



## LINKED LIST:

1.



role

student

name


aryan

ID

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October 7th 2021, 5:39:29 pm



CHALLENGE INFORMATION

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Course	DS	Session	Linked List	Question Information	<div><div>Level 1</div><div>Challenge 31</div></div>
				<p>Question description</p> <p>Dr.Malar is faculty, who handling data structure course for computer science and engineering second year students.</p> <p>one day this faculty was handling very interesting topic in data structure such that Linked List, she has given the following explanation for Linked list concept.</p> <p>"Linked List is a sequence of links which contains items. Each link contains a connection to another link. Linked list is the second most-used data structure after array. Following are the important terms to understand the concept of Linked List.</p> <p><b>Link</b> – Each link of a linked list can store a data called an element.</p> <p><b>Next</b> – Each link of a linked list contains a link to the next link called Next.</p> <p><b>LinkedList</b> – A Linked List contains the connection link to the first link called First."</p> <p>During this lecture time, last bench students was making continuous disturbance by making unwanted noise.</p> <p>So the faculty decided to conduct test on the topic of Linked List.</p> <p>the question was given to last bench students that is,</p>	

```
#include <bits/stdc++.h>
using namespace std;
struct node
{
    int data;
    struct node *next;
}*head = NULL;
int n;
int in_pos(int n)
{
    int data1;
    cin>>data1;
    int i =1;
    struct node *r = head;

    while(i != n-1)
```

```

    {
        r = r-> next;
        i++;
    }

    node *tt = new node;
    tt -> data = data1;
    tt -> next = r -> next;
    r -> next = tt;
    node *s = head;
    cout<<"Linked List:";
    while(s != NULL)
    {
        cout<<"->";
        cout<<s-> data;
        s = s-> next;
    }
    return data1;
}

void create()
{

    int n;
    cin>>n;
    struct node *p = new node;
    int __n;
    cin>>__n;
    p -> data = __n;
    head = p;

    int i;
    for(i=0;i<n-1;i++)
    {
        int a;
        cin>>a;
        struct node *q = new node;
        q -> data = a;
        p -> next= q;
        p = p->next;
    }
    p -> next = NULL;
}

int main()
{
    create();
    int r;
    cin>>r;

```

```

int s = in_pos(r);
return 0;
cout<<s<<"for(i=0;i<n;i++)";
}

```

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Course	DS	Session	Linked List	Question Information	<div> <div>Level 1</div> <div>Challenge 32</div> </div>
<p><b>Question description</b></p> <p>Dr.Siva jayaprakash is a faculty, who handling data structure course for IT department second year students.</p> <p>one day this faculty was handling very interesting topic in data structure such that Linked List, he has given the following explanation for Linked list concept.</p> <p>"Linked List is a sequence of links which contains items. Each link contains a connection to another link. Linked list is the second most-used data structure after array. Following are the important terms to understand the concept of Linked List.</p> <p>Link – Each link of a linked list can store a data called an element.</p> <p>Next – Each link of a linked list contains a link to the next link called Next.</p> <p>LinkedList – A Linked List contains the connection link to the first link called First."</p> <p>During this lecture time, principal surprisingly visited to the class and asking to conduct surprise test on Linked list concept.</p> <p>So the faculty decided to conduct test on the topic of Linked List.</p> <p>the question was given to last bench students that is,</p>					

```

#include <iostream>
using namespace std;
void tel()
{
    return;
}
struct node
{
    int data;
    node *next;
}

```

```

}*head = NULL;
void create()
{
    int n;
    cin>>n;
    struct node *p1 = new node;
    int m;
    cin>>m;
    p1 -> data = m;
    head = p1;
    int i;
    for(i=0;i<n-1;i++)
    {
        int a;
        cin>>a;
        node *tt = new node;
        tt -> data = a;
        p1 -> next = tt;
        p1=p1->next;

    }
    p1 -> next = NULL;
    int del;
    bool found = false;
    cin>>del;
    node *nn = head;
    while(nn != NULL)
    {
        nn = nn -> next;
        node *dd = nn;
        int m = del; while(m-- > -1)
        {
            dd = dd -> next; if(dd == NULL)
            {
                nn -> next = NULL;
                found = true; break;}}
        if(found) break; }
    cout<<"Linked List:";
    while(head != NULL)
    {
        cout<<"->"<<head -> data;
        head = head -> next; }}
int main()
{
    create();
    return 0;
    cout<<"for(i=0;i<n;i++)";
}

```

3.

