Abdallah Ghazy
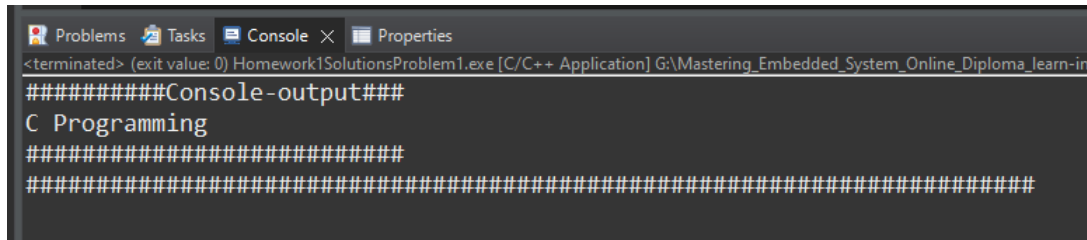
Homework 1 Solutions

❖ Problem 1

Write C Program to Print a Sentence I should see the Console as following:

```
Problems   Tasks   Console ×   Properties
<terminated> (exit value: 0) Homework1SolutionsProblem1.exe [C/C++ Application] G:\Mastering_Embedded_System_Online_Diploma_learn-ir
##########Console-output###
C Programming
##########################
#################################################################################
```

✓ Solution

```c
main.c ×
1  /*
2   * main.c
3   *
4   *  Created on: Jun 29, 2024
5   *      Author: Abdallah Ghazy
6   */
7
8  #include <stdio.h>
9  int main(){
10     printf("##########Console-output###\n"
11            "C Programming\n"
12            "##########################\n"
13            "#################################################################################");
14     return 0;
15 }
```

❖ Problem 2

Write C Program to Print a Integer Entered by a User I should see the Console as following:

```
<terminated> (exit value: 0) Homework1SolutionsProblem1.exe [C/C++ Application] G:\Mastering_Emb
##########Console-output###
Enter a integer: 25
You entered: 25
##########################
```

