanks for playing...."
                          << endl;                      cout
<< "Play the game again with "
                             "us!!\n\n"
<< endl;                      break;                }
else {                      cout << "Nope, " <<
playerChoice                           << " is not the
right number\n";                     if (playerChoice >
secretNumber) {                         cout << "The
secret number is "
                                "smaller than the number "
                                "you have chosen"
                             << endl;
}                     else {
cout << "The secret number is "
                                "greater than the number "
                                "you have chosen"
                             << endl;
                    }                     choicesLeft--;
cout << choicesLeft << " choices left. "
                          << endl;                      if
(choicesLeft == 0) {                          cout <<
"You couldn't find the "
"secret number, it was "
                             << secretNumber
<< ", You lose!!\n\n";                        cout <<
```

```
"Play the game again to "
                                "win!!!\n\n";
                    }
                }
            }
        }
        // Difficulty level : Medium         else if
(difficultyChoice == 3) {             cout << "\nYou have 5
choices for finding the "                    "secret
number between 1 and 100.";             int choicesLeft =
5;             for (int i = 1; i <= 5; i++) {

                // prompting the player to guess the secret
                // number                  cout << "\n\nEnter
the number: ";                 cin >> playerChoice;

                // determining if the playerChoice matches
                // the secret number
if (playerChoice == secretNumber) {
cout << "Well played! You won, "
                        << playerChoice
                        << " is the secret number" << endl;
cout << "\t\t\t Thanks for playing...."
                        << endl;                     cout
<< "Play the game again with "
                           "us!!\n\n"
<< endl;                     break;                }
else {                     cout << "Nope, " <<
playerChoice                           << " is not the
right number\n";                     if (playerChoice >
secretNumber) {                        cout << "The
secret number is "
                                "smaller than the number "
```

```
                                "you have chosen"
                            << endl;
                    }                   else {
cout << "The secret number is "
                                "greater than the number "
                                "you have chosen"
                            << endl;
                    }                   choicesLeft--;
cout << choicesLeft << " choices left. "
                         << endl;                     if
(choicesLeft == 0) {                         cout <<
"You couldn't find the "
"secret number, it was "
                            << secretNumber
                            << ", You lose!!\n\n";
cout << "Play the game again to "
                                "win!!!\n\n";
                    }
                }
            }
        }
        // To end the game         else if
(difficultyChoice == 0) {             exit(0);         }
else {             cout << "Wrong choice, Enter valid
choice to "
                   "play the game! (0,1,2,3)"
                << endl;
        }
}     return
0;
}
```

Results and Discussion

```
Welcome to GuessTheNumber game!
You have to guess a number between 1 and 100. You'll have limited
    choices based on the level you choose. Good Luck!

Enter the difficulty level:
    1 for easy!
    2 for medium!
    3 for difficult!
    0 for ending the game!

Enter the number: 3
The number is ODD
You have 5 choices for finding the secret number between 1 and 100.

Enter the number: 77
Nope, 77 is not the right number
The secret number is greater than the number you have chosen
4 choices left.


Enter the number: 97
Nope, 97 is not the right number
The secret number is smaller than the number you have chosen
3 choices left.


Enter the number: 83
Nope, 83 is not the right number
The secret number is smaller than the number you have chosen
2 choices left.


Enter the number: 81
Nope, 81 is not the right number
The secret number is smaller than the number you have chosen
1 choices left.


Enter the number: 79
Well played! You won, 79 is the secret number
             Thanks for playing....
Play the game again with us!!
```

References https://www.geeksforgeeks.org/number-guessing-game-in-cpp-using-rand-function/