Project 1
Hangman Game

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CSC 5
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Project 1 documentation and flowcharts. This PDF include the rules of the game, pseudo code of the project. And the code of the program.

Introduction

Hangman is a paper and pencil guessing game that many people play around the world. The games consists of two players or more. Player 1 thinks of a word, phrase or sentence and the player 2 tries to guess it by suggesting letters. Player 1 suggests a letter If the suggested letter is not part of the word then player 2 draws one element of a hanged man stick figure as a tally mark. If player 1 gives a correct letter then player 2 writes down the letter in the correct position that the letter is located in the word. The game is over when player 1 guesses the whole word correctly or when player 2 completes the hanged man stick figure.

The Hangman Game project consists of a player vs. computer game. The computer select a random word from "HangmanGame.txt" so that the player is able to guess the random word. The player then is going to guess the word by pressing the alphabet letters there is not number in the word chosen from the computer. The player is going to have seven chances or strikes to guess the word. The player can asks for a hint but the computer is going to deduct five points. The player can only get a hint for each game. Each correct letter correspond from the random chosen word will earn the player five points per letter. But if the player input the incorrect letter then the computer deduct 1 point from each incorrect word. The player wins until he guess the word. The computer wins until the player is unable to resolve the game in seven strikes (chances). The final score is put in a file "game.txt" inputting if the player won or lost and their final score. The computer display the rules to the player so the player is able to play the game.

Summary

Project size: 200+ lines
Number of variables: Around 19
Number of methods: 7

I used concepts that were covered in the course. I implemented: if statements, if-else statements, switch statements, array, for-loops, while-loops, and enumeration types, and function prototypes using void.

The computers reads a random word from the "HangmanGame.txt" file containing a list of many words. When the games end, there is a file created with the random word and the player's results: the file record if the player won or lost, number of strikes (chances) and their final score. This file are very helpful because the game needs the text document to function. And the file that records the result help the player to keep track of their score. The final project it took many days. I used cplusplus website, YouTube videos, and the textbook and some other websites to implement a Hangman Game. I wanted to add a loop where the computer asked the player if they wanted to play again the game but I was not able to find a solution. Every time I try to do a loop an error came up destroying the the all code. A lab aid from the lab helped me to improve the code. The project is using iostream, string, fstream, and cstdlib.

Major Variables

Type	Variable Name	Description	Location
const char	WORD	String that the computer chose at random	Project 1
char	pGuess	player guess input	main(int argc, char** argv)
int	score	player current score	main(int argc, char** argv)
	strikes	How many times has the player guessed incorrectly	main(int argc, char** argv)
	hints	Many of times has the player asked for hints	main(int argc, char** argv)
	wLen	Size of the word chosen by the computer.	main(int argc, char** argv)
	fBlanks	The player fills in the blanks as they guess correctly.	main(int argc, char** argv)

C++ Constructs

Chapter	New syntax and keywords	Location
2	cout	rGame(char, int, char, int, int, int);
	cin	rGame(char, int, char, int, int, int);
	int	main(int argc, char** argv)
	char	main(int argc, char** argv)
	bool	rGame(char, int, char, int, int, int);
	string	main(int argc, char** argv)
	assignment operator (+=)	rGame(char, int, char, int, int, int);
	arithmetic operator (+,-,*,/)	rGame(char, int, char, int, int, int);

Chapter	New syntax and keywords	Location
	increment operator (++)	rGame(char, int, char, int, int, int);
	decrement operator(--)	rGame(char, int, char, int, int, int);
3	enumerator type	project 1
	if-else statements	bonus(in)
	break	rGame(char, int, char, int, int, int);
	while loops	rGame(char, int, char, int, int, int);
	switch stamens	rGame(char, int, char, int, int, int);
4	global constants	project 1
	global variable	
	overload function	
5	void function	
	return	
	procedural abstraction	
6	ifstream	
	ofstream	
7	arrays	

