Design Report

User Manual

This user manual is easy to user to understand about the program before they start to play the game. Below is the instruction of the program for the user.
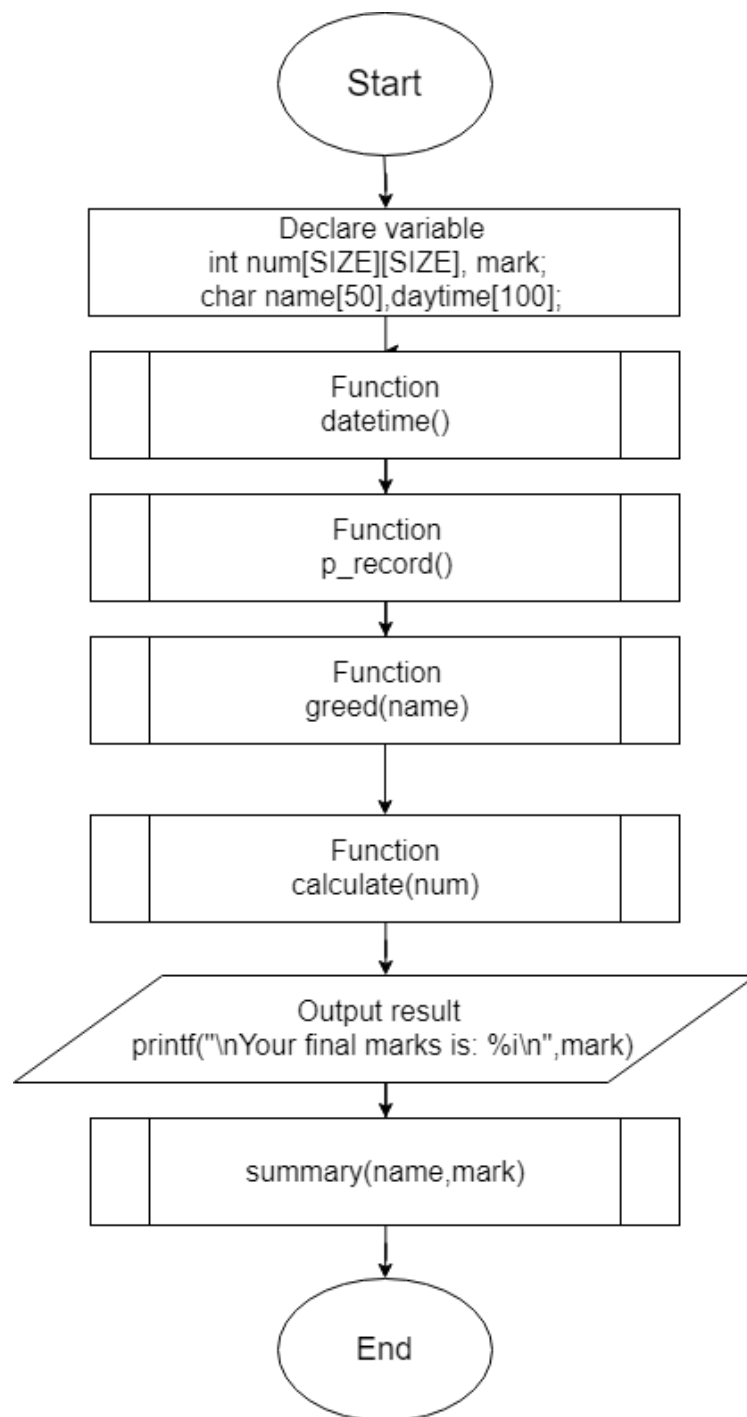
1. Today's date and time will be display on the screen
2. Will display the previous player record
3. Welcome and greeting speech
4. Show the number grids
5. Shows the rules of the game
6. The rule is the user need get the high mark within 14moves
7. Quit the game and record the mark
8. Exit program

Description

I have several function in this program. Below shows the description of each function.

1. The first function will show today's date and time to the user.
2. The second function is to display the previous user record.
3. The third function is to greet the user and user need to input his/her name.
4. The fourth function is show the number grid and the rules of playing this game and the number grid that using 2D array to create.
5. The fifth function is used to calculate the marks.
6. The sixth function is used to store the player record to the text file.
7. Lastly, the last function is used to call all the function above and run it.

