

# **Project 1**

## **<Guessing Password>**

CSC-5

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Date: 10/28/16

## **Introduction**

Title: Password Guessing Game

Assume you have a machine, which requires password to turn it on. However, you don't know what the password is, so you have to guess the password follow the machine's hint. If you find the password successfully, the machine will turn on. Also, the password will output to the page automatically so you can print it out in case you forget the password. If you ran out of all the chances that the machine gives you, however, the machine will shut down forever.

## **Summary**

Project size: 261 lines

The number of variables: 18

The number of methods: 10

## **Problems during the programming**

It took about a week to finish the project. It is kind of hard for me because I didn't have experience doing it. Before the project starts, I was a nervous since I must develop a program at least 100 lines on my own which is never happened to me before. However, after I started programming, I found that 100 lines was not so hard for me.

While I was programming, I also got some troubles. For example, I need to find a random three digits' number which is divisible by 50. I typed the random code easily, but I was think about the divisibility for a long time. Finally, I used a "while" loop to solve this problem. Also, when I combined two difficulties into one program with menu, I got into troubles, and it was hard to find out. They could work separately but not together. Then I found out it was the "brace" problem, and it cost me a long time to solve it.

## System libraries

|                                       |
|---------------------------------------|
| <code>#include &lt;cstdlib&gt;</code> |
| <code>#include&lt;iostream&gt;</code> |
| <code>#include&lt;ctime&gt;</code>    |
| <code>#include&lt;fstream&gt;</code>  |
| <code>#include&lt;string&gt;</code>   |

## Variables

|                       |                         |                               |
|-----------------------|-------------------------|-------------------------------|
| <code>int</code>      | <code>guess</code>      | User's guess in easy level    |
|                       | <code>E1</code>         | Random password in easy level |
|                       | <code>tries=1</code>    | User's initial try            |
|                       | <code>choice</code>     | User's choice in menu         |
| <code>ofstream</code> | <code>outputfile</code> | Output string to file         |

|        |        |  |
|--------|--------|--|
| string | guess2 | User's guess in normal level               |
|        | guess3 |  |
|        | guess4 |  |
|        | guess5 |  |
|        | guess6 |  |
|        | N1     |  |
| char   | f      | First digit of password in<br>normal level |
|        |        |  |

## Function prototypes

|                    |
|--------------------|
| void introduce( ); |
| void Easy( );      |
| void Normal( );    |

|                                 |
|---------------------------------|
| <code>char genRandom( );</code> |
| <code>void outputN1( );</code>  |

## Concepts

| Concepts        | Type                                | Code  | Location |
|-----------------|-------------------------------------|---|----------|
| cout<br>object  | cout                                | <code>cout&lt;&lt;"Inside this level"&lt;&lt;endl;</code> | 51       |
| #include        | #include                            | <code>#include &lt;iostream&gt;</code>                    | 10       |
| variables       | int,ofstream,string,<br>char        | <code>int guess</code>                                    | 35       |
| comment         | <code>//statement</code>            | <code>//Declare variables</code>                          | 34       |
| cin object      | cin                                 | <code>cin&gt;&gt;guess</code>                             | 62       |
| Type<br>casting | <code>static_cast&lt;int&gt;</code> | <code>static_cast&lt;int&gt;(time(0))</code>              | 58       |

|                 |                     |   |         |
|-----------------|---------------------|---|---------|
| Making decision | Relational operator | <code>!= , &gt;=</code>                         | 77      |
|                 | If statement        | <code>if(E1==guess)</code>                      | 83      |
|                 | If /else if         | <code>If...else if...</code>                    | 108/130 |
|                 | Logical operator    | <code>guess!=E1&amp;&amp;guess&gt;E1</code>     | 65      |
|                 | Menus               | <code>Cout&lt;&lt;.....&lt;&lt;endl;</code>     | 42      |
|                 | Switch statement    | <code>switch(choice){</code>                    | 49      |
| Loop            | Do/while            | <code>Do{...}while(tries&lt;5);</code>          | 63      |
|                 | for                 | <code>for(int i = 1; i&lt;=2; i++)</code>       | 101     |
|                 | while               | <code>while(E1%50!=0)</code>                    | 57      |
| Using files     | ofstream            | <code>outputfile&lt;&lt;...&lt;&lt;endl;</code> | 87      |

|           |           |                   |     |
|-----------|-----------|-------------------|-----|
| Functions | Void,char | Void introduce(); | 20  |
|           |           | Char genRandom(); | 23  |
| array     | char      | char N1password[] | 251 |

## Flowchart

<https://www.gliffy.com/go/publish/11410365>

## Code

```

/*
* File:  main.cpp
* Author: Bochi Lin
* Created on October 23, 2016, 10:23 AM
* Purpose: Project 1 for CSC-5 48102
* Name of the Game: Password Guessing
*/

