

Assignments 2

EX 1

Project Explorer

Lecture 3_Lab 1

Lecture 3_Assignment 1_EX 1

Lecture 3_Assignment 1_EX 2

Lecture 3_Assignment 1_EX 3

Lecture 3_Assignment 1_EX 4

Lecture 3_Assignment 1_EX 5

Lecture 3_Assignment 1_EX 6

Lecture 3_Assignment 1_EX 7

> Lecture 3_Assignment 2_EX 1 [Mastering-Embedded-System-Online-Diploma]

> Binaries

> Includes

> Debug

> Lecture 3_Assignment 2_EX 1.c

Lecture 3_Assignment 2_EX 1.c

```
20 * Lecture 3_Assignment 2_EX 1.c
7
8 /*
9  * EX1: Write C Program to Check Whether a Number is Even or Odd
10
11 You should know those topics:
12 C Programming Operators
13 C Programming if, if ..elseand Nested if ...else Statement
14
15 The program idea
16 Numbers perfectly divisible by 2 are known even numbers and numbers which are not divisible by 2 are known odd numbers.
17 Output 1
18 Enter an integer you want to check: 25 25 is odd.
19 Output 2
20 Enter an integer you want to check: 12 12 is even.
21 *
22 */
23
24 #include<stdio.h>
25
26 int main(void){
27     int x,y;
28     do
29     {
30         printf("Enter an integer you want to check: ");
31         fflush(stdin); fflush(stdout);
32         scanf("%d",&x);
33
34         if ((x % 2) == 0)
35         {
36             printf("%d is even.",x);
37             fflush(stdin); fflush(stdout);
38             printf("\nTo Exit Press 0");
39             fflush(stdin); fflush(stdout);
40             scanf("%d",&y);
41         }
42         else
43         {
44             printf("%d is odd.",x);
45             fflush(stdin); fflush(stdout);
46             printf("\nPress ant Key to continue Or \nTo Exit Press 0 \n");
47             fflush(stdin); fflush(stdout);
48             scanf("%d",&y);
49         }
50     }while (y != 0);
51 }
52
53
```

Outline

stdio.h

main(void): int

Problems

Tasks

Console

Properties

Debugger Console

Lecture 3_Assignment 2_EX 1.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessones Assignments\Unit 2\Lecture 3_Assignment 2_EX 1.exe

Enter an integer you want to check: 25

25 is odd.

Press ant Key to continue Or

To Exit Press 0

1

Enter an integer you want to check: 12

12 is even.

To Exit Press 0

EX 2

The screenshot displays the Visual Studio Code interface with a C program for checking vowels and consonants. The code is located in `Lecture_3_Assignment_2_EX_2.c`. The program prompts the user to enter an alphabet and checks if it is a vowel or consonant. The console output shows the program's execution with inputs 'i' and 'G'.

```
1 /*
2  * Lecture_3_Assignment_2_EX_2.c
3  *
4  * Created on: 28 Jul 2022
5  * Author: Muhammad Osama
6  */
7
8
9 /*
10  * EX2: C Program to Check Vowel or Consonant
11
12  Alphabets a, e, i, o and u are known as vowels and all alphabets except these characters are
13  known as consonants. This program asks user to enter a character
14  and checks whether that character is vowel or not.
15
16  Output 1
17  Enter an alphabet: i i is a vowel.
18
19  Output 2
20  Enter an alphabet: G G is a consonant
21  *
22  */
23
24 #include<stdio.h>
25 int main(void){
26     char x,y;
27     do
28     {
29         printf("Enter an alphabet: ");
30         fflush(stdin); fflush(stdout);
31         scanf("%c",&x);
32
33         if (x == 'i' || x == 'a' || x == 'e' || x == 'o' || x == 'u' || x == 'I' || x == 'A' || x == 'E' || x == 'O' || x == 'U' )
34         {
35             printf("%c is a vowel.",x);
36             fflush(stdin); fflush(stdout);
37             printf("\nDo you want to input another alphabet? \n");
38             fflush(stdin); fflush(stdout);
39             scanf("%c",&y);
40         }
41         else
42         {
43             printf("%c is a consonant.",x);
44             fflush(stdin); fflush(stdout);
45             printf("\nDo you want to input another alphabet? \n");
46             fflush(stdin); fflush(stdout);
47             scanf("%c",&y);
48         }
49     }while (y == 'y' || y == 'Y');
50 }
51
```