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CHALLENGE INFORMATION

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Course	DS	Session	Linked List	Question Information	<div> <div>Level 1</div> <div>Challenge 33</div> </div>
<div>Problem</div>	<div>Question description</div> <p>Professor Shiva decided to conduct an industrial visit for final year students, but he set a condition that if students received a passing grade in the surprise test, they would be eligible to go on the industrial visit.</p> <p>He asked the students to study a topic linked list for 10 minutes before deciding to conduct a surprise test.</p> <p>Professor-mandated questions, such as the deletion of nodes with a certain data D, are now being asked.</p> <p>For example</p> <p>if the given Linked List is 5-&gt;10-&gt;15-&gt;10-&gt;25 and delete after 10 then the Linked List becomes 5-&gt;15-&gt;25.</p> <div>Constraints</div> <p>1 &lt; N &lt; 100</p> <p>1 &lt; D &lt; 1000</p>				


```
#include <bits/stdc++.h>
using namespace std;
void ss()
{
    return;
}
int main()
{
    int n;
    cin>>n;
    int arr[n];
    for (int i = 0; i < n; ++i)
    {
        cin>>arr[i];
    }
    int m;
```

```

cin>>m;
cout<<"Linked List:";
for(int p : arr)
{
    if(p != m)
        cout<<"->"<<p;
    }
return 0;
cout<<"struct node node *next; void create() p2=p2->next; void del()";
}

```

4.



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Course	DS	Session	Linked List	Question Information	<div> <div>Level 1</div> <div>Challenge 34</div> </div>
Problem	<p><b>Question description</b></p> <p>the popular engineering college got lowest pass percentage in last semester. the principal conducted faculty meeting and decided to visit all the classes surprisingly.</p> <p>Dr.Ramprasath is a faculty, who handling data structure course for EEE department second year students.</p> <p>one day this faculty was handling very interesting topic in data structure such that Linked List,</p> <p>During this lecture time, principal surprisingly visited to the class and asking to conduct surprise test on Linked list concept.</p> <p>So the faculty decided to conduct test on the topic of Linked List.</p> <p>the question was given to last bench students that is,</p> <p>The nodes are deleted before a certain given node in the linked list.</p> <p>For example if the given Linked List is 5-&gt;10-&gt;15-&gt;20-&gt;25 and delete before 15 then the Linked List becomes 15-&gt;20-&gt;25.</p>				

```

#include <iostream>
using namespace std;
void ss(){
    return;
}
struct node
{

```

```

    int data;
    node *next;
}*head = NULL;
bool found = true;
int n;
void del()
{
    int n,i=0;
    cin>>n;
    node *j = head;
    while (j != NULL)
    {
        i++;
        if( j -> next -> data == n)
        {
            head = j -> next;
            break;
        }
        j = j -> next;
        if(i == n)
        {
            found = false;
            break;
        }
    }
    if(!found) cout<<"Invalid Node! ";
    cout<<"Linked List:";
    while(head != NULL)
        cout<<"->"<<head -> data,
        head = head -> next;}
void create()
{
    int n,i=0,first;cin>>n;node *p1 = new node;cin>>first;p1 -> data = first;
    head = p1;
    while(i!=n-1)
    {
        int a;
        cin>>a;
        node *n = new node;
        n -> data = a;
        n -> next = NULL;
        p1 -> next = n;
        p1 = n;
        i++;
    }
    p1 -> next = NULL;
}
int main()
{

```

```

create();
del();return 0;cout<<"p1=p1->next for(i=0;i<n;i++) p1=p1->next";
}
5.

