

CSE-016 Programming Lab Assignment № 3

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Solutions begin from the second page.

1 Problems

1.1 Problem (1)

Write a program that reads in three integers and then determines and prints the **largest** and the **smallest** integers in the group.

Sample Run:

Input three integers: 4 5 3

5 is the largest, 3 is the Smallest

1.2 Problem (2)

Write a C program to read the **quantity**, **unit price** and **discount type** for any item.

Your program will calculate the net price according to the following table and then print out the quantity, unit price, discount type, net price.

Discount Type	Discount
1	10%
2	15%
Others	5%

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2 Solutions

2.1 Solution to Problem (1)

2.1.1 Source Code

Program's main.c File – console input/output-oriented application to solve the problem

```
1 #include <stdio.h>
2
3 int main()
4 {
5     int n1, n2, n3, b, s;
6     printf("Input three numbers: ");
7     scanf("%d %d %d", &n1, &n2, &n3);
8     // Only one comparison will evaluate to 1, the other two evaluate to 0
9     b = n1*(n1 > n2 && n1 > n3);
10    b += n2*(n2 > n1 && n2 > n3);
11    b += n3*(n3 > n1 && n3 > n2);
12
13    s = n1*(n1 < n2 && n1 < n3);
14    s += n2*(n2 < n1 && n2 < n3);
15    s += n3*(n3 < n1 && n3 < n2);
16
17    printf("%d is the largest, %d is the Smallest.\n", b, s);
18
19    return 0;
20 }
```

PLEASE NOTE | Line numbers are only meant to improve readability.

2.1.2 Outcome

Test Input Samples

#1st	#2nd	#3rd		
4	5	3		
Obtained Results			Largest Number	Smallest Number
			5	3

The obtained results match the expected results.

Console Output

Program's output to console in plaintext – using inputs from test sample

```
Input three numbers: 4 5 3
5 is the largest, 3 is the Smallest.
```

2.2 Solution to Problem (2)

2.2.1 Source Code

Program's main.c File – console input/output-oriented application to solve the problem

```
1  #include <stdio.h>
2  int main()
3  {
4      int quantity, discount_type;
5      float unit_price, net_price;
6      printf("Enter the quantity of the item: ");
7      scanf("%d", &quantity);
8      printf("Enter the price per item: $");
9      scanf("%f", &unit_price);
10     printf("Enter the type of discount you have: ");
11     scanf("%d", &discount_type);
12
13     printf("\nQuantity: %d \t\t Unit Price: $%.2f \t ", quantity, unit_price);
14     switch(discount_type)
15     {
16         case 1:
17             net_price = (unit_price*quantity)*0.9;
18             printf("Discount Type: 1 \t Net Price: $%.2f \n", net_price);
19             break;
20         case 2:
21             net_price = (unit_price*quantity)*0.85;
22             printf("Discount Type: 2 \t Net Price: $%.2f \n", net_price);
23             break;
24         default:
25             net_price = (unit_price*quantity)*0.95;
26             printf("Discount Type: Others \t Net Price: $%.2f \n", net_price);
27             break;
28     }
29     return 0;
30 }
```

2.2.2 Outcome

Console Output

Program's output to console in plaintext – using inputs from test sample (2) in following page

```
Enter the quantity of the item: 9
Enter the price per item: $15.75
Enter the type of discount you have: 2
```

```
Quantity: 9          Unit Price: $15.75          Discount Type: 2      Net Price: $120.49
```

Test Input Samples

#	Quantity	Unit Price	Discount Type	Theoretical Net Price
(1)	4	9	1	32.40
(2)	9	15.75	2	120.4875
(3)	2	18	4	34.20

Obtained Results	#	Net Price
	(1)	32.40
	(2)	120.49
	(3)	34.20

The obtained results equal the expected results rounded to 2 decimal points.

2.3 Evidence of Work (Screenshots)

2.3.1 Problem 1 in CLion

The screenshot displays the CLion IDE interface. The main editor window shows the source code for `solution-1.c`. The code includes `<stdio.h>` and defines a `main` function. It prompts the user to "Input three numbers:" and reads three integers `n1`, `n2`, and `n3` using `scanf`. The code then calculates the largest and smallest numbers based on conditional logic and prints the result using `printf`. The output window at the bottom shows the execution results for the input "4 5 3", indicating that 5 is the largest and 3 is the smallest, and that the process finished with exit code 0.

