

計算機概論 作業五

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HW 5

(一) 程式碼

1. version 1

將 function Length 置於 main 之前

```
#include<stdio.h>
#include<stdio.h>
#include<math.h>
double Length(double num1, double num2)
{
    double i = sqrt(num1*num1 + num2*num2);
    return i;
}

int main(void)
{
    int x = 3, y = 4;
    printf("Before Normalize: (x, y) = (%d, %d)\n", x, y);
    printf("After Normalize: (x, y) = (%.1f, %.1f)\n", x/Length(x, y),
y/Length(x, y));
    return 0;
}
```

2. version 2

將 function Length 置於 main 之後，並利用 forward declaration 作為 header file 避免 complier 發出 warning

```
#include<stdio.h>
#include<math.h>
double Length(double, double);

int main(void)
{
    int x = 3, y = 4;
    printf("Before Normalize: (x, y) = (%d, %d)\n", x, y);
```

```

        printf("After Normalize: (x, y) = (%.1f, %.1f)\n", x/Length(x, y),
y/Length(x, y));
        return 0;
}

double Length(double num1, double num2)
{
    double i = sqrt(num1*num1 + num2*num2);
    return i;
}

```

(二) 輸出結果

```

Before Normalize: (x, y) = (3, 4)
After Normalize: (x, y) = (0.6, 0.8)

```

HW 4-1 修正

老師非常抱歉我看錯了題目，在下面附上修正過的程式碼及輸出結果。

(一) 程式碼

1. Version 1

```

#include<stdio.h>

int main(){
    int size; //define variable size
    printf("please enter the size:\n");
    scanf("%d", &size);

    for(int i=1; i<=size; i++){
        for(int j=size; j>=i; j--){
            printf("*");
        } //end for
        printf("\n");
    } //end for
}

```

```
    return 0; //indicate program ended successfully
} //end function main
```

2. Version 2

```
#include<stdio.h>
int main(void)
{
    int size;
    printf("please enter the size:\n");
    scanf("%d", &size);

    for(int i=0; i<size; i++){
        for(int j=size; j>i; j--){
            printf("*");
        }
        printf("\n");
    }
    return 0;
}
```

(二) 輸出結果

```
please enter the size:
10
*****
*****
*****
*****
*****
*****
*****
****
***
**
*
```

HW 4-2 延伸

(一) 程式碼

使用 do while 迴圈

```

#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main()
{
    int DoOrNot = 1;
    do{
        printf("WELCOME! This is the game of \"GUESS THE NUMBER\"\n");
        printf("I have a number between 1 and 100\n");
        printf("Can you guess my number?\n");

        srand(time (NULL)); //設定亂數種子
        int rnum = rand() % 100 + 1; //產生範圍 1~100 的亂數
        int gNum, gtime = 1, min = 1, max = 100;

        while(1){
            printf("Please type your guess (enter -1 to end):\n");
            scanf("%d", &gNum);
            if(gNum == -1) { //若輸入-1，則結束遊戲
                DoOrNot = 0;
                break;
            }
            else if(gNum < 1 || gNum > 100){ //若輸入數字不在亂數範圍，則須
重新輸入
                printf("Your number is out of range.\n");
                continue;
            }
            else {
                if(gNum == rnum){
                    printf("Excellent! You took %d times to guess my
number!\n", gtime);
                    printf("Would you like to play again? (Type 1 to restart
a new game, -1 to end)\n");
                    int k;
                    scanf("%d", &k);
                    if(k == 1) {
                        break;
                    }
                }
            }
        }
    }
}

```

```

        }
        if(k == -1) {
            DoOrNot = 0;
            break;
        }
    }
    else if(gNum < rnum){
        gtime += 1;
        min = gNum;
        printf("Too low. The answer is in the range of %d ~ %d.
Try again.\n", min, max);
        continue;
    }
    else{
        gtime += 1;
        max = gNum;
        printf("Too high. The answer is in the range of %d ~ %d.
Try again.\n", min, max);
        continue;
    }
}

}

}while(DoOrNot == 1);
printf("-----Bye Bye-----");
return 0;
}

```

(二) 輸出結果

```

I have a number between 1 and 100
Can you guess my number?
Please type your guess (enter -1 to end):
50
Too high. The answer is in the range of 1 ~ 50. Try again.
Please type your guess (enter -1 to end):
25
Too low. The answer is in the range of 25 ~ 50. Try again.
Please type your guess (enter -1 to end):
35
Too high. The answer is in the range of 25 ~ 35. Try again.
Please type your guess (enter -1 to end):
29
Too low. The answer is in the range of 29 ~ 35. Try again.
Please type your guess (enter -1 to end):
33
Too high. The answer is in the range of 29 ~ 33. Try again.
Please type your guess (enter -1 to end):
31
Excellent! You took 6 times to guess my number!
Would you like to play again? (Type 1 to restart a new game, -1 to end)
1
WELCOME! This is the game of "GUESS THE NUMBER"
I have a number between 1 and 100
Can you guess my number?
Please type your guess (enter -1 to end):
-1
-----Bye Bye-----

```

HW 3-2 修正

(一) 程式碼

更改為連續輸入迴圈

```

#include<stdio.h>
int main()
{
    double price, salary;
    printf("please enter hourly rate of worker($00.00):\n");
    scanf("%lf", &price);

    int worker = 1;

    while(1){

```

```

    int hour;
    printf("please enter the working hours(-1 to end):\n");
    scanf("%d", &hour);
    if(hour == -1){
        printf("while end\n");
        break;
    }
    else{
        if(hour <= 40){
            salary = hour * price;
            printf("Salary is $%.2f\n", salary);
        }
        else{
            salary = 40 * price + (hour - 40)*1.5* price;
            printf("Salary is $%.2f\n", salary);
        }
        worker++;
    }
}
return 0;
}

```

(二) 輸出結果

- a) 第一個人：工作 38 小時，每小時 20 元。
- b) 第二個人：工作 42 小時，每小時 20 元。
- c) 第三個人：工作 52 小時，每小時 20 元。
- d) 第四個人：在工作小時輸入-1，結束迴圈

```

please enter hourly rate of worker($00.00):
20
please enter the working hours(-1 to end):
38
Salary is $760.00
please enter the working hours(-1 to end):
42
Salary is $860.00
please enter the working hours(-1 to end):
52
Salary is $1160.00
please enter the working hours(-1 to end):
-1
while end

```