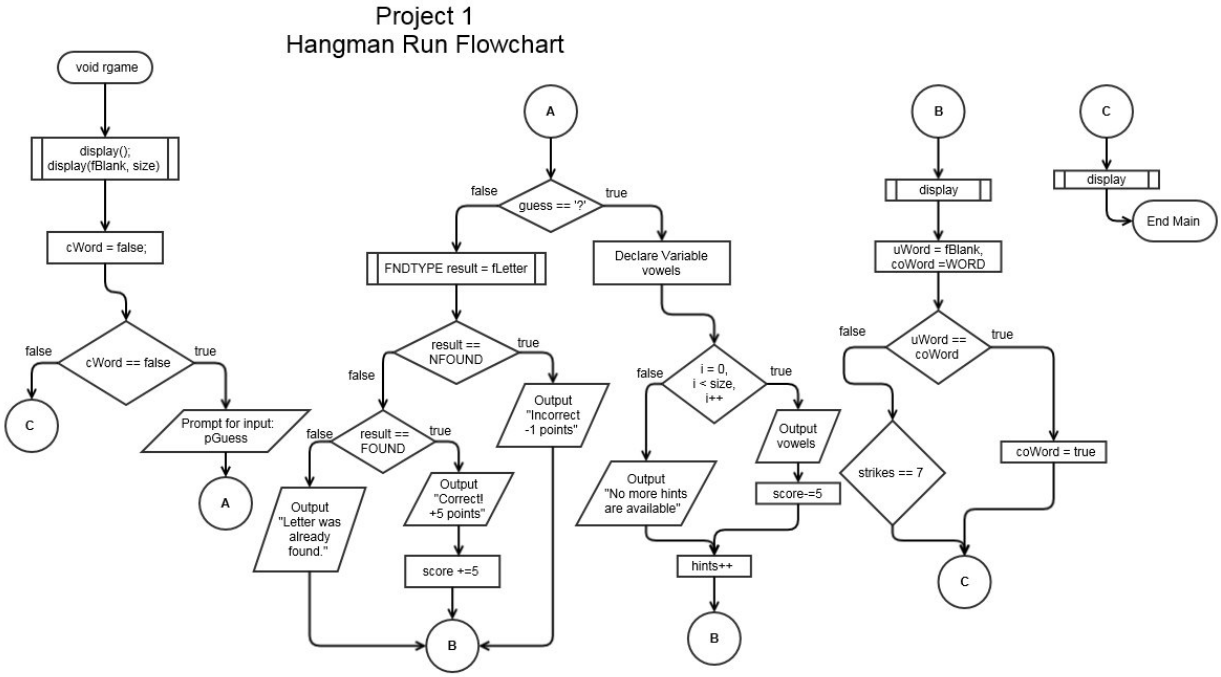
Reference

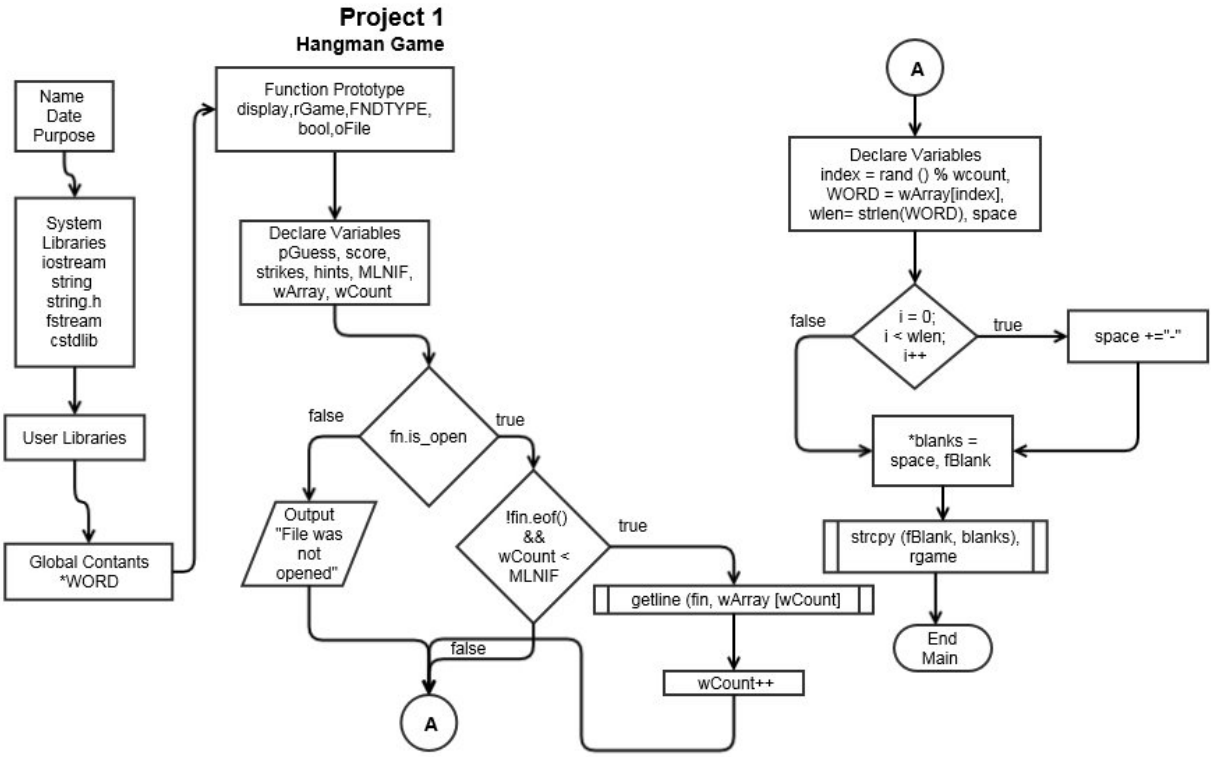
1. http://www.cplusplus.com
2. YouTube
3. Textbook
4. Lab aid in the computer lab

