

**School of Engineering**  
**Jawaharlal Nehru University**  
**B. Tech. (2<sup>nd</sup> Semester)**  
**Subject: Data Structure**

**Instructions:**

1. You are advised to use Google Document to write your program.
2. Write your document name as (Branch\_RollNumber\_Lab\_1) [Example: CS\_01\_Lab\_1]
3. Each program should start with new page.
4. At least four Test Cases should be provided with each program.
5. Plagiarised content (program) will be penalised.
6. Submit the assignment on time (request for date extension will not be entertained)
7. Check the linked Sample Copy for further clarification.

[https://docs.google.com/document/d/1TfnEi\\_MgEwByxG\\_9Ez\\_s51Ss\\_GYh\\_5G6FBA0KoFh\\_j8/edit?usp=sharing](https://docs.google.com/document/d/1TfnEi_MgEwByxG_9Ez_s51Ss_GYh_5G6FBA0KoFh_j8/edit?usp=sharing)

**Lab Assignment No. 6**

1. Alice and Bob are meeting after a long time. As usual they love to play some math games. This times Alice takes the call and decides the game. The game is very simple, Alice says out an integer and Bob has to say whether the number is prime or not. Help Bob accomplish this task by writing a program which will calculate whether the number is prime or not.

**Input Format:**

The first line of the input contains an integer T, the number of elements.  
Each of the next line contains an integer.

**Sample Input:**

5  
23  
13  
20  
1000  
99991

**Output:**

yes  
yes  
no  
no  
yes

2. Write a program to enter list of 10 numbers. Write a program to create two lists "asc" and "des" where the numbers in "asc" are arranged in ascending order and "des" are ordered in descending order.

**Sample Input**

23  
34  
-33  
-54  
10  
99  
73  
65  
23  
-45  
asc

**Output:**

Numbers in asc order are: -54, -45, -33, 10, 23, 23, 34, 65, 73, 99

3. In a university batch of students decides on the basis of students marks. There are two batch of students. Write a program to move student from one batch to another.

**Input Format:**

List of students from batch1  
List of students from batch2  
Student to move

**Sample Input:**

Shambhavi Puspender Dhairya Yash Akash  
Muskan Aniket Shreya Rohit  
Dhairya

**Sample Output:**

Updated Batch 1= 'Shambhavi', 'Puspender', 'Yash', 'Akash'  
Updated Batch 2= 'Muskan', 'Aniket', 'Shreya', 'Rohit', 'Dhairya'

4. You are given 10 numbers. Write a program to input integers in numbers list and create two lists "Positive" and "Negative" where "Positive" contains only the positive numbers and "Negative" contains only the negative numbers.

**Format Input:**

Input numbers split using space

**Sample Input:**

23 27 -45 0 23 67 -56 -9 48 50

**Output:**

Positive numbers: 23, 27, 23, 67, 48, 50  
Negative numbers: -45, -56, -9

5. Write a program to create a list with input from the user of non-repetitive numbers A and find five lists, one contains all prime numbers in A, second one contains composite numbers in A, the third list contains all numbers in A which are neither divisible by 2, fourth and fifth list contains number divisible by 3 and 5 respectively.

**Input Format:**

1. Number of elements
2. List of elements

**Output Explanation:**

**List of**

1. Prime numbers
2. Composite numbers
3. Divisible by 2
4. Divisible by 3
5. Divisible by 5

**Sample Input:**

10  
1  
2  
3  
4  
5  
6  
7  
8  
9  
11

**Output:**

2, 3, 5, 7, 11  
4, 6, 8, 9  
2, 4, 6, 8  
3, 6, 9  
5

6. Write a program that accepts two positive integers a and b (a is smaller than b) and returns a list that contains all the odd numbers between a and b (including a and including b if applicable) in reverse order without using reverse function.

**Sample Input:**

2 #a  
10 #b

**Output:**

9, 7, 5, 3

**Test Case:**

10

32

**Output:**

31, 29, 27, 25, 23, 21, 19, 17, 15, 13, 11