✓ Solution

```c
8  #include <stdio.h>
9  int main(){
10     int value = 0;
11
12     printf("##########Console-output###\n"
13            "Enter a integer: ");
14
15     fflush(stdout);
16     scanf("%i",&value);
17
18     printf("You entered: %i",value);
19
20     printf("##########################");
21
22     return 0;
23 }
```
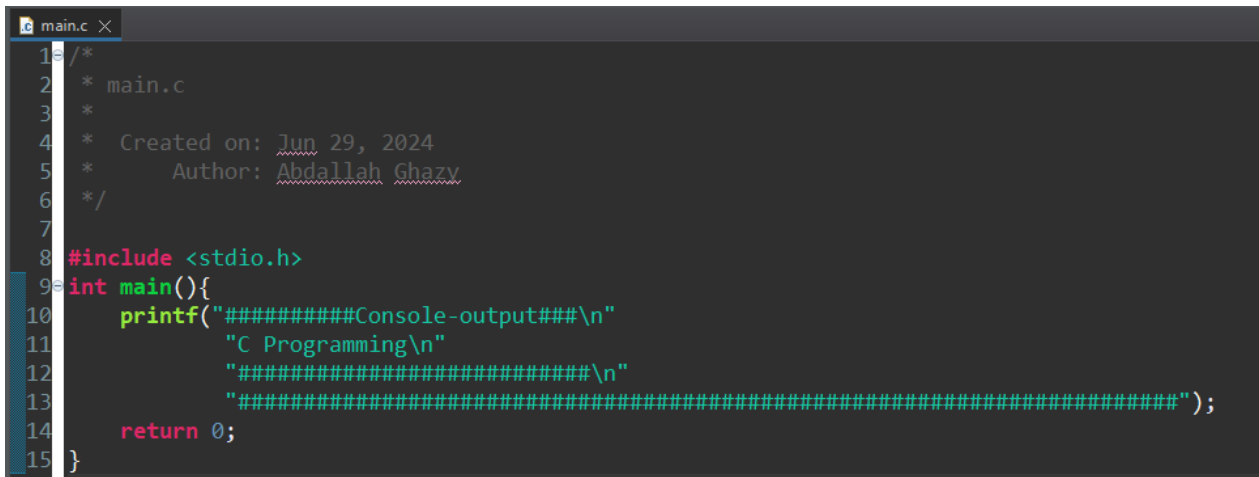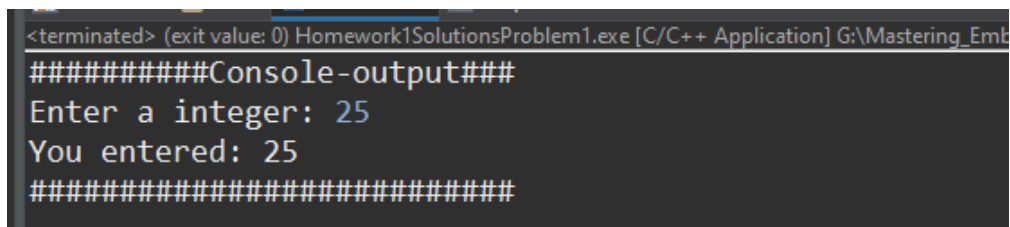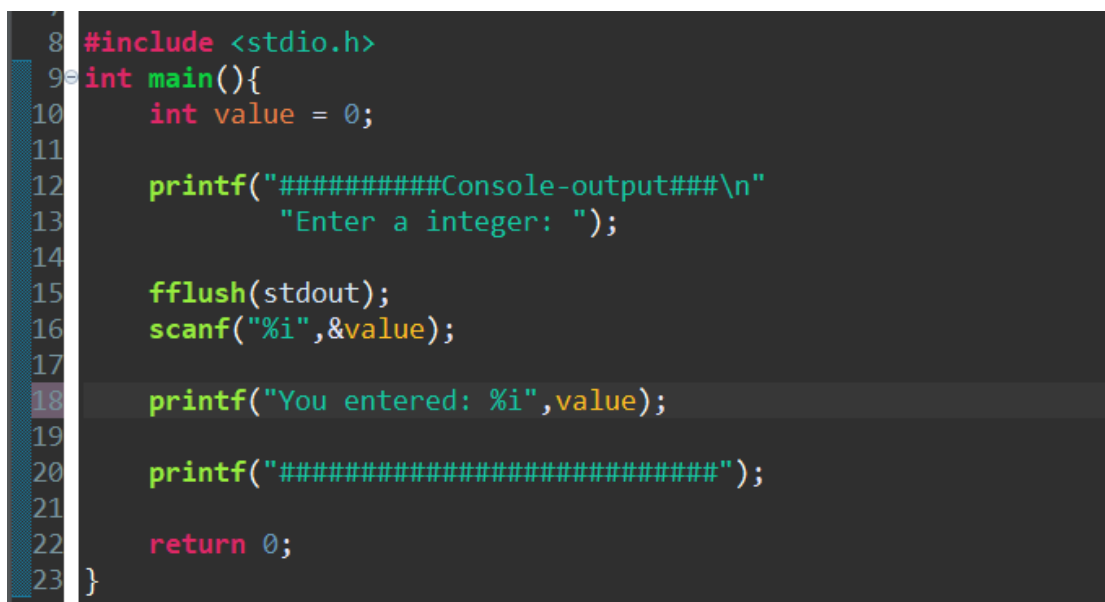
❖ Problem 3

Write C Program to Add Two Integers I should see the Console as following:

```
<terminated> (exit value: 0) Homework1SolutionsProblem1.exe [C/C++ Application] G:\Mastering_Embedded_S
##########Console-output###
Enter two integers "A + B" : 12+11
Sum: 23
##########################
```

✓ Solution

```c
#include <stdio.h>
int main(){
    int num1 = 0;
    int num2 = 0;

    printf("##########Console-output###\n"
            "Enter two integers \"A + B\" : ");

    fflush(stdout);
    scanf("%i + %i",&num1,&num2);

    printf("Sum: %i\n",num1+num2);

    printf("##########################");

    return 0;
}
```