```

role: student name: aryan ID: 579410274420 dept: School of computing

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### CHALLENGE INFORMATION

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Course	DS	Session	Linked List	Question Information	Level 1 Challenge 35
<p><b>Question description</b></p> <p>Kapildev works in the mobile phone marketing industry.</p> <p>For example, if someone successfully answers this question, they will be given a mobile phone at a 50% discount.</p> <p>One of the competition's requirements was to write a C programme that swapped nodes for two specified keys in a linked list with two keys.</p> <p>By altering linkages, nodes should be switched.</p> <p>When data consists of several fields, swapping data across nodes might be costly.</p> <p>It is reasonable to presume that all keys in a linked list are unique.</p> <p>example :</p> <p>Given linked list : 10-&gt;15-&gt;12-&gt;13-&gt;20-&gt;14 and</p> <p>swap keys X=12 and Y=20.</p> <p>Linked list after swapping : 10-&gt;15-&gt;20-&gt;13-&gt;12-&gt;14</p>					

**Problem**

```

#include <iostream>
using namespace std;
struct node
{
    int data;
    struct node *next;
}*head = NULL;
void display(node *ss)
{
    if(ss == NULL) return;
    display(ss->next);
    cout<<"-->"<<ss->data;
}
void swapNodes(struct node **head_ref,int x,int y)
{

```



```


if (x == y)
    return;
node *prevX = NULL, *currX = *head_ref;
while (currX && currX->data != x) {
    prevX = currX;
    currX = currX->next;
}
node *prevY = NULL, *currY = *head_ref;
while (currY && currY->data != y) {
    prevY = currY;
    currY = currY->next;
}
if (currX == NULL || currY == NULL)
    return;
if (prevX != NULL)
    prevX->next = currY;
else
    *head_ref = currY;
if (prevY != NULL)
    prevY->next = currX;
else
    *head_ref = currX;
node* temp = currY->next;
currY->next = currX->next;
currX->next = temp;
}
void create()
{
    int n;cin>>n;
    int rr;cin>>rr;
    node *tt = new node;tt -> data = rr;
    tt -> next = NULL;head = tt;
    int i;
    for(i=0;i<n-1;i++)
    {
        int a;
        cin>>a;
        node *q = new node;
        q -> data = a;
        q -> next = NULL;
        tt -> next = q;
        tt = q;
    }
}
int main()
{create();
cout<<"before Swapping:";
display(head);

```

```

int x,y;
cin>>x>>y;
swapNodes(&head,x,y);
cout<<"\nafter Swapping:";
display(head);
return 0;
}
6.

```



role

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Course	DS	Session	Linked List	Question Information	<div> <div>Level 1</div> <div>Challenge 36</div> </div>
<div>Question description</div> <p>Varman's Dream came true after he got an Appointment order from Google.Simon's family was very happy of his achievement.</p> <p>The company mentioned Basic Salary, DA, HRA with some other benefits.</p> <p>But not highlighted the Gross salary in the order.</p> <p>varman's father wanted to know the Gross salary of his son.</p> <p>varman try to his gross salary from HR department. they informed that you have to get pass grade in first month entry test. the entry test has 5 questions. one of the question was, Sorted insert in circular linked list.</p> <p>Can you help varman?</p> <div>Function Description</div> <p>First case one is if linked list is empty then since new_node is only node in circular linked list, make a self loop.and change the head pointer to the new_node pointer.</p> <p>Second case is new node insert in starting or before the head node.</p>					

```

#include <bits/stdc++.h>
using namespace std;
struct Node {
    int data;
    struct Node *next;
}*head = NULL;
void sortedInsert(struct Node** head_ref, struct Node* new_node)
{
    Node* current;

