

Indian Institute of Space Science and Technology

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Tutorial I - April 2023

B.Tech - II Semester

AV121 - Data Structures and Algorithms

1. Using the ListNode Structure, write a function

```
void printFirst (ListNode *ptr)
```

that prints the value stored in the first node of a list passed to it as parameter. The function should print an error message and terminate the program if the list passed to it is empty().

2. Write a function

```
ListNode *ListConcat(ListNode *list1, ListNode *list2)
```

that concatenates the items in list 2 to the end of list 1 and returns the resulting list.

3. For the following program fragments, predict what the output will be

```
ListNode *p = new ListNode(56.4);  
p = new ListNode(34.2, p);  
cout<< (*p).value << endl << p → value;
```

4. Create and implement the dynamic stack with appropriate header files containing declaration of class and cpp file containing member function explanation and finally the implementation in a main file.

5. The following member function perform operation on a linked list of type NumberList has at least one error. Explain what is wrong and how to fix it.

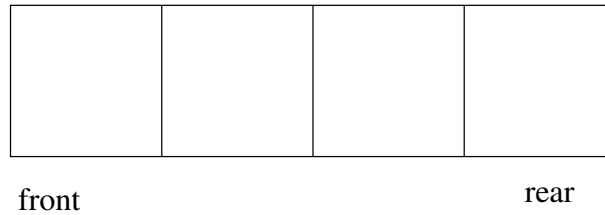
```
NumberList::printList()  
{  
    while(head)  
    {  
        cout<<head → value;  
        head = head → next;  
    }  
}
```

6. What is the difference between a Static Stack and a Dynamic Stack?
7. When an element is added to a queue, where it is added?

8. Suppose the following operations are performed on an empty queue:

```
enqueue(5);  
enqueue(7);  
enqueue(9);  
enqueue(12);
```

Insert numbers in the following diagram to show what will be stored in the static queue after the operations have executed



*****END*****