❖ Problem 4

Write C Program to Multiply two Floating Point Numbers I should see the Console as following:

```
<terminated> (exit value: 0) Homework1SolutionsProblem1.exe [C/C++ Application] G:\Mastering_Embedded_System_Online_Diploma_lea
##########Console-output###
Enter two numbers "A * B" : 2.4 * 1.1
Product: 2.640000
##########################
```

✓ Solution

```c
#include <stdio.h>
int main(){
    float num1 = 0;
    float num2 = 0;

    printf("##########Console-output###\n"
            "Enter two numbers \"A * B\" : ");

    fflush(stdout);
    scanf("%f * %f",&num1,&num2);

    printf("Product: %f\n",num1*num2);

    printf("##########################");

    return 0;
}
```

❖ Problem 5

Write C Program to Find ASCII Value of a Character

```
<terminated> (exit value: 0) Homework1SolutionsProblem1.exe [C/C++ Application] G:\Mastering_Embedded_Sys
##########Console-output###
Enter a character: G
ASCII value of G = 71
############################
```

✓ Solution

```c
#include <stdio.h>
int main(){
    char character;

    printf("##########Console-output###\n"
            "Enter a character: ");

    fflush(stdout);
    scanf("%c",&character);

    printf("ASCII value of G = %d\n",character);
    printf("############################");

    return 0;
}
```

❖ Problem 6

Write Source Code to Swap Two Numbers

```
##########Console-output###
Enter value of a:2.45
Enter value of b:1.20
After swapping, value of a = 1.20
After swapping, value of b = 2.45
############################
```

✓ Solution

```c
#include <stdio.h>
int main(){
    float a = 0;
    float b = 0;
    float x = 0;

    printf("##########Console-output###\n");

    printf("Enter value of a:");
    fflush(stdout);
    scanf("%f",&a);

    printf("Enter value of b:");
    fflush(stdout);
    scanf("%f",&b);

    x = a;
    a = b;
    b = x;

    printf("After swapping, value of a = %.2f\n",a);
    printf("After swapping, value of b = %.2f\n",b);

    printf("############################");

    return 0; }
```

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❖ Problem 5

it is an interview trick, Write Source Code to Swap Two Numbers <u>without temp</u> variable.

```
<terminated> (exit value: 0) Homework1SolutionsProblem1.exe [C/C++ Application] G:\Mastering_Embedded_System_Online_Diplor
##########Console-output###
Enter value of a:1.20
Enter value of b:2.45
After swapping, value of a = 2.45
After swapping, value of b = 1.20
###########################
```

```c
#include <stdio.h>
int main(){
    float a = 0;
    float b = 0;
    printf("##########Console-output###\n");

    printf("Enter value of a:");
    fflush(stdout);
    scanf("%f",&a);

    printf("Enter value of b:");
    fflush(stdout);
    scanf("%f",&b);

    a += b;
    b  = a - b;
    a  = a - b;

    printf("After swapping, value of a = %.2f\n",a);
    printf("After swapping, value of b = %.2f\n",b);

    printf("###########################");

    return 0;
}
```

يتميز هذ الحل بقدرته علي التبديل بين الأرقام العشرية ولا يشكل وجود فصلة عشرية أي مشكلة

Abdallah Ghazy

حل اخر باستخدام XOR مشكلة هذا الحل انه لا يتعامل مع الأرقام العشرية

```c
#include <stdio.h>
int main(){
    int a = 0;
    int b = 0;
    printf("##########Console-output###\n");

    printf("Enter value of a:");
    fflush(stdout);
    scanf("%i",&a);

    printf("Enter value of b:");
    fflush(stdout);
    scanf("%i",&b);

    a = a ^ b;
    b = a ^ b;
    a = a ^ b;

    printf("After swapping, value of a = %i\n",a);
    printf("After swapping, value of b = %i\n",b);

    printf("#########################");

    return 0;
}
```