```



```
#include <cstdlib> //Get the random passwords

#include <iostream>

#include <string>

#include <fstream> //file I/O

#include <ctime>

using namespace std;

//User libraries


//Global constants


//Function prototypes

void introduce(); //Introduce the whole game

void Easy();    //introduce the easy level

void Normal(); //Introduce the normal level

char genRandom(); //Get the random password with characters and numbers

void outputN1(); //output information for successful user in normal level


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

    //Introduce the game

    introduce();


    //Set the random seeds

    //Get the random password for your machine
```

```

srand(static_cast<int>(time(0)));

//Declare variables

int guess;                //Guess for Easy level

int E1;                   //Random password for easy level

int tries=1;              //Chances of guessing in easy level used in for
loop

ofstream outputfile;      //Output the file to a file

string guess2,guess3,guess4,guess5,guess6;//Guessing random password for
normal level

int choice;               //Choice from menu


//Menu

cout<<"1. Type 1 for Easy level"<<endl;
cout<<"2. Type 2 for Normal level"<<endl;
cout<<"3. Type any other button to Quit the game"<<endl;
cin>>choice;


//Switch a difficulty

switch(choice){

    case 1:{

        cout<<"Inside this level"<<endl;

        Easy(); //Easy level introduction

        cout<<"(It might take a little time.Please wait until the direction shows

```

```

up)"<<endl;

    outputfile.open("Easy.h");    //Open a file "Easy.h"

    //Get a three digit random number which is dividable by 50

    E1=rand()%900+100;

    while(E1%50!=0){                //This number which is only dividable by 50

        srand(static_cast<int>(time(0)));//Set a random number

        E1=rand()%900+100;          //This random number has only three digits

    }

    cout<<"Please enter your guess:"<<endl;

    cin>>guess;                    //User enter the first guess

    do{

        tries++;

        if(guess!=E1&&guess>E1){

            cout<<"\nYou guess is too high"<<endl;

            cout<<"Please enter again:"<<endl;

            cin>>guess;

        }

        else if(guess!=E1&&guess<E1){

            cout<<"\nYou guess is too low"<<endl;

            cout<<"Please enter again:";

            cin>>guess;

        }

    }while(tries<5);//User can only guess four times at most while the hints

```

show up

```
//And fives time in total
```

```
if(guess!=E1&&tries>=5){//Game over, and output the following  
information
```

```
    cout<<"\nThe password is "<<E1<<endl;//Show the right password
```

```
    cout<<"You ran out of all chances"<<endl;
```

```
    cout<<"This machine will shut down forever. Just buy a new one.\n\n";
```

```
} //Tries>=7. User ran out of all chances, and game over
```

```
if(E1==guess){//User find the password, and output the following  
information
```

```
    cout<<"\nWell done! You find the password!"<<endl;
```

```
    cout<<"Now writing the password to a file ";
```

```
    cout<<"so you can print it out in case you forget the password."<<endl;
```

```
    outputfile<<"Here is the password,you can print it out:"<<endl;
```

```
    outputfile<<E1<<endl;
```

```
    cout<<"Writing finished.\n\n";
```

```
}
```

```
    outputfile.close();//Close the file
```

```
    break;
```

```
}
```

```
//Normal level begins!
```

```
case 2:{
```

```

cout<<"Inside this level"<<endl;

Normal();

srand(time(0)); //Random password with numbers and characters

std::string N1;

for(int i = 1; i<=2; i++)

{

    N1+= genRandom();

}

//Get the random password

cout<<"Please enter your guess: ";

cin>>guess2;//User enter his/her guess

if(guess2!=N1){

    if(guess2[guess2.length()-1]!=N1[N1.length()-1]){

        cout<<"Wrong, please continue your guessing: ";

        cin>>guess3;//user enter the guess again

        if(guess3==N1){//User find the right password

            outputN1();

            outputfile.open("Easy.h");

            outputfile<<"Here is the password,you can print it out:"<<endl;

            outputfile<<N1<<endl;//Output password to the file

            outputfile.close();

            return 0;

        }

        //Close the file, writing finished

        if(guess3[guess3.length()-1]==N1[N1.length()-1]){//If the last digit is

```

right in guess3

```
cout<<"The last digit is right, please continue guessing: "<<endl;
```

```
cin>>guess4;
```

```
}
```

not right,

```
cout<<"Here is a hint."<<endl;           //the machine will show
```

hint

```
cout<<"The last digit is "<<N1[N1.length()-1]<<endl;
```

```
cout<<"Please continue guessing:"<<endl;
```

```
cin>>guess4;
```

```
}
```

```
}
```

