



COMSATS University Islamabad, Abbottabad Campus
Department of Computer Science

Lab 3 Tasks
Data Structures

Class: BCS – 4 C

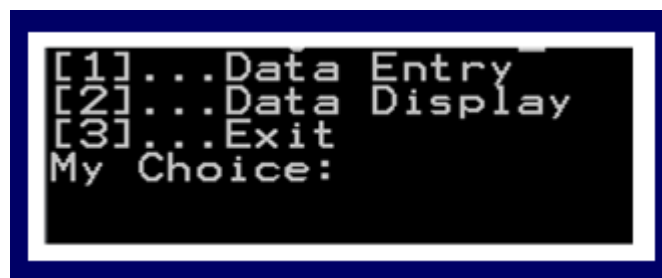
Single Linked List exercises

1. Write a Java program to create a singly linked list by using the class template below and enter data upon user choice and count the number of nodes you entered.

```
class node{
    int data;
    node next, first, cur, pre;

    node(){
        first=pre=null;
    }
    Void entry(){        //Data entry module
    }
    Void show(){         //Data display module
    }
}
```

2. Additionally you are also required to traverse all those elements in a singly linked list having odd data elements.
3. Write a Java program to iterate through all elements in a singly linked list starting at the specified position.
4. Write a Java program to iterate a singly linked list in reverse order.
5. Write a Java program to find out the largest/smallest element in a singly linked list.
6. Write a Java program of swap two elements in a singly linked list.
7. Write a Java program to convert a singly linked list to array list.
8. Write a menu driven program in Java to merge all questions from 1-8 shown above in a single menu driven program. For example consider the following menu:



1-D / 2-D Arrays Lab Exercises

- Q1. a) Write a program in which one can insert an element at the location specified by the user.

Numbers in Array: **10 20 30 40 50**

Enter location. **2**

The element to be inserted is: **99**

The output look like as: **10 20 99 30 40 50**

- b) You are also required to delete the specific element in the array

- Q2. Declare a 2-Dimensional array of integer numbers. The array consists of 4 rows and 5 columns. Write a program to find out the sum of all elements of 2D-array **above and below the diagonal** shown in the figure:

34	56	20	33	18
89	35	67	23	54
67	42	56	76	90
56	78	14	79	11

- Q3. Find out the sum of –ve numbers in each row and each column and find out the largest number in –ve of each row and each column.

-34	56	20	33	-18	-52
89	35	67	-2	-54	-56
44	42	56	-76	90	??
-56	78	-14	79	11	??
-100	??	??	??	??	

Q4. Find the maximum number in each row and minimum in each column in the given matrix below. You can use the variables called **min**, **max** to store the minimum and maximum numbers for each row and column. Display the result in the following format.

	34	56	20	33	18	Max
						56
	89	35	67	23	54	
						89
	67	42	56	76	90	
						90
	56	78	14	79	11	
						79
Min	34	35	14	23	11	