Project 1
<Hangman>

CIS-17C

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Introduction

Title: Hangman

This program is coded to play the popular game known has hangman in digital form. The game is coded so it utilizes every concept required for project 1.

The game starts by picking one of the randomized words, which can be changed through the difficulty setting menu. The player then is given a choice of guessing a letter or guessing a word. In either case if the player chooses wrong be it a letter or a word the text picture display will change depending on how many mistakes were made. The player loses if he or she makes six mistakes. The player wins if the word is guessed right or if the player guessed each letter for the given word.

Summary

Project size: about 430 lines

The number of variables: about 33 variables

The number of functions: 14 functions

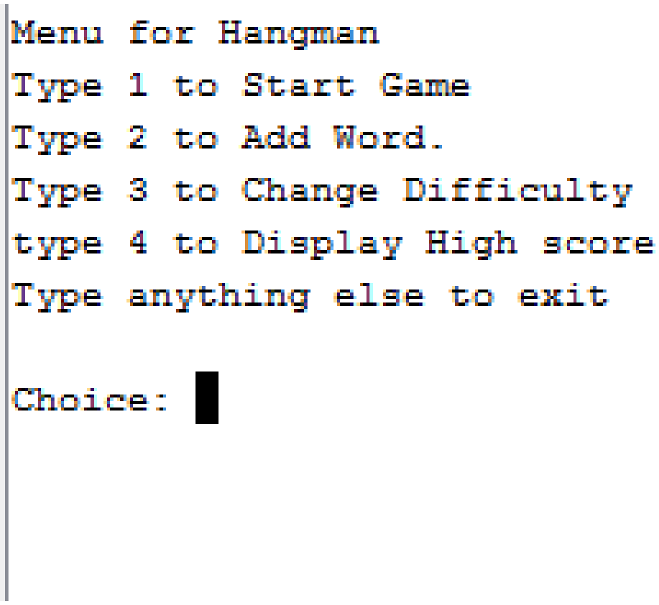
The project includes all the concepts required for the project. Most of the concepts were learned through the documentation of the STL libraries. The game logic was easy to create but implementing the required concepts was tricky. Using the documentation from the online website help lessen the line of code needed for the project. Functions such as find, delete, sort which each has more than 40 lines of code is lessen to a single line. I have chosen to create the game hangman because the concepts required are mostly on storing values into different type of storage organization.

Description

The creation of the game was to implement all the concepts in class as easily as possible. The game hangman to code requires lots of storage for the word values or the logic for checking, so creating a game for the concepts needed was helpful.

Input / Output

The game is navigated and played through a menu system.



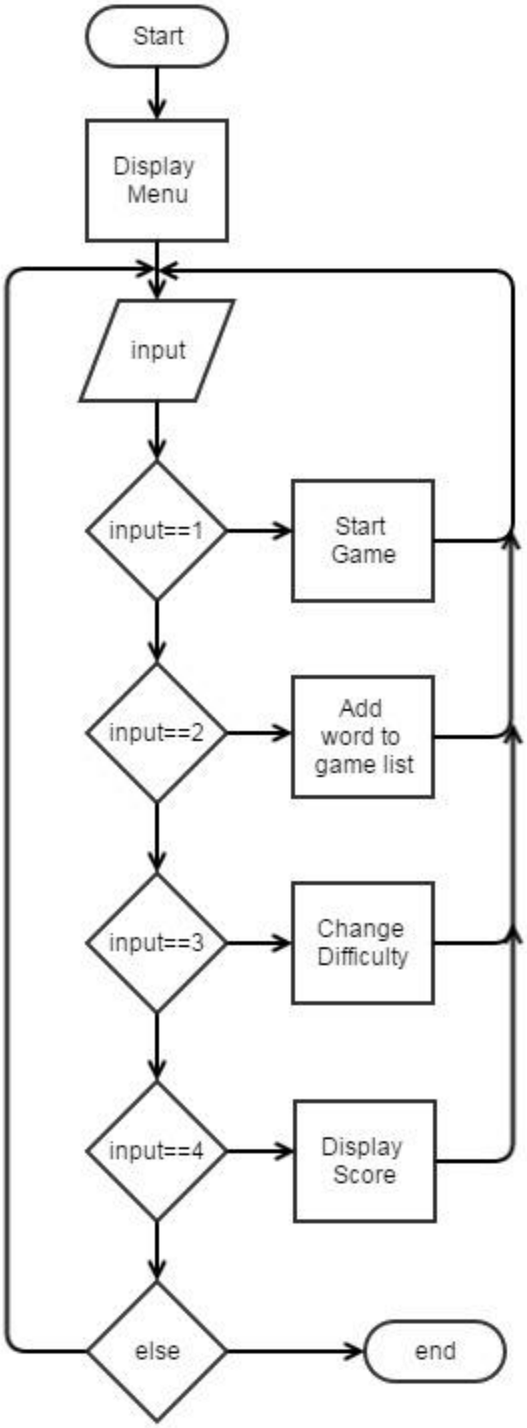
```
Menu for Hangman
Type 1 to Start Game
Type 2 to Add Word.
Type 3 to Change Difficulty
type 4 to Display High score
Type anything else to exit

Choice: █
```