Flowchart

```
                    ( Start )
                       |
                       v
        +-----------------------------------+
        |          Declare variable         |
        |   int num[SIZE][SIZE], mark;      |
        |   char name[50],daytime[100];     |
        +-----------------------------------+
                       |
                       v
        +--+-------------------------+--+
        |  |         Function        |  |
        |  |        datetime()       |  |
        +--+-------------------------+--+
                       |
                       v
        +--+-------------------------+--+
        |  |         Function        |  |
        |  |        p_record()       |  |
        +--+-------------------------+--+
                       |
                       v
        +--+-------------------------+--+
        |  |         Function        |  |
        |  |       greed(name)       |  |
        +--+-------------------------+--+
                       |
                       v
        +--+-------------------------+--+
        |  |         Function        |  |
        |  |     calculate(num)      |  |
        +--+-------------------------+--+
                       |
                       v
      /-----------------------------------------\
     /             Output result                 \
    /  printf("\nYour final marks is: %i\n",mark) \
    \---------------------------------------------/
                       |
                       v
        +--+-------------------------+--+
        |  |   summary(name,mark)    |  |
        +--+-------------------------+--+
                       |
                       v
                    (  End  )
```

Screen Capture


```
Quincy 2005
Today's Date and Time: 05/25/18 14:01:14

************** WELCOME YO Manhattan Tourist Problem! **************

*************** Previous Players' Record ***************

                    Erin 70
Please key in your name:Lai

*** Good day Lai, let's start the game~~ All the best!!! ***

Press any key to start the game...


- 7 - 8 - 8 - 5 - 0 - 0 - 4 - 3 -
- 3 - 5 - 0 - 8 - 8 - 8 - 1 - 4 -
- 8 - 2 - 1 - 3 - 9 - 2 - 0 - 9 -
- 1 - 3 - 8 - 5 - 5 - 8 - 2 - 6 -
- 1 - 4 - 3 - 2 - 7 - 2 - 8 - 6 -
- 4 - 2 - 9 - 5 - 8 - 5 - 9 - 8 -
- 8 - 8 - 2 - 7 - 5 - 0 - 8 - 4 -
- 3 - 1 - 7 - 5 - 7 - 2 - 3 - 3 -

To win this game you need to get the highest mark within *14* move!

Each number in the map represents the number of attractions along each street
You may only move to the right or move down!

 Press 'R' to go to right
 Press 'D' to go to down
 Press 'Q' to go to quit

Your starting point is: 7

Number of attractions visited so far: 7
Please choose your next action:_
```

```
Quincy 2005

- 7 - 8 - 8 - 5 - 0 - 0 - 4 - 3 -
- 3 - 5 - 0 - 8 - 8 - 8 - 1 - 4 -
- 8 - 2 - 1 - 3 - 9 - 2 - 0 - 9 -
- 1 - 3 - 8 - 5 - 5 - 8 - 2 - 6 -
- 1 - 4 - 3 - 2 - 7 - 2 - 8 - 6 -
- 4 - 2 - 9 - 5 - 8 - 5 - 9 - 8 -
- 8 - 8 - 2 - 7 - 5 - 0 - 8 - 4 -
- 3 - 1 - 7 - 5 - 7 - 2 - 3 - 3 -

You have left 13 move
Your marks now: 15

Number of attractions visited so far: 8
Please choose your next action:r

- 7 - 8 - 8 - 5 - 0 - 0 - 4 - 3 -
- 3 - 5 - 0 - 8 - 8 - 8 - 1 - 4 -
- 8 - 2 - 1 - 3 - 9 - 2 - 0 - 9 -
- 1 - 3 - 8 - 5 - 5 - 8 - 2 - 6 -
- 1 - 4 - 3 - 2 - 7 - 2 - 8 - 6 -
- 4 - 2 - 9 - 5 - 8 - 5 - 9 - 8 -
- 8 - 8 - 2 - 7 - 5 - 0 - 8 - 4 -
- 3 - 1 - 7 - 5 - 7 - 2 - 3 - 3 -

You have left 12 move
Your marks now: 23

Number of attractions visited so far: 8
Please choose your next action:r

- 7 - 8 - 8 - 5 - 0 - 0 - 4 - 3 -
- 3 - 5 - 0 - 8 - 8 - 8 - 1 - 4 -
- 8 - 2 - 1 - 3 - 9 - 2 - 0 - 9 -
- 1 - 3 - 8 - 5 - 5 - 8 - 2 - 6 -
- 1 - 4 - 3 - 2 - 7 - 2 - 8 - 6 -
- 4 - 2 - 9 - 5 - 8 - 5 - 9 - 8 -
- 8 - 8 - 2 - 7 - 5 - 0 - 8 - 4 -
- 3 - 1 - 7 - 5 - 7 - 2 - 3 - 3 -

You have left 11 move
Your marks now: 28

Number of attractions visited so far: 5
```

```
Quincy 2005
You have left 2 move
Your marks now: 72

Number of attractions visited so far: 9
Please choose your next action:d

- 7 - 8 - 8 - 5 - 0 - 0 - 4 - 3 -
- 3 - 5 - 0 - 8 - 8 - 8 - 1 - 4 -
- 8 - 2 - 1 - 3 - 9 - 2 - 0 - 9 -
- 1 - 3 - 8 - 5 - 5 - 8 - 2 - 6 -
- 1 - 4 - 3 - 2 - 7 - 2 - 8 - 6 -
- 4 - 2 - 9 - 5 - 8 - 5 - 9 - 8 -
- 8 - 8 - 2 - 7 - 5 - 0 - 8 - 4 -
- 3 - 1 - 7 - 5 - 7 - 2 - 3 - 3 -

You have left 1 move
Your marks now: 80

Number of attractions visited so far: 8
Please choose your next action:d

- 7 - 8 - 8 - 5 - 0 - 0 - 4 - 3 -
- 3 - 5 - 0 - 8 - 8 - 8 - 1 - 4 -
- 8 - 2 - 1 - 3 - 9 - 2 - 0 - 9 -
- 1 - 3 - 8 - 5 - 5 - 8 - 2 - 6 -
- 1 - 4 - 3 - 2 - 7 - 2 - 8 - 6 -
- 4 - 2 - 9 - 5 - 8 - 5 - 9 - 8 -
- 8 - 8 - 2 - 7 - 5 - 0 - 8 - 4 -
- 3 - 1 - 7 - 5 - 7 - 2 - 3 - 3 -

You have left 0 move
Your marks now: 83

Number of attractions visited so far: 3
Please choose your next action:q

Thank You for playing!

Your final marks is: 83

Press Enter to return to Quincy...
```

