```
  ^     ^     ^     ^     ^
 /J\   /e\   /w\   /e\   /l\
<___><___><___><___><___>

  ^     ^     ^     ^     ^
 /T\   /h\   /i\   /e\   /f\
<___><___><___><___><___>
```

By Tyler Stevens

CSC-5-48102

Dr. Mark Lehr

October 28, 2016

Table of Contents

Introduction

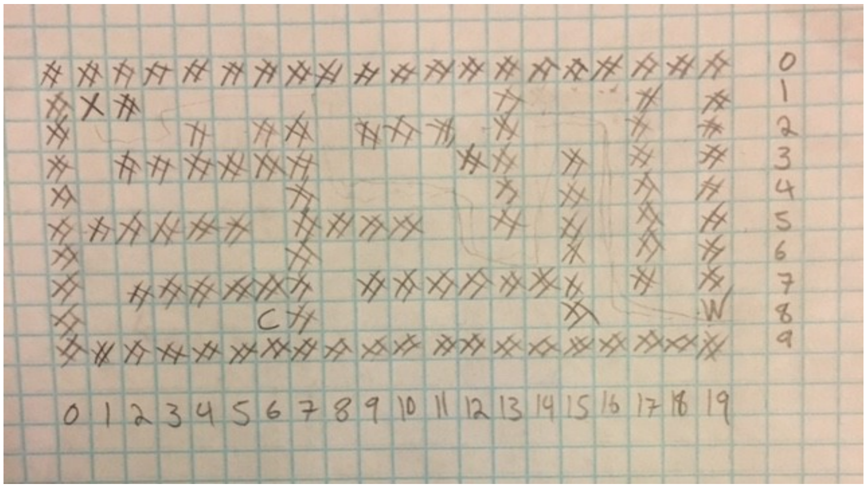
Title: Jewel Thief

Jewel Thief follows a thief that has stolen the “Regent” diamond from The Lovre museum in Paris. All there is to do now is escape the maze like museum without getting caught. Escaping is harder than the thief anticipated. Dead ends and secret passage ways litter the museum. Are you brave enough to be the Jewel Thief?

Summary

Project size: 188 lines of code.

In the beginning I Started off making the maze by reading it from a file. However, I ran into some complications and found it much easier to create a 2D array to create the maze. It works very much like a graph where you have the Y axis and the X axis. That being said I just plotted points in the array like a graph. First, I started out with the width of the maze at 20 and its height at 10. After that I drew the maze out spaces and pound signs. The tricky part to figure out was implementing character movement in the array. The Thief starts at position 1 on the X axis and also on the Y axis. His position is manipulated by increasing and decreasing his value in the maze with 4 separate for loops that increment either Y position or the X position. This is achieved by inputting 'a' for left, 'd' for right, 'w' for up, and 's' for down. It is all contained in a switch statement which also includes a quit option and a instruction prompt. The switch is contained in a do while loop that runs as long as the variable quit is set to false. Once the thief is at a certain value in the array and if statement sets quit to true ending the do while loop. Setting quit is also how the player can exit the program by entering 'q'. When 'q' is entered quit is set to true in the switch statement.



- Original blueprint

In the future I plan to add jewel collection in the maze, score counter, guards that take the jewel back, multiple mazes, and possibly a time limit.

Description

The whole point of this game is to solve the maze and escape! Hint: go to space 6, 3 in the maze for a cheat code.

Pseudo code

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

//Declaration of Variables and Process values

//Width and Height of Maze
//Symbol for Thief position
//User input. “asdw” to move “q” to quit, and “i” for instructions.
//Default thief position
//If  false execute program is true quit program.

//2D Array Maze

//Call Function

//Instructions
```

//While quit does not equal true execute code

//Instruction for user
//Placement of Thief in maze. Default position is maze[1][1]
//Increments 2D array Maze
//Input direction the thief moves

//Declaration of variables and Process Values

//User Inputs

//Switch statement
//Moves thief to the left in the maze
//Moves thief to the right in the maze
//Moves thief down in the maze
//Moves thief down in the maze
//Display instruction on how to play the game
//Quits game
//Break

//**Winning criteria**
//Solving the maze exits the program

//Cheat code
//If user inputs the secret code the automatically win

//Exits Function

//Title Screen Function

//Declaration of Variables
//Any input will execute program
//Variable for the title
//Declare input file object
//Open input file object "file.txt"

//if File was opened successfully
//While we can read in more input from the file
//Display 'words'

//Else
//Error with file

//Plays game when user enters anything from the keyboard

```
//Exit Program
```

Variables

```
int main(){

const char W = 20, H = 10; //Width and Height of Maze
unsigned char thief = 'X' ; //symbol for thief position
unsigned char action; //user input. asdw to move and q to quit
int posx = 1, posy = 1; //default player
bool quit=false;
unsigned char maze[H][W] = {The maze is made in here};

int y = 0
int x=0
}

int prevposx = posx;
int prevposy = posy;
unsigned char space = {32};

void titleScreen () {

char play; //any input will execute program
string title;  //variable for the title
ifstream inFile;  //declare input file object
```

Code

```
/*
 * File:   main.cpp
 * Author: Tyler
 * Created on October 25, 2016, 9:10 PM
 * Purpose: Create a maze game the user figures out how to escape
 */

#include <iostream> //Input/Output
#include <cstdlib>
#include <fstream> //File objects
#include <string> //String objects
using namespace std;
//User Libraries
```

```
//Global Constants

//Execution Begins Here!

