

بسمه تعالی



گزارش تمرین ۴ سوالات تحلیلی
ساختمان داده

محسن کربلایی امینی، ۹۸۲۴۲۱۲۸
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سوال ۱:

```
struct node {
    int data;
    node* next;
}

node* mianeLinkedList (linkedlist ll) {
    node* result=ll.L;
    node* nextCandidate=ll.L->next;
    counter=۰;
    for (node* i = ll.L ; i !=null ; i=i->next, counter=counter++%۲) {
        if (counter == ۱) {
            result=nextCandidate;
            nextCandidate=ll[result]->next;
        }
    }
    return result;
}
```

سوال ۲:

```
Node* reverse(Node* node)
{
    if (node == NULL)
        return NULL;
    if (node->next == NULL) {
        head = node;
        return node;
    }
    Node* node\ = reverse (node->next) ;
    node\->next = node;
    node->next = NULL;
    return node;
}
```

سوال ۳:

```
node* merge(node* nHead, node* mHead ) {
    node* previousNode=nHead; // just an assumption that nhead's value is lower.
    node* result=nHead;
    for (int i=0 ; i < m+n ; i++) {
        /* compare paires of n and m then acquire the lowest as a node to the new list and go on.
        */
        if (nHead->value < mHead->value) {
            if (nHead != previousNode)
                previousNode->next=nHead;
            nHead=nHead->next;
        } else {
            if (i==0)
                result=mHead;
            previousNode->next=mHead;
            mHead=mHead->next;
        }
    }
    return result;
}
```

سوال ۴:

```
node* sortAbsoluteSortedLinkedList (node* head) {
    node* result=head;
    node* previousNode=head;
    for (node* L=head ; L != NULL ; ) {
        // the iterations are done in if and else clauses
        if (L->value < 0){
            // iterate the list from first node up to end
            // put every negative node to the first of the list
            previousNode->next=L->next;
            node* temp = L->next;
            L->next = result;
            result=L;
            L=temp;
        }else {
            previousNode=previousNode->next;
            L=L->next;
        }
    }
}
```

```
    }  
    return result;  
}
```

سوال ۵:

```
bool hasCircle(node* head) {  
    for (node* L=head ; L != NULL ; L=L->next) {  
        if (L->next == head->next)  
        {  
            L->next = null;  
            return true;  
        }  
    }  
    return false;  
}
```