For example, the figure above shows a menu and gives you a choice to decide where you would like to go. If by choosing the number 4, it would display the score for people who previously played the game.

Pseudo Code

```
Initialize
Do while loop in the beginning until player exits
Display Menu
If input 1
        Start game of hangman
If input 2
        Add word to the game by text file
If input 3
        Change Difficulty
If input 4
        Display Score List
Else Exit
```

Flowchart


Start
Display Menu
input
input==1
Start Game
input==2
Add word to game list
input==3
Change Difficulty
input==4
Display Score
else
end

Required Concepts

Concept	Name	Description	Location
Maps	found	Utilizes maps to insert letters which where guessed	main.cpp
Sets	theset	Used sets to write in highscore	main.cpp
Stacks	stackc	Used to count mistakes a player makes	stackcount.h
Queues	myq	Reads in highscore and then prints it in a function	main.cpp
Iterators	p	Iterator p is used for find function in stl	main.cpp
Algorithms	sort,find	sort is used to sort by string size, find uses to check if letter guessed	main.cpp

Reference

STL Library Documentation online

Program

```
/*
 * File:   main.cpp
 * Author: Andrew Kim
 * Purpose: Project 1 - Hangman
 * Created on November 9, 2014, 5:31 PM
 */

//System Libraries
#include <iostream>
#include <cstdlib>
#include <string>
#include <cstring>
#include <fstream>
```

```
#include <vector>
#include <algorithm>
#include <map>
#include <set>
#include <stack>
#include <queue>
#include "stackcount.h"
using namespace std;

//Function Prototypes
//Menu
void Menu();
int getN();
void def(int);
//Game
void startG();
void enterW();
void changeD();
void manDisp(stackcount);
void highD();
void guessW(string,bool &,stackcount &);
//Sort by string size (difficulty)
bool smallest(const string& a, const string& b){
    return (a.size() < b.size());
}
bool largest(const string& a, const string& b){
    return (a.size() > b.size());
```

```
}
//Debug
void prntVec(vector<string>);

//Execution Begins Here
int main(int argc, char** argv) {
    int inN;
    do{
        Menu();
        inN=getN();
        switch(inN){
        case 1:    startG();break;
        case 2:    enterW();break;
        case 3:    changeD();break;
        case 4:    highD();break;
        default:   def(inN);}
    }while(inN>=1&&inN<=4);
    return 0;
}

void Menu(){
    cout<<"Menu for Hangman"<<endl;
    cout<<"Type 1 to Start Game"<<endl;
    cout<<"Type 2 to Add Word to the game"<<endl;
    cout<<"Type 3 to Change Difficulty"<<endl;
    cout<<"type 4 to Display Score"<<endl;
    cout<<"Type anything else to exit \n"<<endl;
```

```
}

int getN(){
        int inN;
        cout<<"Choice: ";
        cin>>inN;
        return inN;
}

void def(int inN){
        cout<<"You typed "<<inN<<" to exit the game."<<endl;
}

void startG(){
    //To get word randomly (Easy and Hard = SIZE 247, Random = SIZE 989)
    srand(static_cast<unsigned int>(time(0)));
    int random;
    vector<string> wordlist;
    //Open game word list
    fstream file;
    string word;
    file.open("game.txt");
    while(file>>word){
        wordlist.push_back(word);
    }
    file.close();
    //Check vector size
```

```
if(wordlist.size()<=247){
    random=rand()%247+1;    //Get random from 1~247
}
if(wordlist.size()==989){
    random=rand()%989+1;    //Get random from 1~989
}
//Word for game
string gameword;
gameword=wordlist[random-1];
//Answer
//cout<<gameword<<endl;
//cout<<"Size: "<<gameword.size()<<endl;
//Game Logic