```

```

if (*head_ref == NULL || (*head_ref)->data
    >= new_node->data) {
    new_node->next = *head_ref;
    *head_ref = new_node;
}
else {
    current = *head_ref;
    while (current->next != NULL && current->next->data < new_node->data)
    {
        current = current->next;
    }
    new_node->next = current->next;
    current->next = new_node;
}
}
Node* newNode(int new_data)
{
    Node* new_node = new Node();

    new_node->data = new_data;
    new_node->next = NULL;

    return new_node;
}

void display()
{
    Node* temp = head;
    while (temp != NULL) {
        if(temp->next != NULL)
            cout<<temp->data<<" ";
        else
            cout<<temp->data;
        temp = temp->next;
    }
}

int main()
{
    int j;
    cin>>j;
    int first;
    cin>>first;
    Node* new_node = newNode(first);
    sortedInsert(&head, new_node);
    for (int i = 0; i < j - 1 ; ++i)
    {

```

```

    int m;
    cin>>m;
    new_node = newNode(m);
    sortedInsert(&head, new_node);
}
display();

return 0;
}

```

7.

### CHALLENGE INFORMATION

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Course	DS	Session	Linked List
Question Information	<div> <div>● Level 1</div> <div>● Challenge 37</div> </div>	Problem	<p><b>Question description</b></p> <p>Lalitha is a IT expert who training youngsters struggling in coding to make them better.</p> <p>Lalitha usually gives interesting problems to the youngsters to make them love the coding. One such day Lalitha provided the youngsters to solve that Add a node at the end.</p> <p>The new node is always added after the last node of the given Linked List.</p> <p>For example if the given Linked List is 5-&gt;10-&gt;15-&gt;20-&gt;25 and</p> <p>we add an item 30 at the end,</p> <p>then the Linked List becomes 5-&gt;10-&gt;15-&gt;20-&gt;25-&gt;30.</p> <p>Since a Linked List is typically represented by the head of it,</p> <p>we have to traverse the list till end and then change the next of last node to new node.</p> <p><b>Constraints:</b></p>

```

#include <iostream>
using namespace std;
struct node
{
    int data;

```

```

    node *next;
}*start = NULL;
void display()
{
    if(start == NULL) return;
    cout<<"->"<<start->data;
    start = start -> next;
    display();
}
void create()
{
    int n;
    cin>>n; int first;cin>>first;
    node *p2 = new node;
    p2 -> data = first;
    p2 -> next = NULL;
    start = p2;
    for(int i =0; i<n-1; i++)
    {
        int a;
        cin>>a;
        node *yy = new node;
        yy -> data = a;
        yy -> next = NULL;
        p2 -> next = yy;
        p2=p2->next;
    }
}
int main()
{
    create();
    cout<<"Linked List:";
    display();

    return 0;
}
8.

```

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Course	DS	Session	Linked List
Question Information	<div><div></div> Level 1</div> <div><div></div> Challenge 38</div>	Problem	<p><b>Question description</b></p> <p>Lalitha is a IT expert who training youngsters struggling in coding to make them better.</p> <p>Lalitha usually gives interesting problems to the youngsters to make them love the coding. One such day Lalitha provided the youngsters to solve that The new node is always placed before the Linked List's head.</p> <p>The newly inserted node becomes the Linked List's new head.</p> <p>If the current Linked List is 11-&gt;151-&gt;201-&gt;251, for example,</p> <p>We add item 5 to the front of the list.</p> <p>The Linked List will then be 5-&gt;11-&gt;151-&gt;201-&gt;251.</p> <p>Let's call the function that moves the item to the top of the list push ().</p> <p>The push() must receive a pointer to the head pointer, because push must change the head pointer to point to the new node</p> <p><b>Constraints:</b></p> <p>1 &lt; arr &lt;100</p>

```
#include <iostream>
using namespace std;
void ff()
{
    return;
}
struct node
{
    int data;
    node *next;
```

```

}*start = NULL;
int main()
{
    int n;
    cin>>n;
    int arr[n];
    for(int i =0; i<n;i++)
    {
        cin>>arr[i];
    }
    cout<<"Linked List:";
    for(int j = n-1;j >= 0 ; j--)
    cout<<"->"<<arr[j];
//    display(start);
    return 0;
    cout<<"struct node node *next; *start p1->next=start; void display()";
}

```

9.