Pseudo Code

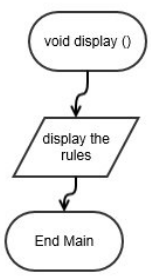
```
Initialize

read a file
choose a random word from file

create the fill in the blanks

display the rules of the game
display the fill in the blanks

while the user has yet to completely fill in the blanks
        read: the user's guess
        if the player input is a ?
                if the number of hints used is equal to zero
                        output: the number of vowels there are in the letter
                        decrement their score by 5
   else
                        output: no more hints
                increment the number of hints used
      else
                if the letter was not found
                        output: incorrect! -1pt
                        decrement their score
                        increment their strike count
       else
                        if the letter was found
                                output: correct! +5 pts.
                                Increment score by 5
                        else
                                output: letter was already found

                        display the fill in the blanks
                        if the word filled out is equal to the word chosen by the computer
                                end the game user won
                        else
                                if strike count is equal to 7
                                        end the game user lost
display the game results
```

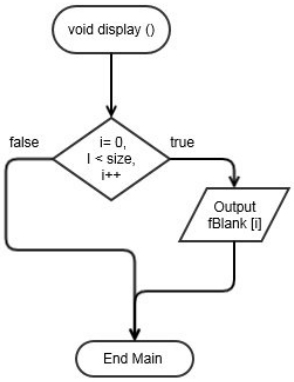
Flowcharts

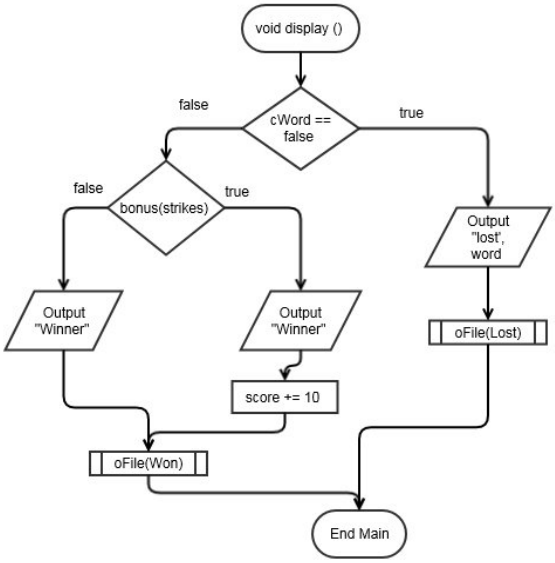

Project 1
Hangman Run Flowchart
void rgame
display();
display(fBlank, size)
cWord = false;
cWord == false
false
true
C
Prompt for input:
pGuess
A
A
guess == '?'
false
true
FNDTYPE result = fLetter
result ==
NFOUND
true
false
Output
"Incorrect
-1 points"
result ==
FOUND
false
true
Output
"Letter was
already
found."
Output
"Correct!
+5 points"
score +=5
B
Declare Variable
vowels
i = 0,
i < size,
i++
false
true
Output
"No more hints
are available"
Output
vowels
score-=5
hints++
B
B
display
uWord = fBlank,
coWord =WORD
uWord ==
coWord
false
true
strikes == 7
coWord = true
C
C
display
End Main