The console output shows the program's execution with inputs 'i' and 'G'.

```
<terminated> (exit value: 0) Lecture_3_Assignment_2_EX_2.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessones Assignments\Unit 2\Lecture_3_Assign
Enter an alphabet: i
i is a vowel.
Do you want to input another alphabet?
y
Enter an alphabet: G
G is a consonant.
Do you want to input another alphabet?
n
```

An "Updates Available" notification is visible in the bottom right corner, stating: "Updates are available for your software. Click to review and install updates. Set up [Reminder options](#)".

EX 3

```
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
Lecture 3_Lab 1
Lecture 3_Assignment 1_EX 1
Lecture 3_Assignment 1_EX 2
Lecture 3_Assignment 1_EX 3
Lecture 3_Assignment 1_EX 4
Lecture 3_Assignment 1_EX 5
Lecture 3_Assignment 1_EX 6
Lecture 3_Assignment 1_EX 7
Lecture 3_Assignment 2_EX 1
Lecture 3_Assignment 2_EX 2
Lecture 3_Assignment 2_EX 3 [Masterir]
Binaries
Includes
Debug
Lecture 3_Assignment 2_EX 3.c

Lecture 3_Assignment 2_EX 3.c
2 * Lecture 3_Assignment 2_EX 3.c
7
8
9 /*
10 * EX3:C Program to Find the Largest Number Among Three Numbers
11
12 In this program user is asked to enter three numbers and this program will find the largest number among three numbers entered
13 by user. This program can be solved in more than one way.
14
15 Output
16 Enter three numbers: 12.2 13.452
17 10.193
18 Largest number= 13.45
19 *
20 */
21
22 #include<stdio.h>
23
24 int main(void) {
25     float x,y,z; char f;
26     do
27     {
28         printf("Enter three numbers: ");
29         fflush(stdin); fflush(stdout);
30         scanf("%f %f\n%f",&x,&y,&z);
31
32         if (x > y)
33         {
34             if (x > z)
35             {
36                 printf("Largest number= %.2f",x);
37                 fflush(stdin); fflush(stdout);
38                 printf("\nIf you want to continue Press C\nOr any key to Exit\n");
39                 fflush(stdin); fflush(stdout);
40                 scanf("%c",&f);
41             }
42             else
43             {
44                 printf("Largest number= %.2f",z);
45                 fflush(stdin); fflush(stdout);
46                 printf("\nIf you want to continue Press C \nOr any key to Exit\n");
47                 fflush(stdin); fflush(stdout);
48                 scanf("%c",&f);
49             }
50         }
51         else if (y > z)
52         {
53             printf("Largest number= %.2f",y);
54             fflush(stdin); fflush(stdout);
55             printf("\nIf you want to continue Press C\nOr any key to Exit\n");
56             fflush(stdin); fflush(stdout);
57             scanf("%c",&f);
58         }
59         else
60         {
61             printf("Largest number= %.2f",z);
62             fflush(stdin); fflush(stdout);
63             printf("\nIf you want to continue Press C\nOr any key to Exit\n");
64             fflush(stdin); fflush(stdout);
65             scanf("%c",&f);
66         }
67     }while (f == 'c' || f == 'C');
68 }
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) Lecture 3_Assignment 2_EX 3.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessoness Assignments\Unit 2\Lecture 3_Assign
Enter three numbers: 12.2 13.452
10.193
Largest number= 13.45
If you want to continue Press C
Or any key to Exit
c

Updates Available
Updates are available for your software.
Click to review and install updates.
Set up [Reminder options](#)

Writable Smart Insert 63 : 76

EX 4

Project Explorer

Lecture 3_Lab 1

Lecture 3_Assignment 1_EX 1

Lecture 3_Assignment 1_EX 2

Lecture 3_Assignment 1_EX 3

Lecture 3_Assignment 1_EX 4

Lecture 3_Assignment 1_EX 5

Lecture 3_Assignment 1_EX 6

Lecture 3_Assignment 1_EX 7

Lecture 3_Assignment 2_EX 1

Lecture 3_Assignment 2_EX 2

Lecture 3_Assignment 2_EX 3

> Lecture 3_Assignment 2_EX 4 [Masterir

> Binaries

> Includes

> Debug

> Lecture 3_Assignment 2_EX 4.c

Lecture 3_Assignment 2_EX 4.c