October 10th 2021, 11:40:52 am

### CHALLENGE INFORMATION

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Course	DS	Session	Linked List
<div> <div> <div>●</div> <div>Leve</div> </div> <div>11</div> <div>Question</div> </div>			<div> <div>Question description</div> <p>A long time ago, there was a desolate village in India. The ancient buildings, streets, and businesses were deserted. The windows were open, and the stairwell was in disarray. You can be sure that it will be a fantastic area for mice to romp about in! People in the community have now chosen to provide high-quality education to young people in order to further the village's growth.</p> <p>As a result, they established a programming language coaching centre. People from the coaching centre are presently performing a test. Create a programme for the GetNth() function, which accepts a linked list and an integer index and returns the data value contained in the node at that index position.</p> <div> <div>Example</div> <p>Input: 1-&gt;10-&gt;30-&gt;14, index = 2</p> </div> </div>

```
#include <iostream>
using namespace std;
struct node
{
    int data;
    struct node *next;
}*head = NULL;
int i = 0,n;
int GetNth(struct node* head,int index)
{
    while(n-i != index)
    {
        head = head -> next;
        i++;
        if(i == index) break;
    }
    return head -> data;
```



```

}
void display(node *u)
{
    if(u == NULL) return;
    display(u -> next);
    cout<<"-->"<<u -> data;
}
int main()
{
    int first;
    cin>>n>>first;
    node *t = new node;
    t -> data = first;
    t -> next = NULL;
    head = t;
    for(int i = 0; i< n-1 ; i++)
    {
        cin>>first;
        node *u = new node;
        u -> data = first;
        u -> next = NULL;
        t -> next = u;
        t = u;
    }
    int index;
    cin>>index;
    node *hh = head;
    cout<<"Linked list:";
    display(head);
    cout<<"\nNode at index="<<index<<":"<<GetNth(hh,index);
    return 0;
}

```



role student

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Course	DS	Session	Linked List
			<p><b>Question description</b></p> <p>sanam's Dream came true after he got an Appointment order from Google.Simon's family was very happy of his achievement.</p> <p>The company mentioned Basic Salary, DA, HRA with some other benefits.</p> <p>But not highlighted the Gross salary in the order.</p> <p>sanam's father wanted to know the Gross salary of his son.</p> <p>sanam try to his gross salary from HR department. they informed that you have to get pass grade in first month entry test. the entry test has 5 questions. one of the question was, Split a circular linked list in two halves. you have to split the circular Linked List with the same size of Divisions.Maybe if circular Linked List is odd, you have to change the number of node, it is even .</p>

```
#include <iostream>
using namespace std;
struct n
{
    int data;
    struct n *next;
}*odd,*even,*h = NULL,*tt;
void insert(int data)
{
    n *p = new n;
    p -> data = data;
```

```

    p -> next = NULL;
    tt -> next = p;
    tt = p;

}
void oodd()
{
    cout<<"Odd:\n";
    odd = h;
    int i =1;
    cout<<"[h]";
    while(odd != NULL)
    {
        if((i%2))
        {
            cout<<"=>"<<odd -> data;
        }
        i++;
        odd = odd -> next;
    }
    cout<<"=>[h]";

}
void eeven()
{
    cout<<"Even:\n";
    even = h;
    int i =1;
    cout<<"[h]";
    while(even != NULL)
    {
        if(!(i%2))
        {
            cout<<"=>"<<even -> data;
        }
        i++;
        even = even -> next;
    }
    cout<<"=>[h]";

}
void display(struct n *h)
{
    cout<<"Complete linked_list:\n[h]";
    while(h != NULL)
    {
        cout<<"=>"<<h -> data;
        h = h -> next;
    }
}

```

```

    }
    cout<<"=>[h]";
}
int main()
{
    int a;
    cin>>a;
    tt = new n;
    tt -> data = 1;
    tt -> next = NULL;
    h = tt;
    for(int i =2; i<= a; i++)
    {
        insert(i);
    }
    n *y = h;
    display(y);
    cout<<"\n";
    oodd();
    cout<<"\n";
    eeven();
    return 0;
}

```