Project 1
Hangman Game
Name
Date
Purpose
System
Libraries
iostream
string
string.h
fstream
cstdlib
User Libraries
Global Contants
*WORD
Function Prototype
display,rGame,FNDTYPE,
bool,oFile
Declare Variables
pGuess, score,
strikes, hints, MLNIF,
wArray, wCount
fn.is_open
false
true
Output
"File was
not
opened"
!fin.eof()
&&
wCount <
MLNIF
true
false
getline (fin, wArray [wCount]
wCount++
A
A
Declare Variables
index = rand () % wcount,
WORD = wArray[index],
wlen= strlen(WORD), space
i = 0;
i < wlen;
i++
false
true
space +="-"
*blanks =
space, fBlank
strcpy (fBlank, blanks),
rgame
End
Main

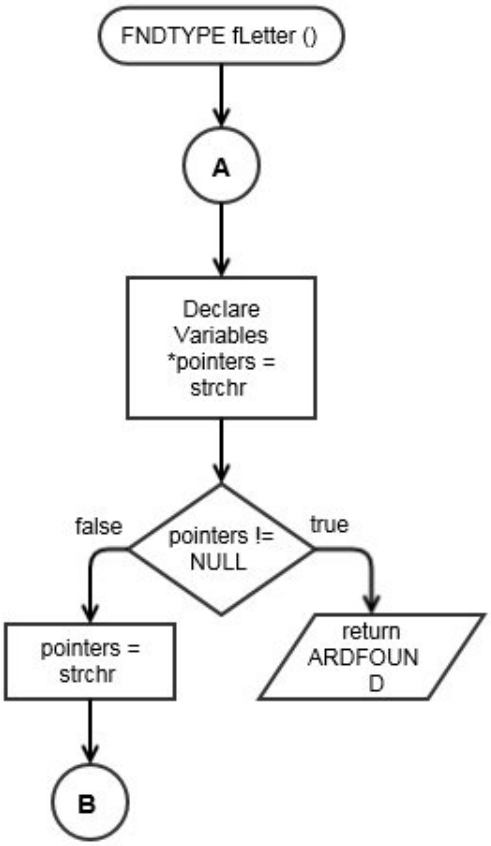
Display the Game

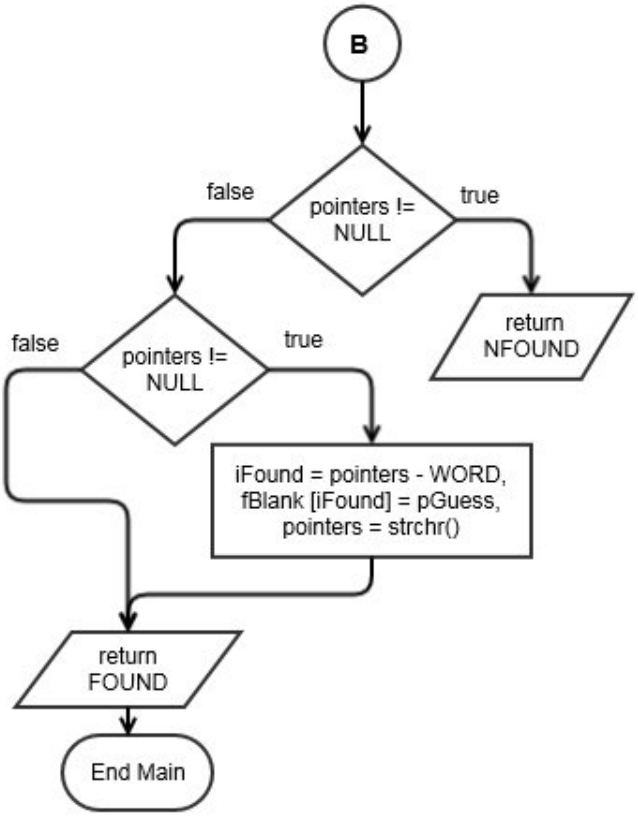




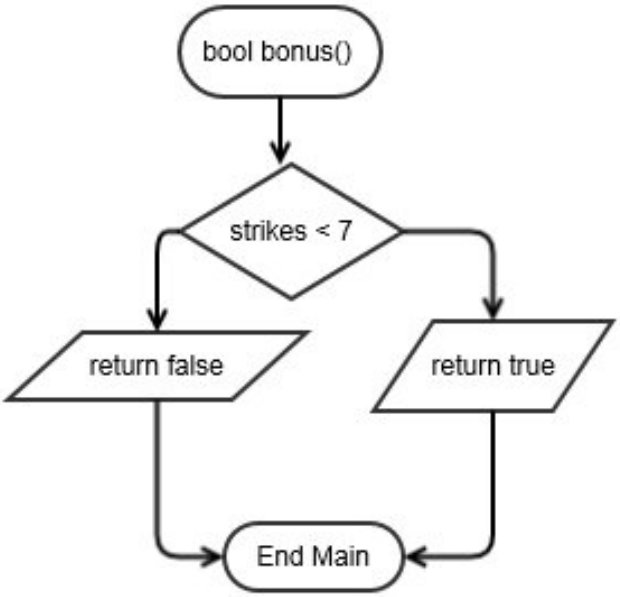


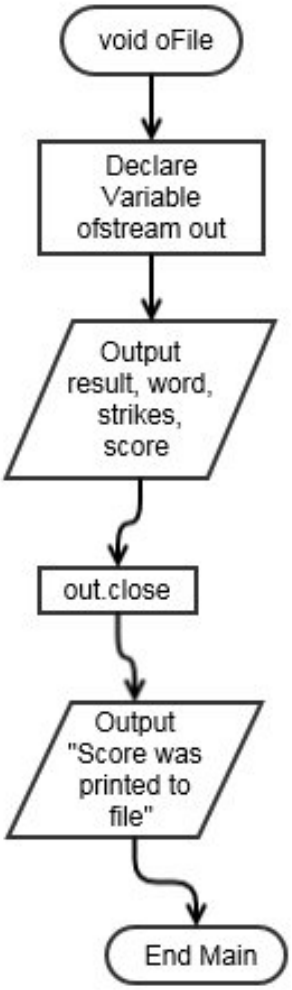
Hangman Game
Letter





Hangman Bool and Output
to file





Program

```
 /*
 * File:   main.cpp
 * Author: Jose Roman
 * Created on May 4, 2015, 10:33 AM
 *      Purpose: Project 1: Hangman Game
 */

//System Libraries
#include <iostream>
#include <string.h>
#include <string>
#include <fstream>
#include <cstdlib>
using namespace std;
//User Libraries

//Global Constants
const char *WORD;
enum FNDTYPE {NFOUND, FOUND, ARDFOUND};// Compare Results
//Function Prototypes
void display();//rules of the games
void rGame(char fBlank[],int,char,int,int,int);
void display(char fBlank[], int);// Fill in the blanks
FNDTYPE fLetter(char,char fBlank[]);//Blanks to be filled
bool bonus(int);//Finish the word in seven chances
void display(bool,int,int);
void oFile(string,int,int);// Output the result in a file
//Execution Begins Here!
int main (int argc, char** argv){
    //Initialize the random seed
    srand (time(NULL));

    //Declare Variables
    char pGuess;//Player Guess
    int score   =0;//Player Score
    int strikes =0;//Guessed Wrong
    int hints   =0;//Hints at the player

    const int MLNIF = 300; //Max lines in file
    string wArray[MLNIF];
```

```
    int wCount = 0;//Word Count
    ifstream fin("HangmanWords.txt");//File name for the hangman words
    if (fin.is_open()){

        while(!fin.eof() && wCount < MLNIF){
            getline(fin, wArray[wCount]);
            wCount++;
        }
    }
    else
        cout<<"File was not opened"<<endl;//Input this if file is not found
    //Random Word from file