```
20 * Lecture 3_Assignment 2_EX 4.c
7
8 /*
9  * EX4: C Program to Check Whether a Number is Positive or Negative
10
11 This program takes a number from user and checks whether that number is either positive or negative or zero.
12
13 Output 1
14
15 Enter a number: 12.3
16 12.30 is positive.
17
18 Output 2
19
20 Enter a number: 0 You entered zero.
21 *
22 */
23
24 #include<stdio.h>
25 int main(void){
26     float x; int y;
27     do
28     {
29         printf("Enter a number: ");
30         fflush(stdin); fflush(stdout);
31         scanf("%f",&x);
32
33         if (x < 0)
34         {
35             printf("%.2f is negative.",x);
36             fflush(stdin); fflush(stdout);
37             printf("\nPress 1 to continue\n");
38             fflush(stdin); fflush(stdout);
39             scanf("%d",&y);
40         }
41         else if (x > 0)
42         {
43             printf("%.2f is positive.",x);
44             fflush(stdin); fflush(stdout);
45             printf("\nPress 1 to continue\n");
46             fflush(stdin); fflush(stdout);
47             scanf("%d",&y);
48         }
49         else
50         {
51             printf("%.0f You entered zero.",x);
52             fflush(stdin); fflush(stdout);
53             printf("\nPress 1 to continue\n");
54             fflush(stdin); fflush(stdout);
55             scanf("%d",&y);
56         }
57     }while (y == 1);
58 }
59
```

Quick Access

stdio.h

main(void) : int

Problems

Tasks

Console

Properties

Debugger Console

<terminated> (exit value: 0) Lecture 3_Assignment 2_EX 4.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessoness Assignments\Unit 2\Lecture 3_Assign
Enter a number: 12.3
12.30 is positive.
Press 1 to continue
1
Enter a number: 0
0 You entered zero.
Press 1 to continue
1
Enter a number: -12.3
-12.30 is negative.
Press 1 to continue
2

/Lecture 3_Assignment 2_EX 4/Lecture 3_Assignment 2_EX 4.c

EX 5

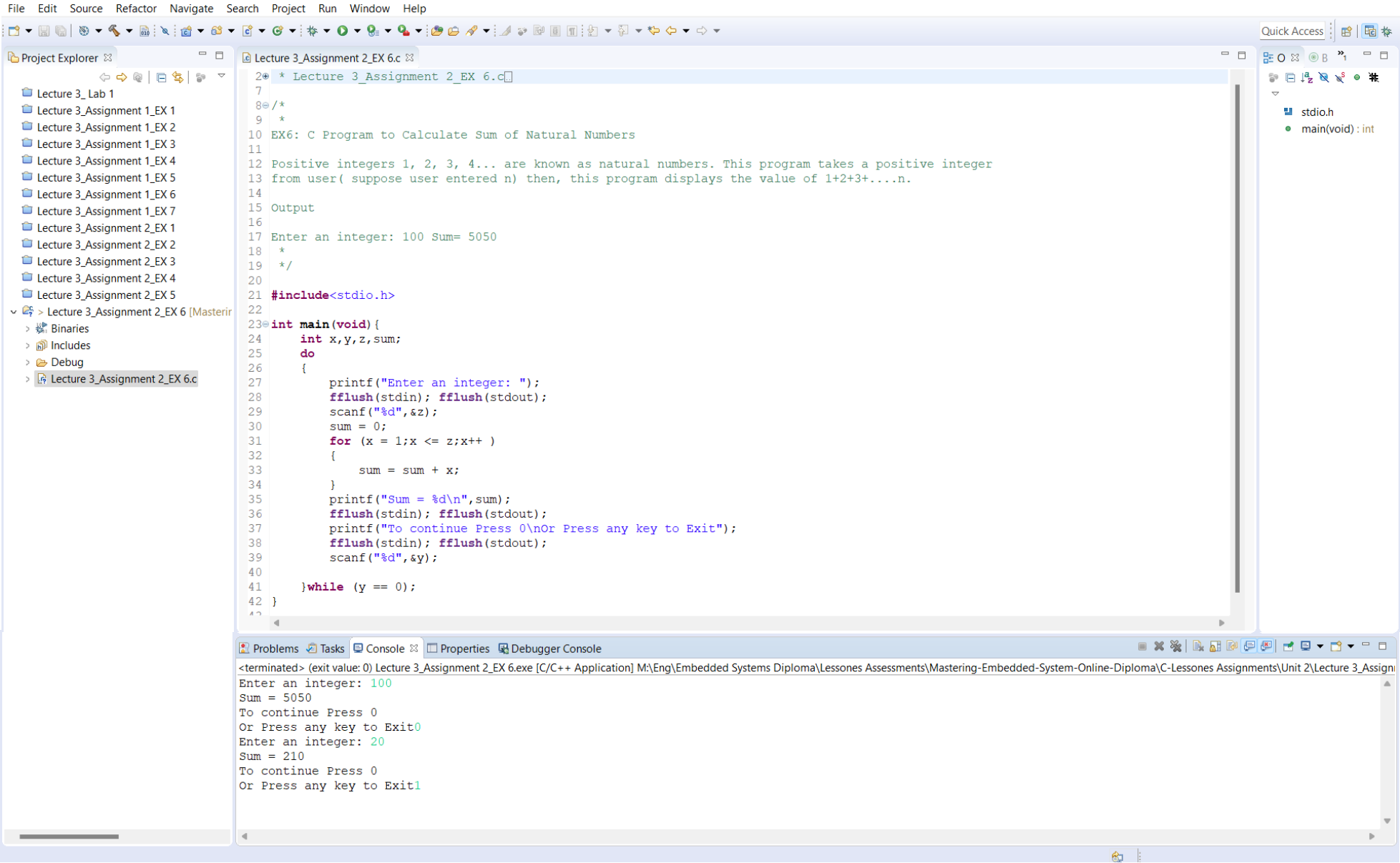
The screenshot displays an IDE with the following components:

- Project Explorer:** Shows a project structure with folders for Lecture 3 assignments. The file `Lecture_3_Assignment_2_EX_5.c` is selected.
- Editor:** Contains the C source code for `Lecture_3_Assignment_2_EX_5.c`. The code is as follows:

