

ALGORITMA STRUKTUR DATA

Tugas – Linked List

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Pertanyaan

1. Implementasikan method-method berikut pada class LinkedList:
 - a. insertBefore() untuk menambahkan node sebelum keyword yang diinginkan

```
public void insertBefore(int key, int input) {
    Node newNode = new Node(input, next:null);

    if (!isEmpty()) {
        Node currentNode = head;
        do {
            if (currentNode.next.data == key) {
                newNode.next = currentNode.next;
                currentNode.next = newNode;
                break;
            }
            currentNode = currentNode.next;
        } while (currentNode != null);
    } else {
        System.out.println(x:"Linked list kosong");
    }
}
```

- b. insertAt(int index, int key) untuk menambahkan node pada index tertentu

```
public void insertAt(int index, int key) {
    Node newNode = new Node(key, next:null);

    if (index == 0) {
        newNode.next = head;
        head = newNode;
        return;
    }

    Node currentNode = head;
    int count = 0;
    while (currentNode != null && count < index - 1) {
        currentNode = currentNode.next;
        count++;
    }

    newNode.next = currentNode.next;
    currentNode.next = newNode;
}
```

- c. `removeAt(int index)` untuk menghapus node pada index tertentu

```
public void removeAt(int index) {
    if (index == 0) {
        removeFirst();
    } else {
        Node temp = head;
        for (int i = 0; i < index - 1; i++) {
            temp = temp.next;
        }
        temp.next = temp.next.next;
        if (temp.next == null) {
            tail = temp;
        }
    }
}
```

2. Dalam suatu game scavenger hunt, terdapat beberapa point yang harus dilalui peserta untuk menemukan harta karun. Setiap point memiliki soal yang harus dijawab, kunci jawaban, dan pointer ke point selanjutnya. Buatlah implementasi game tersebut dengan linked list.

Node.java

```
1  package tugas;
2
3  public class Node {
4      String answer, question;
5      Node next;
6
7      public Node(String question, String answer) {
8          this.question = question;
9          this.answer = answer;
10         this.next = null;
11     }
12 }
```

LinkedList.java

```
1  package tugas;
2
3  import java.util.Scanner;
4
5  public class LinkedList {
6      Node head;
7
8      public LinkedList() {
9          head = null;
10     }
11
12     public void addPoint(String question, String answer) {
13         Node newNode = new Node(question, answer);
14
15         if (head == null) {
16             head = newNode;
17         } else {
18             Node current = head;
19             while (current.next != null) {
20                 current = current.next;
21             }
22             current.next = newNode;
23         }
24     }
25
26     public void game() {
27         Scanner sc = new Scanner(System.in);
28         Node current = head;
29
30         while (current != null) {
31             System.out.println("Pertanyaan: " + current.question);
32             System.out.print("Jawaban: ");
33             String input = sc.nextLine();
34
35             if (input.equalsIgnoreCase(current.answer)) {
36                 System.out.println("JAWABAN BENAR");
37                 current = current.next;
38             } else {
39                 System.out.println("JAWABAN SALAH");
40             }
41         }
42         System.out.println("See You !");
43     }
44 }
45
```

Output :

```
Pertanyaan: Siapa pacar reza...  
Jawaban: ahli kubur  
JAWABAN BENAR  
Pertanyaan: Ibukota Indonesia adalah...  
Jawaban: nganjuk  
JAWABAN SALAH  
Pertanyaan: Ibukota Indonesia adalah...  
Jawaban: tokyo  
JAWABAN BENAR  
Pertanyaan: Billie Eilish berasal dari...  
Jawaban: tanah  
JAWABAN BENAR  
See You !
```