    int index = rand() % wCount;
    WORD = wArray[index].c_str();
    int wLen = strlen(WORD);

    //Input player guesses in a string
    string space;
    for (int i = 0;i < wLen; i++)
        space += "_";
    const char *blanks = space.c_str();//Empty string
    char fBlank[wLen];
    strcpy(fBlank,blanks);
    rGame(fBlank,wLen,pGuess,hints,strikes,score);

    return 0;
}

//Rules of the game
void display(){
    cout<<"Welcome to the Hangman Game..."<<endl;
    cout<<"To win the game you need to guess a random word."<<endl;
    cout<<"Rules:"<<endl;
    cout<<"Rule 1. You will only have seven chances to guess the random word"<<endl;
    cout<<"Rule 2. If you guess the correct word before the seven chances you"<<endl;
    cout<<"         you will earn 10 points"<<endl;
    cout<<"Rule 3. You are allowed for only one hint but I will deduct five points."<<endl;
    cout<<"Rule 4. For each correct letter from the random word you earn five points."<<endl;
    cout<<"Rule 5. For each incorrect letter from the random word I will deduct you 1
point."<<endl;
    cout<<"Rule 6. Good Luck!! May the odd be in your favor.."<<endl;
    cout<<endl;
```

```
}

void rGame(char fBlank[],int size,char pGuess, int hints,int strikes,int score){
   //Input the rules of the games
   display();
   //Display how many letters in a word
   display(fBlank, size);

   bool cWord = false;//
   while (cWord == false){

      cout<<"Your Guess? ";
      cin>>pGuess;




      if(pGuess == '?'){
         if(hints == 0){
            int vowels=0;
            for(int i=0;i<size;i++){
               switch(WORD[i]){
                  case 'a':{vowels++;break;}// vowels++ means vowels=vowels+1;
                  case 'i':{vowels++;break;}
                  case 'u':{vowels++;break;}
                  case 'e':{vowels++;break;}
                  case 'o':{vowels++;break;}
                  default:break;
               };
            }
            cout<< vowels <<" vowel(s) is this word."<<endl;
            cout<< "-5 points"<<endl;
            score -=5;
         }
         else
            cout<<"No more hints are available."<<endl;
         hints++;
      }
      else{
         FNDTYPE result= fLetter(pGuess, fBlank);
         if(result == NFOUND){
            cout<<"Incorrect! -1 point."<<endl;
            score--;
```

```