```
1 /*
2  * Lecture_3_Assignment_2_EX_5.c
3  *
4  * Created on: 28 Jul 2022
5  * Author: Muhammad Osama
6  */
7
8 /*
9  *EX5: C Program to Check Whether a Character is an Alphabet or not
10
11 This program takes a character from user and checks whether that character is an alphabet or not.
12
13 Output 1
14
15 Enter a character: *
16 * is not an alphabet Output 2
17 Enter a character: K K is an alphabet
18
19 */
20
21
22 #include<stdio.h>
23
24 int main(void){
25     char x,y;
26     do
27     {
28         printf("Enter a character: ");
29         fflush(stdin); fflush(stdout);
30         scanf("%c",&x);
31         if ((64 < x && x < 91)|| (95 < x && x < 123))
32         {
33             printf("%c is an alphabet",x);
34             fflush(stdin); fflush(stdout);
35             printf("\nTo continue press C\n");
36             fflush(stdin); fflush(stdout);
37             scanf("%c",&y);
38         }
39         else
40         {
41             printf("%c is not an alphabet",x);
42             fflush(stdin); fflush(stdout);
43             printf("\nTo continue press C\n");
44             fflush(stdin); fflush(stdout);
45             scanf("%c",&y);
46         }
47     }while (y == 'C' || y == 'c');
48
49 }
50
51
```
- Console:** Shows the program's execution output:

```
<terminated> (exit value: 0) Lecture_3_Assignment_2_EX_5.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessoness Assignments\Unit 2\Lecture_3_Assign
Enter a character: *
* is not an alphabet
To continue press C
c
Enter a character: K
K is an alphabet
To continue press C
q
```

EX 6



EX 7

The screenshot displays a C++ IDE with the following components:

- Project Explorer:** Shows a project structure with folders for Lecture 3 assignments and a file named `Lecture 3_Assignment 2_EX 7.c`.
- Code Editor:** Contains the source code for `Lecture 3_Assignment 2_EX 7.c`. The code is a C program to find the factorial of a number. It includes comments explaining the program's purpose and logic. The code uses `printf` for output and `scanf` for input. It includes a `while` loop to allow multiple calculations.
- Console:** Shows the output of the program. It displays the results of calculating the factorial for inputs 10 and 20, and an error message for a negative input (-1).

```
2* * Lecture 3_Assignment 2_EX 7.c
7
8= /*
9 *
10 EX7: C Program to Find Factorial of a Number
11
12 For any positive number n, its factorial is given by: factorial= 1*2*3*4...n
13 If a number is negative, factorial does not exist and factorial of 0 is 1.
14 *
15 This program takes an integer from a user. If user enters negative integer, this program will
16 display error message and if user enters non-negative integer, this program will display the
17 factorial of that number.
18
19
20 Output 1
21
22 Enter an integer: -5
23 Error!!! Factorial of negative number doesn't exist.
24
25 Output 2
26
27 Enter an integer: 10
28 Factorial= 3628800
29 *
30 */
31
32 #include<stdio.h>
33
34 int main(void){
35     int x,y,z; long long int multi;
36     do
37     {
38         printf("Enter an integer: ");
39         fflush(stdin); fflush(stdout);
40         scanf("%d",&z);
41         multi = 1;
42         if (z >= 0)
43         {
44             for (x = 1; x <= z; x++)
45             {
46                 multi *= x;
47             }
48             printf("Factorial= %lli",multi);
49             fflush(stdin); fflush(stdout);
50             printf("\nTo continue press 0\nOr any key to Exit\n");
51             fflush(stdin); fflush(stdout);
52             scanf("%d",&y);
53         }else
54         {
55             printf("Error!!! Factorial of negative number doesn't exist.");
56             fflush(stdin); fflush(stdout);
57             printf("\nTo continue press 0\nOr any key to Exit\n");
58             fflush(stdin); fflush(stdout);
59             scanf("%d",&y);
60         }
61     }while (y == 0);
62 }
63
```

Problems Tasks Console Properties Debugger Console

Lecture 3_Assignment 2_EX 7.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessones Assignments\Unit 2\Lecture 3_Assignment 2_EX 7\Debug\Lecture

Enter an integer: 10
Factorial= 3628800
To continue press 0
Or any key to Exit
0
Enter an integer: 20
Factorial= 2432902008176640000
To continue press 0
Or any key to Exit
0
Enter an integer: -1
Error!!! Factorial of negative number doesn't exist.
To continue press 0
Or any key to Exit

./Lecture 3_Assignment 2_EX 7/Lecture 3_Assignment 2_EX 7.c

Ex 8

The screenshot displays a C++ IDE with a project explorer on the left, a code editor in the center, and a console window at the bottom. The code editor shows a file named `Lecture 3_Assignment 2_EX 8.c` containing a C program for a simple calculator. The program uses `switch...case` to handle arithmetic operations (+, -, *, /) and includes a loop to allow multiple calculations. The console window shows the program's execution, including prompts for operators and operands, and the resulting calculations.

