**Sheikh Fazilatunnesa Mujib University**

**Department of Computer Science and Engineering**

**CSE 112 (Structured Programming)**

**Lab 1**

**Note: Do not use loops for any of these problems**

**Task 1:**

Write a **C program** that reads one number from the user, and prints it back to show which number was entered by the user.

**Task 2:**

Write a **C program** that reads two numbers from the user, and prints their sum, product and difference.

**Task 3:**

Write a **C program** that reads the radius of a circle and prints its circumference and area.

**Task 4:**

Write a **C program** that reads two numbers from the user and prints “first” if the first number is greater than the second number.

**Task 5:**

Write a **C program**that reads two numbers from the user. Your program should then print “first is greater” if the first number is greater, and “first is not greater” otherwise.

**Task 6:**

Write a **C program**that reads two numbers from the user. Your program should then print “first is greater” if the first number is greater, “second is greater” if the second number is greater, and “the numbers are equal” otherwise.

**Task 7:**

Write a **C program** that reads two numbers, subtracts the smaller number from the larger one, and prints the result.

**Task 8:**

Write a **C program** that reads a number, and prints “The number is even” or “The number is odd”, depending on whether the number is even or odd.

**Task 9**

Write a **C program**that prints the first ten positive whole numbers. [Do NOT use loops]

**Task 10**

Write a **C program**that prints the first two even positive whole numbers. (Do NOT use loop for this problem).

**Task 11**

Write a **C program**that reads five numbers from the user, and prints their average. [Do NOT use loops]

**Task 12**

Write a **C program**that reads five numbers as input from the user, and prints whether the numbers are odd or even. [Do NOT use loops]

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**Lab 2**

**Note: Nowyou can use loopsfor these problems**

**Task 1:**

Write a C program that reads ten integers from the user and print those values.

**Task 2:**

Write a C program that reads **n** numbers of integers from the user. Your program should then print them inorder.

**Task 3:**

Write a C program that reads **n** numbers of integers from the user. Your program should calculate their sum and average.

**Task 4:**

Write a C program that reads two fractional numbers, subtracts the smaller number from the larger one, and prints the result.

**Task 5:**

Repeat all the four tasks above for two float numbers.

**Task 6:**

Write a C program that reads n numbers of integer, and prints “The number is even” or “The number is odd”, depending on whether the number is even or odd. (Hint: use the modulus operator and loops)

**Task 7:**

Write a C program that reads an integer, and if the number is even and greater than 10, prints “An even number greater than 10”. If the number is even but lesser than 10, print “An even number not greater than 10”. If the number is greater than 10 but odd, print “An odd number greater than 10”. If the number is odd and also less than 10, print “An odd number less than 10”.

**Task 8.1:**

Write a C program that reads an integer, and prints the integer if it is a multiple of **either 2 or 5**.

For example, 2, 4, 5, 6, 8, 10, 12, 14, 15, 16, 18, 20, 22 …

**Task 8.2:**

Write a C program that reads an integer, and prints the integer if it is a multiple of either 2 or 5 **but not both.**

For example, 2, 4, 5, 6, 8, 12, 14, 15, 16, 18, 22 …

**Task 8.3:**

Write a C program that reads an integer, and prints the integer if it is a multiple of 2 **and** 5.For example, 10, 20, 30, 40, 50 …

**Task 8.4:**

Write a C program that reads an integer, and prints the integer if it is a multiple of **NEITHER 2 NOR 5.**

For example, 1, 3, 7, 9, 11, 13, 17, 19, 21, 23, 27, 29, 31, 33, 37, 39 …

**Task 8.5:**

Write a C program that reads an integer, and prints the integer if it is **NOT** a multiple of **2OR**,**NOT** a multiple of **5**.

**Task 9:**

Write a C program that reads a student’s mark for a single subject, and prints out “Pass” if the student got more than 50, and “You shall not pass” otherwise.

**Task 10:**

Write a C program that reads a student’s mark for a single subject, and prints out the corresponding grade for that mark. The mark ranges and corresponding grades are shown in the table below.

|  |  |
| --- | --- |
| **Marks** | **Grade** |
| 90 and above | A |
| 80-89 | B |
| 70-79 | C |
| 60-69 | D |
| 50-59 | E |
| Below 50 | F |

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**Lab 3**

Rules:

* You are not allowed to use any array or String
* The word “char” must not be anywhere in your solution

**Overall hint:** Imagine all outputs as a matrix of space and star. Then count spaces and stars to find out the trend of increment or decrement of number of stars/spaces. Utilize several IF statement to control when ‘star’ will be printed, when ‘space’ will be printed and when ‘enter’ will be printed.

**Task 01:**Number Line

Sample input:

6

Sample output

123456

**Task 02:**Rectangle

Sample input:

4

6

Sample output

123456

123456

123456

123456

Hint: 4 and 6 means 4 lines of numbers having 1..6 in each line.

**Task 03:**Star Line

Print as many stars as given in input

Sample input:

6

Sample output

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**Task 04:**Rectangle

Sample input:

4

6

Sample output

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Hint: 4 and 6 means 4 lines of stars having 6 stars in each line.

**Task 05:**Triangle - Left Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

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**Hint:** One loop for lines, another loop for printing i number of starts when it is line i.

**Task 06:**Triangle - Left Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

1

12

123

1234

**Task 07:**Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

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Hint: Count and print appropriate number of spaces in front of stars. Notice that there is one less space and one more star in each line.

**Task 08:**Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

4

34

234

1234

**Task 09:**Triangle - Right Justified

Draw right angled triangle of given height

Sample input:

4

Sample output

1

12

123

1234

**Task 10:**Triangle - Isosceles

Draw triangle of given height

Sample input 1:

3

Sample output 1:

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Sample input 2:

4

Sample output 2:

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**Task 11:**Triangle - Isosceles

Draw triangle of given height

Sample input 1:

3

Sample output 1:

1

123

12345

Sample input 2:

4

Sample output 2:

1

123

12345

1234567

**Task 12:**Rhombus

Just draw the image of the above triangle once.  And then, the opposite, once.

Sample input:3

Sample output

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**Task 13:**Rhombus

Just draw the image of the above triangle once. And then, the opposite, once.

Sample input:

3

Sample output

1

123

12345

123

1

**Task 14:**Hollow Rectangle

Display a rectangle of given length and width.

Sample input:

4

5

Sample output

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\*   \*

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Hint 1: Print the character space (‘   ‘)  in the middle.

Hint 2: You can re-use your solution to PROBLEM 2 and use if condition to selectively print first and last star of each line and all stars of first and last line.

**Task 15:**Hollow Rectangle

Display a rectangle of given length and width.

Sample input:

4

5

Sample output

12345

1   5

1   5

12345