            strikes++;
        }
        else{
            if(result == FOUND){
                cout<<"Correct! +5 points.";
                score += 5;
            }
            else
                cout<<"Letter was already found.";
        }
        cout<<endl<<endl;


    //Where the word was filled
    display(fBlank, size);

    string uWord = fBlank;
    string coWord = WORD;
    if(uWord == coWord)
        cWord = true;
    else//
    {
        if(strikes == 7)
            break;
    }
  }

}
//Display results to user
display(cWord, strikes, score);
}

//
void display(char fBlank[],int size){
  //Display the blanks
  for(int i=0;i<size;i++)
    cout<< " " <<fBlank[i];
  cout<<endl;
}
//Letter given by the user
FNDTYPE fLetter(char pGuess,char fBlank[]){
  char *cPter = strchr(fBlank, pGuess);// Pointers
  if(cPter != NULL)
```

```
        return ARDFOUND;

    cPter=strchr(WORD,pGuess);
    if(cPter == NULL)
        return NFOUND;

    while(cPter != NULL){
        int iFound= cPter - WORD;
        fBlank[iFound]= pGuess;
        cPter = strchr( cPter + 1,pGuess);
    }
    return FOUND;

    }
//If the player completed the word in seven chances
bool bonus(int strikes){
    if(strikes < 7)
        return true;
    else
        return false;
}
//Display results and Output Results
void display(bool cWord,int strikes, int score){
    cout<<endl;
    if(cWord == false){
        cout<< "You Lose!";
        cout<< " The word was "<<WORD;
        oFile("Lost", strikes, score);
    }
    else
    {
        if(bonus(strikes)){
            cout<< "Congratulation! You completed the word before 7 strikes! "<<endl;
            cout<< "+10 points!";
            score+=10;

    }
    else
    cout<< "You have completed the game! Congratulations!";
oFile("Won",strikes,score);
}
}
void oFile(string results,int strikes,int score){
```

```
    ofstream myfile;
    myfile.open("game.txt");
    myfile<<"You "<<results<<" the game!"<<endl;
    myfile<<"The word was " <<WORD      <<endl;
    myfile << "You used up "   << strikes       << " strikes" << endl;
    myfile << "Your score = "  << score         << endl;
    myfile.close();
    // Tell User their result was outputted to a file
    cout << endl;
    cout << "Your score was printed to a file";
    cout << "...Go check out your score!" << endl;

}
```