```
2* * Lecture 3_Assignment 2_EX 8.c
7
8= /*
9 * EX8: C Program to Make a Simple Calculator to Add, Subtract, Multiply or Divide Using switch...case
10
11 This program takes an arithmetic operator ( +, -, *, /) and two operands from an user and performs
12 the operation on those two operands depending upon the operator entered by user.
13
14 Output
15
16 Enter operator either+ or - or* or divide
17 Enter two operands: 3.4
18 8.4
19 3.4 - 8.4 = -5.0
20 *
21 */
22
23 #include <stdio.h>
24
25 int main(void) {
26     float x,y,answer; char sing,z;
27     do
28     {
29         printf("Enter operator either + or - or * or / : ");
30         fflush(stdin); fflush(stdout);
31         scanf("%c",&sing);
32         printf("\nEnter two operands\nFirst one: ");
33         fflush(stdin); fflush(stdout);
34         scanf("%f",&x);
35         printf("Second one: ");
36         fflush(stdin); fflush(stdout);
37         scanf("%f",&y);
38
39         if (sing == '+')
40         {
41             answer = x + y;
42             printf("\n%.1f + %.1f = %.1f",x,y,answer);
43             fflush(stdin); fflush(stdout);
44             printf("\n\nTo Continue Press Y : ");
45             fflush(stdin); fflush(stdout);
46             scanf("%c",&z);
47         }
48         else if (sing == '-')
49         {
50             answer = x - y;
51             printf("\n%.1f - %.1f = %.1f",x,y,answer);
52             fflush(stdin); fflush(stdout);
53             printf("\n\nTo Continue Press Y : ");
54             fflush(stdin); fflush(stdout);
55             scanf("%c",&z);
56         }
57         else if (sing == '*')
58         {
59             answer = x * y;
60             printf("\n%.1f * %.1f = %.1f",x,y,answer);
61             fflush(stdin); fflush(stdout);
62             printf("\n\nTo Continue Press Y : ");
63             fflush(stdin); fflush(stdout);
64             scanf("%c",&z);
65         }
66         else if (sing == '/')
67         {
68             answer = x / y;
69             printf("\n%.1f / %.1f = %.1f",x,y,answer);
70             fflush(stdin); fflush(stdout);
71             printf("\n\nTo Continue Press Y : ");
72             fflush(stdin); fflush(stdout);
73             scanf("%c",&z);
74         }
75         else
76         {
77             printf("\nError! The Sing is wrong");
78             fflush(stdin); fflush(stdout);
79             printf("\n\nTo Try again Press Y : ");
80             fflush(stdin); fflush(stdout);
81             scanf("%c",&z);
82         }
83     }while (z == 'y' || z == 'Y');
84 }
85
86
87
```

Problems Tasks Console Properties Debugger Console

<terminated> (exit value: 0) Lecture 3_Assignment 2_EX 8.exe [C/C++ Application] M:\Eng\Embedded Systems Diploma\Lessones Assessments\Mastering-Embedded-System-Online-Diploma\C-Lessoness Assignments\Unit 2\Lecture 3_Assign

Enter operator either + or - or * or / : -

Enter two operands
First one: 3.4
Second one: 8.4

3.4 - 8.4 = -5.0

To Continue Press Y : y
Enter operator either + or - or * or / : +

Enter two operands
First one: 2
Second one: 3

2.0 + 3.0 = 5.0

To Continue Press Y : y
Enter operator either + or - or * or / : *

Enter two operands
First one: 3
Second one: 2

3.0 * 2.0 = 6.0

To Continue Press Y : y
Enter operator either + or - or * or / : /

Enter two operands
First one: 8
Second one: 2

8.0 / 2.0 = 4.0

To Continue Press Y : q