Source Code

```c
/* FILE: Custom_Program
* Author: Erin Lai 100086372
* Last Modified: 25/5/2018
*/
#include<stdio.h>
#include<stdlib.h>
#include <time.h>
#define SIZE 8
/*Funtion that display day and time*/
void datetime()
{
        char daytime[100];
        time_t t = time(NULL);
        struct tm *tm = localtime(&t);
        strftime(daytime, sizeof(daytime), "%c", tm);

        printf("Today's Date and Time: %s\n\n", daytime);
}

/*Funtion that display the previous player record*/
void p_record()
{
        char c[1000];
        FILE *fptr;

        printf("*************** WELCOME YO Manhattan Tourist Problem!
**************\n\n");

        printf("*************** Previous Players' Record
**************\n\n");

        if ((fptr = fopen("Record.txt", "r")) == NULL)
        {
            printf("Error! opening file");
                    exit(1);
        }
         fscanf(fptr,"\n\n\n\n\n\n%[^\n]", c);
        printf("\t\t\t%s", c);

         fclose(fptr);
}

/*Funtion that let user enter the name and display greeting*/
void greet(char name[])
{
        char mykey;
        printf("\nPlease key in your name:");
        gets(name);

        printf("\n*** Good day %s, let's start the game~~ All the best!!!
***\n\n", name);
        printf("Press any key to start the game...\n\n");
        scanf("%c", &mykey);
        getch();
}

/*Funtion that display the rules and the board*/
void start_game(int num[SIZE][SIZE])
{
```

```c
        char act;
        int x, y, r;

        srand((unsigned)time(NULL));


        for(x=0; x<8; x++)
        {
                for(y=0; y<8; y++)
                {
                        r = rand()%10;
                        num[x][y] = r;

                        printf("- %i ", num[x][y]);
                }

                printf("-\n");

        }

        printf("\nTo win this game you need to get the highest mark within
*14* move!");
        printf("\n\nEach number in the map represents the number of
attractions along each street");
        printf("\nYou may only move to the right or move down!\n\n");

        printf(" Press 'R' to go to right\n Press 'D' to go to down \n Press
'Q' to go to quit\n");
        printf("\nYour starting point is: %i\n",num[0][0]);


}

/*Funtion that calculate the mark they get*/
int calculate(int num[SIZE][SIZE])
{
        int x, y, d=0, r=0,marks=num[0][0],i=14,c;
        char act;

        while (act != 'q' || act != 'Q')
        {
                printf("\nNumber of attractions visited so
far: %i\n",num[d][r]);
                printf("Please choose your next action:");
                fflush(stdin);
                scanf("%c", &act);

                if(act == 'd' || act == 'D')
                {
                        d++;
                        marks = marks+num[d][r];
                }
                if(act == 'r' || act == 'R')
                {
                        r++;
                        marks = marks+num[d][r];
                }

                if(act == 'q' || act == 'Q')
                {
```

```c
                printf("\nThank You for playing!\n");
                break ;
        }

        printf("\n");
        for(x=0; x<8; x++)
        {
                for(y=0; y<8; y++)
                {
                        printf("- %i ", num[x][y]);
                }

                printf("-\n");

        }

        i--;
        printf("\nYou have left %i move\n",i);
        printf("Your marks now: %i\n",marks);
    }

    return marks;
}

/*Funtion that store the name and marks and the time they play*/
void summary(char name[], int score)
{

    FILE *ptr;

    ptr = fopen("Record.txt", "a");

    if(ptr == NULL)
    {
            printf("File not found!\n");
            exit(1);
    }

    fprintf(ptr,"%s %i \n", name,score);

    fclose(ptr);
}

int main(void)
{
    int num[SIZE][SIZE], mark;
    char name[50],daytime[100];

    datetime();
    p_record();
    greet(name);
    start_game(num);
    mark = calculate(num);
    printf("\nYour final marks is: %i\n",mark);
    summary(name,mark);

    return 0;

}
```