//Utilize maps to insert found letters from "_"
map<int,char> found;
bool win=false;
int input;
string guess;
char letter;
//Count mistakes
stackcount count;
//Memorize letter used
vector<char> memor;
memor.push_back('0');
//Array for all the Alphabet and check
char alphabet[26]={'a','b','c','d','e','f','g','h','i','j','k','l','m','n','o','p','q','r','s','t','u','v','w','x','y','z'};
bool array[26]={false};
```

```
do{
    //Display Hangman
    manDisp(count);
    for(int i=0;i<gameword.size();i++){
        //Dont Know
        if((float)found[i]!=0){
            cout<<found[i]<<" ";
        }
        else if((float)found[i]==0)cout<<"_ ";
    }
    cout<<endl;
    cout<<"---Options--"<<endl;
    cout<<"1. Guess a Letter"<<endl;
    cout<<"2. Guess the Word"<<endl;
    cout<<"Choice: ";
    cin>>input;
    //Logic for guessing a letter
    if(input==1){
        cout<<"Letter: ";
        cin>>letter;
        //Store to vector
        memor.push_back(letter);
        //Check if letter is already used
        vector<char>::iterator p;
        p=find(memor.begin(),memor.end(),letter);
        cout<<"Found: "<<*p<<endl;
        if(*p==letter){
```

```
    cout<<"Letter already used"<<endl;
    for(int i=0;i<26;i++){
        if(alphabet[i]==letter){
            array[i]=true;
        }
    }
}
//Make character array for string
char cword[gameword.size()];
strcpy(cword,gameword.c_str());
bool checkl=false;
//Check if the word has the letters
for(int i=0;i<gameword.size();++i){
    if(letter==cword[i]){
        //In first element is the position, second element is the letter
        found[i]=letter;
        checkl=true;
    }
}
//Check if you guessed all letters
int counta=0;
for(int i=0;i<gameword.size();i++){
    if((float)found[i]!=0)counta++;
}
if(counta==gameword.size())win=true;
//If not found count mistake
if(checkl==false)count.stackdown();
```

```
    }
    //Logic for guessing a word
    if(input==2){
        guessW(gameword,win,count);
    }
    cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
    //Display Letter Used
    cout<<"Letter Used: ";
    for(int i=0;i<26;i++){
        if(array[i]==true){
            cout<<alphabet[i]<<" ";
        }
    }
    cout<<endl;
}while(win==false&&count.getS()<6);
if(count.getS()==6){
    cout<<"YOU LOSE!"<<endl;
    cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
    manDisp(count);
}
if(win==true){
    cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
    cout<<"You Win!"<<endl;
    //Display Hangman
    manDisp(count);
    for(int i=0;i<gameword.size();i++){
        //Dont Know
```

```
    if((float)found[i]!=0){
        cout<<found[i]<<" ";
    }
    else if((float)found[i]==0)cout<<"_ ";
}
//Display Answer
cout<<endl;
cout<<"Answer: "<<gameword<<endl;
//Ask for name to put in high score
string name;
string texthigh;
cout<<"Enter your name: ";
cin>>name;
//Utilize Sets
set<string> theset;
//Open high score text file
fstream hfile;
hfile.open("highscore.txt");
while(hfile>>texthigh){
    theset.insert(texthigh);
}
hfile.close();
//Entering the score for you
//Open to write high score
fstream writeh;
writeh.open("highscore.txt",fstream::in|fstream::out|fstream::app);
if(writeh.is_open()){
```

```
            cout<<"Writing to File"<<endl;
            writeh<<name<<" "<<count.getS()<<endl;
        }
        writeh.close();
    }
    cout<<endl;
}

void enterW(){
    fstream file;
    string word;
    cout<<"Type the word to enter be listed in the game: ";
    cin>>word;
    //Adds to the word list