 //Function prototypes
void titleScreen();

//Execution Begins Here!
   int main() {
   //Declare Variables
   const char W = 20, H = 10;//Width and Height of Maze
   unsigned char thief = 'X';//symbol for thief position
   unsigned char action;//user input. asdw to move and q to quit
   int posx = 1, posy = 1;//default player
   int choose;
   bool quit=false;

   //2D Array Maze
  unsigned char maze[H][W] = {//second maze
      {'#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#'}, //0
      {'#', ' ', '#', ' ', ' ', ' ', ' ', ' ', ' ', '#', ' ', ' ', ' ', '#', ' ', '#', ' ', ' ', ' ', '#'}, //1
      {'#', ' ', '#', '#', '#', ' ', '#', '#', ' ', '#', ' ', '#', ' ', '#', ' ', '#', ' ', '#', '#', '#'}, //2
      {'#', ' ', ' ', ' ', '#', ' ', ' ', '#', ' ', ' ', ' ', '#', ' ', ' ', ' ', '#', ' ', '#', ' ', '#'}, //3
      {'#', ' ', '#', ' ', '#', ' ', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', ' ', '#', ' ', '#'}, //4
      {'#', ' ', '#', '#', '#', ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' ', ' ', '#', ' ', '#', ' ', '#'}, //5
      {'#', ' ', ' ', '#', ' ', ' ', '#', '#', ' ', '#', '#', '#', ' ', '#', ' ', ' ', ' ', '#', ' ', '#'}, //6
      {'#', ' ', '#', '#', ' ', '#', '#', ' ', ' ', '#', ' ', '#', ' ', '#', '#', '#', ' ', ' ', ' ', '#'}, //7
      {'#', ' ', ' ', ' ', ' ', '#', ' ', ' ', '#', '#', ' ', ' ', ' ', ' ', '#', ' ', ' ', '#', ' ', ' '}, //8
      {'#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#', '#'},
   }; //9
   //0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15   16   17   18   19

   //Call Function
   titleScreen();

   cout<<"You have got the jewel. Now Escape!\n\n";

   //Instruction
   cout<<"INSTRUCTIONS \n";
   cout<<"---------------------------\n";
   cout<<"Move Thief Left with:  'a' \n";
   cout<<"Move Thief Right with: 'd' \n";
   cout<<"Move Thief Up with:    'w' \n";
   cout<<"Move Thief Down with:  's' \n";
   cout<<"Quit game with:        'q' \n";
```

```
cout<<"See instructions with: 'i' \n";
cout<<"---------------------------\n";
//Quits game when user enter q
 do{

   //Placement of Thief in maze. Default position is maze[1][1]
   maze[posx][posy] = thief;

  //Increments 2D array
   for (int y = 0; y < H; y++) {
      cout << endl;

      for (int x = 0; x < W; x++){
         cout << maze[y][x];
      }
   }

   //Inputs direction the thief moves by
   cout << "\nAction:";
   cin>>action;

   //Declaration of variables
   int prevposx = posx;
   int prevposy = posy;
   unsigned char space = {32};

   //Input values for Thief movement
   switch (action){
      //Moves thief to the left in the maze
      case'a':
         if (maze[posx][posy - 1] != '#'){
            posy--;
            cout<<posx<<','<<posy<<endl;//displays move
            maze[prevposx] [prevposy] = space;
         } //replace 'x' with space
         system("clear");//clear screen
         break;

      //Moves thief to the right in the maze
      case'd':
         if (maze[posx][posy + 1] != '#') {
            posy++;
            cout<<posx<<','<<posy<<endl;
            maze[prevposx] [prevposy] = space;
         }
         system("clear");
```

```
        break;

    //Moves thief down in the maze
    case's':
         if (maze[posx + 1][posy] != '#'){
            posx++;
            cout<<posx<<','<<posy<<endl;
            maze[prevposx] [prevposy] = space;
         }
        system("clear");
        break;

    //Moves thief down in the maze
    case'w':
        if (maze[posx - 1][posy] != '#'){
            posx--;
            cout<<posx<<','<<posy<<endl;
            maze[prevposx] [prevposy] = space;
        }
        system("clear");
        break;

    //Display instruction on how to play the game
    case'i':
        cout<<"INSTRUCTIONS \n";
        cout<<"--------------------------\n";
        cout<<"Move Thief Left with:  'a' \n";
        cout<<"Move Thief Right with: 'd' \n";
        cout<<"Move Thief Up with:    'w' \n";
        cout<<"Move Thief Down with:  's' \n";
        cout<<"Quit game with:        'q' \n";
        cout<<"See instructions with: 'i' \n";
        cout<<"--------------------------\n";
    break;

    //Quits game
    case'q':
        quit=true;
        cout<<"See you later!\n\n";
        break;

    //If user does not input asdwq they will be prompt the instruction again
    default:
        cout << "Use asdw to move! hurry before you're caught!";
}
```

```
        //Solving the maze exits the program
        if((posx == 8) && (posy == 19 )){
            cout<<"You escaped!"<<endl;
            quit=true;
        }

        //A cheat code a Genie whispers to the thief
        if((posx == 3) && (posy == 6 )){
            cout<<"A magic entity rises from a lamp and whispers to you \n"
                  "Enter assddddddddddsddsddsdd at once"<<endl;
        }
    }while(quit != true);

    return 0;
}
void titleScreen(){
    //Declaration of Variables
    char play;//any input will execute program
    string title;//variable for the title
    ifstream inFile;  //declare input file object
    inFile.open("files.txt"); //open input file object "file.txt"

    if (inFile) { //if inFile was opened successfully
        while (inFile >> title) {
            getline(inFile,title);//while we can read in more input from the file
            cout << title << endl; //display 'words'
        }
     //Unsuccessfully tries to open file
    }else {
        cout << "Error with file" << endl;
    }

   //User input starts game
    cin>>play;

    return;
}
```

Flow Chart

https://www.gliffy.com/go/share/sug7ag253birwvuncxmv