COURSE: DATA STRUCTURES AND ALGORITHMS

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LINKED LIST MID SEMESTER PREPARATION

I. LINKED LIST AND RECURSION

1. What does the following function do for a given Linked List?

```
void fun1(struct Node* head)
{
 if(head == NULL)
   return;

 fun1(head->next);
 printf("%d  ", head->data);
}
```

2. What does the following function do for a given Linked List?

```
void fun2(struct Node* head)
{
 if(head == NULL)
   return;
 printf("%d  ", head->data);

 if(head->next != NULL )
   fun2(head->next->next);
 printf("%d  ", head->data);
}
```

II. SINGLY LINKED LIST

1. Write a program in C to create and display Singly Linked List.

Test Data :

Input the number of nodes : 3

Input data for node 1 : 5

Input data for node 2 : 6

Input data for node 3 : 7

Expected Output:

Data entered in the list:
Data = 5
Data = 6
Data = 7

2. Write a program in C to create a singly linked list of n nodes and count the number of nodes.

Test Data :

Input the number of nodes : 3

Input data for node 1 : 5

Input data for node 2 : 6

Input data for node 3 : 7

Expected Output :

Data entered in the list are:
Data = 5
Data = 6
Data = 7

Total number of nodes = 3

3. Write a program in C to search an existing element in a singly linked list.

Test Data and Expected Output:

Input the number of nodes: 3

Input data for node 1: 2
Input data for node 2: 5
Input data for node 3: 8

Data entered in the list are:
Data = 2
Data = 5
Data = 8

Input the element to be searched: 5
Element found at node 2

III. DOUBLY LINKED LIST

1. Write a program in C to find the maximum value from a doubly linked list.

Test Data :

Input the number of nodes : 3

Input data for node 1 : 5

Input data for node 2 : 9

Input data for node 3 : 1

Expected Output :

Data entered in the list are:
node 1: 5
node 2: 9
node 3: 1

The Maximum Value in the Linked List: 9

2. Write a search function for a doubly linked list.

3. Remove duplicates from a doubly linked list.

IV. CIRCULAT LINKED LIST

1. Write a program in C to create and display a circular linked list.

Test Data :

Input the number of nodes: 3

Input data for node 1: 2

Input data for node 2: 5

Input data for node 3: 8

Expected Output :

Data entered in the list are:
Data 1 = 2
Data 2 = 5
Data 3 = 8

2. Write a search function for a circular linked list.

3. Write a function to search for the maximum number in a circular linked list.