Lab Assignment – 2

1. You will be given a set of numbers, you have to find Greatest Common Divisor (**GCD**) among them. The first input will be N, then N numbers will be given from which you have to find the **GCD**.

   Sample Input:
   4
   42 21 28 14
   Sample Output:
   7

2. You will be given a set of numbers, you have to find Least Common Multiple (**LCM**) among them. The first input will be N, then N numbers will be given from which you have to find the **LCM**.

   Sample Input:
   4
   4 2 1 6
   Sample Output:
   12

3. You will be given a number, you have to determine if the number is prime or not. If the number is prime print **Yes** otherwise print **No**. A number is prime if the number is larger than 1 and the number is not divisible by any other number except 1 and the number itself. The first input will be **t**, means number of test cases. Then there would be **t** numbers. For each numbers you have check if the number is prime or not.

   Sample Input:
   5
   1
   2
   3
   14
   11
   Sample Output:
   No
   Yes
   Yes
   No
   Yes

4. You will be given a number N. You have to print number of prime numbers between 1 to N. First input will be **t**, then t numbers would be followed.

   Sample Input:
   3
   2
   3
   4
   Sample Output:

1
2
2

Explanation: In the first test case N = 2, so the numbers are 1 to 2(1, 2). Here 1 is not prime, but 2 is prime. So, the number of prime number is 1.

5. You will be given a number N. You have to print the number of divisor of N. The first input will be **t** – the number of test cases, the **t** number of times N numbers would be followed.

   Sample Input:
   4
   4
   6
   10
   16
   Sample Output:
   3
   4
   4
   5

   Explanation: For N = 4, the divisors are 1, 2, 4. So, the output is 3. Again for N = 8, the divisors are 1, 2, 4, 8, 16. So, in this case the output is 5.

6. You will be given a number N. Considering numbers from 1 to N, you have to print the number which have maximum number of divisors. In case of multiple answers print any of them.

   Sample Input:
   7
   Sample Output:
   6

   Explanation: From the numbers 1 to 7, number 6 have maximum number of divisors.

7. You will be given N numbers. You have to sort them in ascending order. The first number will be N, then N numbers would be followed.

   Sample Input:
   7
   23 3 454 55 3 45 10
   Sample Output:
   3 3 10 23 45 55 454

8. You will be given a Number N, you have to print **prime numbers** from 1 to N using **Recursion**.

Sample Input:
5
Sample Output:
2 3 5

***You must use recursion for the program**.

9. Print the following pattern using **Recursion**.

   Sample Input1:
   5
   Sample Output1:
   aaaaa
   ccccc
   aaaaa
   ccccc
   aaaaa

   Sample Input2:
   4
   Sample Output2:
   aaaa
   cccc
   aaaa
   cccc

10. The input will be **n** and **r**. You have to print nCr, using **Recursion**.

    Sample Input:
    5 3
    Sample Output:
    10

11. Input 3 numbers, print the maximum among them. **Here every variable should be pointer variable**.

    Sample Input:
    3 34 22
    Sample Output:
    34

12. You will be given a number N. Considering numbers from 1 to N, you have to print the number which have maximum number of divisors. In case of multiple answers print any of them. **Here every variable should be pointer variable**.

    Sample Input:
    7
    Sample Output:
    6

Explanation: From the numbers 1 to 7, number 6 have maximum number of divisors.

13. At first, you have to input N. Then you have to input N employee information's of a company. The information's are – name, age, salary. Then you have to print the employee info where the age is larger than 30.

    Sample Input:
    5
    Arnob 23 20000
    Rafi 34 30000
    Anis 29 20000
    Rafik 31 22000
    Shuvo 32 40000
    Sample Output:
    Rafi 34 30000
    Rafik 31 22000
    Shuvo 32 40000

14. At first, you have to input N. Then you have to input N employee information's of a company. The information's are – name, country name, age, salary. Then you have to print the employee info where the country name is **Bangladesh**.
    ****use structure in this case****

    Sample Input:
    5
    Arnob Bangladesh 23 20000
    Rafi Bangladesh 34 30000
    Anis India 29 20000
    Rafik Bangladesh 31 22000
    Shuvo Pakistan 32 40000
    Sample Output:
    Arnob Bangladesh 23 20000
    Rafi Bangladesh 34 30000
    Rafik Bangladesh 31 22000

15. At first, you have to input N. Then you have to input N employee information's of a company. The information's are – name, country name, age, salary. Then you have to **sort employee info based on salary in descending order**. If there are multiple solutions print any of them.
    ****use structure in this case****

    Sample Input:
    4
    Arnob Bangladesh 23 20000
    Rafi Bangladesh 34 30000
    Anis India 29 20000
    Rafik Bangladesh 31 22000

Sample Output:
Rafi Bangladesh 34 30000
Rafik Bangladesh 31 22000
Arnob Bangladesh 23 20000
Anis India 29 20000