is right in guess2

```
cout<<"The last digit is right, please continue guessing: "<<endl;
```

```
cin>>guess4;
```

```
}
```

```
if(guess4==N1){
```

```
    outputN1();
```

```
    outputfile.open("Easy.h");
```

```
    outputfile<<"Here is the password,you can print it out:"<<endl;
```

```
    outputfile<<N1<<endl;//Output password to the file
```

```
    outputfile.close(); //Close the file, writing finished
```

```

    return 0;
}

if(guess4!=N1){//If the guessing is wrong, continue showing hint

    char f=N1.at(N1.length()-2);

    if(f>='0'&&f<='9') {//The category of first digit(number)

        cout<<"\nThe first digit is a number."<<endl;

    }

    else if(f>='a'&&f<='z'){//The category of first digit(character)

        cout<<"\nThe first digit is a character."<<endl;

    }

    cout<<"Please continue your guessing: ";

    cin>>guess5;

    if(guess5==N1){//User find the right password directly

        outputN1();

        outputfile.open("Easy.h");

        outputfile<<"Here is the password,you can print it out:"<<endl;

        outputfile<<N1<<endl;//Output password to the file

        outputfile.close();//Close the file, writing finished

        return 0;

    }//Congratulations to user for finding the password

    if(guess5!=N1){ //If the guessing is still wrong

        if(f>='0'&&f<='5'){//range of first digit

            cout<<"\nWrong, and the range is form 0 to 5."<<endl;

```

```

        cout<<"Please continue your guessing: ";
        cin>>guess6;
    }
    if(f>='6'&&f<='9'){//range of first digit
        cout<<"\nWrong, and the range is from 6 to 9."<<endl;
        cout<<"Please continue your guessing: ";
        cin>>guess6;
    }
    if(f>='a'&&f<='f'){//range of first digit
        cout<<"\nWrong, and the domain is {a,b,c,d,e,f}."<<endl;
        cout<<"Please continue your guessing: ";
        cin>>guess6;
    }
    if(f>='g'&&f<='l'){//range of first digit
        cout<<"\nWrong, and the domain is from {g,h,i,j,k,l}."<<endl;
        cout<<"Please continue your guessing: ";
        cin>>guess6;
    }
    if(f>='m'&&f<='s'){//range of first digit
        cout<<"\nWrong, and the domain is {m,o,p,q,r,s}."<<endl;
        cout<<"Please continue your guessing: ";
        cin>>guess6;
    }

```



```

        if(f>='t' && f<='z'){//range of first digit

            cout<<"\nWrong, and the range is from {t,u,v,w,x,y,z}."<<endl;

            cout<<"Please continue your guessing: ";

            cin>>guess6;

        }
    }

    if(guess6==N1){

        outputN1();

        outputfile.open("Easy.h");

        outputfile<<"Here is the password,you can print it out:"<<endl;

        outputfile<<N1<<endl;//Output password to the file

        outputfile.close();//Close the file, writing finished

        return 0;

    }

    if(guess6!=N1){//Game over, and output the following

        cout<<endl;

        cout<<"\nYou ran out of chances."<<endl;

        cout<<"The password is "<<N1<<endl;

        cout<<"This machine will shut down forever. Just buy a new

one.\n\n";

    }

}

}
}

```

```

        if(guess2==N1){//User find the right password directly(guess2)

            outputN1();

            outputfile.open("Easy.h");

            outputfile<<"Here is the password,you can print it out:"<<endl;

            outputfile<<N1<<endl;//Output password to the file

            outputfile.close();//Close the file, writing finished

        }//Congratulations to user for finding the password

    }

    return 0;

}

void introduce()

{

    cout<<"*****\n";

    cout<<"**    Welcome to the Passwords Guessing Game    **\n";

    cout<<"**    This game is to find password for your machine    **\n";

    cout<<"**          If you run out of chances          **\n";

    cout<<"**          The machine will shut down forever          **\n";

    cout<<"**    There are two levels of difficulties in this game    **\n";

    cout<<"**          E for easy, N for normal          **\n";

    cout<<"**    Easy level is three digits password  with nums    **\n";

```

```

cout<<"** Normal level is two digits password with nums and chars**\n";

cout<<"**          when you find the password          **\n";

cout<<"** password will output to a file, so you can print it out**\n";


cout<<"*****
\n\n";

}

void Easy();//Function prototype(introduce easy level)

{

    cout<<"\nYou choose difficulty easy\n";

    cout<<"You will guess a three digits password which is divisible by 50 with
only numbers.\n";

    cout<<"The machine will show you your guess is too low or too high."<<endl;

    cout<<"You have five chances to guess. Now begin!"<<endl;

}

void Normal();//Function prototype(introduce normal level)

{

    cout<<"You choose difficulty normal\n";

    cout<<"You will guess a two digits password with numbers and characters";

    cout<<"The machine will show you hints."<<endl;

    cout<<"After all the hints show up, you have only one chance to find it. Now
begins!"<<endl;

}

char genRandom();//Function prototype(get the random password for normal level)

{

```

```

char N1password[] ={
    "0123456789"
    "abcdefghijklmnopqrstuvwxyz"}; //This random password consists of
0-9 and a-z

int stringLength=sizeof(N1password)-1;

return N1password[rand()%stringLength];
}

void outputN1(){//Function Prototype(output information when user find the right
password)

    cout<<"Well done!! You find the password!"<<endl;

    cout<<"Now writing the password to a file";

    cout<<" so you can print it out in case you forget the password."<<endl;

}

```