Project 1

<Guessing Password>

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1. Introduction:

This game is to guessing a 4-digit password. The first inspiration of making this game is from Hangman (A game of guessing words). The second inspiration is from a 4-digit coded lock of my luggage. After I travelled to a city, I forgot the password of my lock. Then, I tried lots of times to guess the pass-word. Every time after I guessed, I need to try to unlock it.

Different from Hangman, players should guess the numbers instead of words in Guessing Password.

Code:

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\* File: main.cpp

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\* Created on January 27, 2015, 12:32 PM

\* Purpose: Project1(Name of the game:Bomb Password)

\*/

//system Libraries

#include <iostream>

#include <cstdlib> //for random number

#include <string>

#include <vector>

#include <fstream> //file I/O

using namespace std;

//User Libraries

//Global Constants

//Function Prototypes

string toDash(int);//change the password to dash

void introduce();//introduce the game

void ask(char&,int&);//ask user for guessing

char check(char,int,const char[],int);//check whether number and digit are correct

bool indexOf(char,const char[],int);//return whether the char is in the char array

void replace(string& dash,char guess,int digit);//replace of the correct digit

bool inside(const vector<int>,int);//return whether this digit is finished

void sample();//display the sample of guessing

//Execution begins here

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

//set seed for random number

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

//declare a file object

ofstream output;

//open the file

output.open("Times.dat");

//declare and initialize variables

const int TOTCHNS=15;//total chance of the game

const int SIZE=4;//the size of the char array

string dash;

string answer;

int times=0; //how many times user tried

int gusCorr=0;//how many correct number have been guessed

int chnsLft; //chance counter(how many chances left)

int digit=0; //digit of the user guesses

char guess=0; //the number user guesses

char pswd[SIZE]={};//the password store in the array

vector<int> inputDg(SIZE,5);//the digits finished

//introduce the game

introduce();

//get a random 4-digit password and put it in array

for(int i=0;i<SIZE;i++) {

pswd[i]=rand()%10+'0';

}

dash=toDash(SIZE);//get the dash

chnsLft=TOTCHNS;

//Use for loop get the password in strings

for(int i=0;i<SIZE;i++) {

answer+=pswd[i];

}

//game begins

while(chnsLft>0&&gusCorr<SIZE) {

//Prompt user for the guess

cout<<endl;

cout<<"The password now looks like this: "<<dash<<endl;//Output dash

cout<<"You have "<<chnsLft<<" chances left"<<endl;//output chances left

ask(guess,digit);//Prompt user for guess

char result=check(guess,digit,pswd,SIZE);//check the guess

switch(result) {

case'1': { //if the number and place both are correct

replace(dash,guess,digit);//replace of the correct digit

if(inside(inputDg,digit)) { //if user have finished that digit

cout<<"You already finish this digit,"

<<"try other digits"<<endl;

} else {//user didn't finish this digit

inputDg.push\_back(digit-1);//record the digit which has been finished to vector

cout<<"Your guess is correct."<<endl;

gusCorr++;

}

break;

}

case'2': { //if number is correct but digit is wrong

cout<<"This is the correct number but in wrong place."<<endl;

chnsLft--;

break;

}

case'3': { //if number and digit both wrong

cout<<"Wrong number and wrong place."<<endl;

chnsLft--;

break;

}

default:;

}

times++;//keep track of how many times user have input

}

if(chnsLft==0) { //No chances left for player

cout<<"You lost"<<endl;

output<<"You lost"<<endl;

}

if(gusCorr==SIZE) { //when 4 digits have been guessed correctly

output<<"You win this game after "<<times<<" tries"<<endl;

cout<<"You win this game after "<<times<<" tries"<<endl;

}

cout<<"The answer is "<<answer<<endl;

output.close();

//Exit stage right

return 0;

}

string toDash(int size) {

string dashed="";

for(int i=0;i<size;i++) {

dashed+="-";

}

return dashed;

}

void introduce() {

cout<<"\*\*\*\*\*\*Welcome to Bomb password\*\*\*\*\*\*"<<endl;

cout<<"In this game, you should guess the password in order to defuse the bomb"<<endl;

cout<<"First, you will input a number that you guess"<<endl;

cout<<"Then, you will input the digit of this number"<<endl;

cout<<"The digit of the number from left to right is 1,2,3,4"<<endl;

cout<<"After you input these two information, the computer will tell you"<<endl;

cout<<"whether the number and digit are correct"<<endl;

cout<<"Attention: some digits of password may be the same number"<<endl;

cout<<"Press Enter to start the game";

cin.ignore();

}

void ask(char& guess,int& digit) {

do {

cout<<"Please input a number you guess"<<endl;

cout<<"If you need sample for input, type \'s\'"<<endl;

cin>>guess;

cin.ignore();

if(guess=='s'||guess=='S') //when player need sample

sample(); //output sample via ifstream

else if(guess<48||guess>57)

cout<<"Invalid input"<<endl<<endl;

} while(guess<48||guess>57);

do {

cout<<"Please input the digit of this number"<<endl;

cin>>digit;

cin.ignore();

if(digit<1||digit>4)

cout<<"Invalid input"<<endl<<endl;

} while(digit<1||digit>4);

}

char check(char guess,int digit,const char pswd[],int size) {

//Because array counts from 0,but digit from left to right is 1,2,3,4,so it need digit-1 for array

if(guess==pswd[digit-1]) { //when guess and digit are correct

return '1';

} else if(indexOf(guess,pswd,size)) { //number is right but digit is wrong

return '2';

} else { //both are wrong

return '3';

}

}

//return whether the char is in the array

bool indexOf(char x,const char pswd[],int size) {

bool temp=false;

for(int i=0;i<size;i++) {

if(pswd[i]==x)

temp=true;

}

return temp;

}

void replace(string& dash,char guess,int digit) {

string part1=dash.substr(0,(digit-1));

string part2=dash.substr(digit);

dash=part1+guess+part2;

}

//return whether is digit has been finished

bool inside(const vector<int> inputDg,int digit) {

bool temp=false;

for(int i=0;i<inputDg.size();i++) {

if(inputDg[i]==(digit-1))

temp=true;

}

return temp;

}

//display sample via file

void sample() {

string str;

ifstream input;

input.open("Sample.dat");

while(input>>str) {

if(str=="Now"||str=="If"||str=="You"||str=="<")

cout<<endl;

cout<<str<<' ';

}

cout<<endl<<endl;

input.close();

}