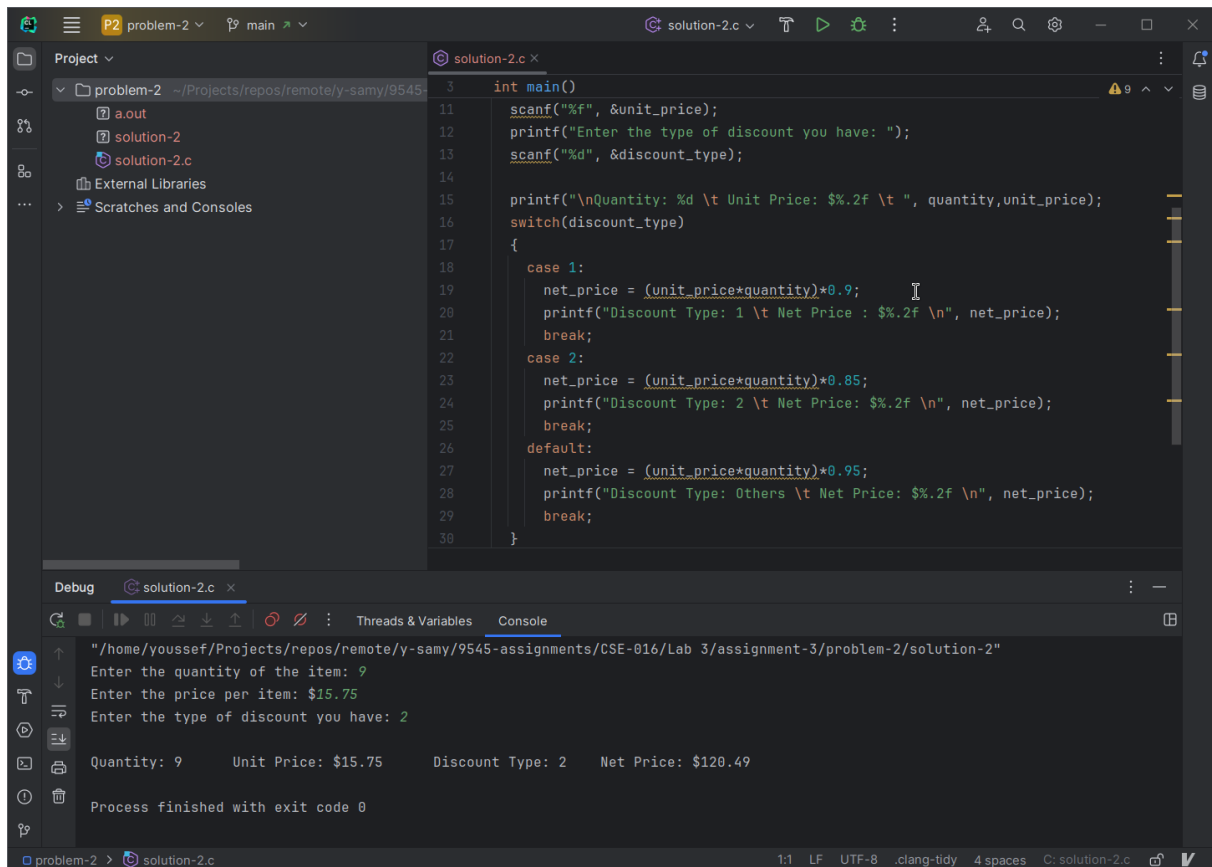
```
1 #include <stdio.h>
2
3 int main()
4 {
5     int n1, n2, n3, b, s;
6     printf("Input three numbers: ");
7     scanf("%d %d %d", &n1, &n2, &n3);
8
9     b = n1*(n1 > n2 && n1 > n3);
10    b += n2*(n2 > n1 && n2 > n3);
11    b += n3*(n3 > n1 && n3 > n2);
12
13    s = n1*(n1 < n2 && n1 < n3);
14    s += n2*(n2 < n1 && n2 < n3);
15    s += n3*(n3 < n1 && n3 < n2);
16
17    printf("%d is the largest, %d is the Smallest.\n", b, s);
18
19 }
```

Debug Console Output:

```
"/home/youssef/Projects/repos/remote/y-samy/9545-assignments/CSE-016/Lab 3/assignment-3/problem-1/solution-1"
Input three numbers: 4 5 3
5 is the largest, 3 is the Smallest.
Process finished with exit code 0
```

Turn over the page for the last screenshot

2.3.2 Problem 2 in CLion



2.4 Specifications

- **Libraries:**
 - `stdio.h`
- **Compiler:** GNU C Compiler (gcc) version 14.0.1 20240328 (Red Hat 14.0.1-0)
- **C Standard Compatibility**

P#	C89/C90	C99	C11	C17	C23
1	✓	✓	✓	✓	✓
2	✓	✓	✓	✓	✓

- **Supported Platforms:** OS: (any), architecture: (any)
- **Tested On:** Fedora 40 Workstation Linux

3 Licenses

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