    file.open("word.txt",fstream::in|fstream::out|fstream::app);
    if(file.is_open()){
        file<<word<<endl;
    }
    file.close();
}

void changeD(){
    //Read in word list
    fstream file;
    string word;
    file.open("word.txt");
    vector<string> wordlist;
```

```
//Read into vector
while(file>>word){
    wordlist.push_back(word);
}
file.close();
//Test if vector has words
//prntVec(wordlist);
int choice;
//Difficulty Setting
cout<<"Type 1 for Easy"<<endl;
cout<<"Type 2 for Hard"<<endl;
cout<<"Type 3 for Random"<<endl;
cout<<"Choice: ";
cin>>choice;
//Create new text file for the game.
fstream filegame;
//Clear text file
filegame.open("game.txt",fstream::out|fstream::trunc);
//Sort word list from smallest to largest
if(choice==1){
    sort(wordlist.begin(),wordlist.end(),smallest);
    for(int i=0;i<wordlist.size()/4;i++){
        filegame<<wordlist[i]<<endl;
    }
}
//Sort word list from largest to smallest
if(choice==2){
        sort(wordlist.begin(),wordlist.end(),largest);
        for(int i=0;i<wordlist.size()/4;i++){
            filegame<<wordlist[i]<<endl;
        }
    }
    //No sort
    if(choice==3){
        for(int i=0;i<wordlist.size();i++){
            filegame<<wordlist[i]<<endl;
        }
    }
    filegame.close();
    cout<<endl;
}

void manDisp(stackcount count){
    if(count.getS()==0){
        //Empty
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
    if(count.getS()==1){
        //Head
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"  0   |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
    if(count.getS()==2){
        //Torso
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"  0   |"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
    if(count.getS()==3){
        //One Arm
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"  0   |"<<endl;
        cout<<"  |)  |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
    if(count.getS()==4){
        //Other Arm
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"  0   |"<<endl;
        cout<<" (|)  |"<<endl;
        cout<<"      |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
    if(count.getS()==5){
        //One Leg
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"  0   |"<<endl;
        cout<<" (|)  |"<<endl;
        cout<<" d    |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
    if(count.getS()==6){
        //Other Leg
        cout<<"  +---+"<<endl;
        cout<<"  |   |"<<endl;
        cout<<"  0   |"<<endl;
```

```
        cout<<" (|)  |"<<endl;
        cout<<" d b  |"<<endl;
        cout<<"      |"<<endl;
        cout<<"========="<<endl;
    }
}

void highD(){
    cout<<endl;
    fstream highs;
    queue<string> myq;
    string scoring;
    highs.open("highscore.txt");
    cout<<"Display Score"<<endl;
    cout<<"(# = mistakes)"<<endl;
    do{
        getline(highs,scoring);
        myq.push(scoring);
    }while(!highs.eof());
    //Print Score
    cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
    while(!myq.empty()){
        cout<<myq.front()<<endl;
        myq.pop();
    }
    cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
    highs.close();
```

```
}

void guessW(string gameword,bool &win,stackcount &count){
    string word;
    cout<<"Word: ";
    cin>>word;
    if(word==gameword){
        win=true;
    }
    else{
        count.stackdown();
    }
}

void prntVec(vector<string> wordlist){
    cout<<endl;
    for(int i;i<wordlist.size();i++){
        cout<<wordlist.at(i)<<endl;
    }
    cout<<endl;
}
```