

Problems On Stacks

Problem 1:

```
import java.util.*;

public class Problem_s1 {

    static Scanner sc = new Scanner(System.in);

    public static void main(String[] args) {
        System.out.println("Enter the String : ");
        String str = sc.next();
        System.out.print(decode(str));
    }

    private static String decode(String str) {
        Stack<Integer> intStack = new Stack<>();
        Stack<Character> CharStack = new Stack<>();
        String result="";
        for(int i=0;i<str.length();i++) {
            if(Character.isDigit(str.charAt(i))) {

intStack.push(Character.getNumericValue(str.charAt(i)));
            }
            else if(str.charAt(i)=='[') {
                CharStack.push(str.charAt(i));
            }
            else if(str.charAt(i)==']') {
                int count=0;
                String temp ="";
                if(!intStack.isEmpty()) {
                    count = intStack.peek();
                    intStack.pop();
                }
                while(!CharStack.isEmpty() &&
CharStack.peek()!='[') {
                    temp = CharStack.peek()+temp;
                    CharStack.pop();
                }
            }
        }
        return result+temp;
    }
}
```

```

        if(CharStack.peek()=='[' && !CharStack.isEmpty()) {
            CharStack.pop();
        }
        for(int j=0;j<count;j++) {
            result += temp ;
        }
        for(int j=0;j<result.length();j++) {
            CharStack.push(result.charAt(j));
        }
        result = "";
    }
    else {
        CharStack.push(str.charAt(i));
    }
}

while(!CharStack.isEmpty()) {
    result = CharStack.peek() + result ;
    CharStack.pop();
}
return result;
}

}

```

Output 1 :-

Enter the String :

3[b2[ca]]

bcacabcacabcaca

Output 2 :-

Enter the String :

4[b2[c2[a]]]

bcaacaabcaacaabcaacaabcaacaa

Output 3 :-

Enter the String :

3[a2[c]]

Accaccacc

Problem 2:

```
package Stack;

import java.util.*;

public class Problem_s2 {

    static Scanner sc = new Scanner(System.in);

    public static void main(String[] args) {
        System.out.println("Enter the String : ");
        String str = sc.next();
        ArrayList<Character> list = new ArrayList<>();
        for(int i=0;i<str.length();i++) {
            if(!list.contains(str.charAt(i))) {
                list.add(str.charAt(i));
            }
        }
        Collections.sort(list);
        String result="";
        for(int i=0;i<list.size();i++) {
            result += list.get(i);
        }
        System.out.println("Answer : "+result);
    }
}
```

Output 1:-

Enter the String :

bcdaechgged

Answer : abcdegh

Output 2:-

Enter the String :

cbacdbc

Answer : abcd

Problem 3:

```
package Stack;

import java.util.Scanner;

public class Problem_s3 {

    static Scanner sc = new Scanner(System.in);

    public static void main(String[] args) {
        System.out.println("String ??");
        String str = sc.next();
        System.out.println("No. of elements to remove ??");
        int n = sc.nextInt();
        System.out.println("Lowest val : "+lowestVal(str,n));
    }

    static String result = "";

    private static void lowest(String str, int n) {

        if(n==0) {
            result += str;
            return;
        }
        if(n>=str.length()) {
            return;
        }
        int minIdx=0;
        for(int i=1;i<n+1;i++) {
            if(str.charAt(i)<str.charAt(minIdx)) {
                minIdx = i;
            }
        }
        result +=str.charAt(minIdx);
        lowest(str.substring(minIdx+1),n-minIdx);
    }
}
```

```
private static String lowestVal(String str, int n) {  
    lowest( str, n);  
    while(result.charAt(0)=='0') {  
        result = result.substring(1);  
    }  
    return result;  
}  
  
}
```

Output 1:-

String ??

1432219

No. of elements to remove ??

3

Lowest val : 1219

Output 2:-

String ??

10200

No. of elements to remove ??

1

Lowest val : 200

Problem 4:

```
package Stack;
import java.util.Scanner;
public class Problem_s4 {
    static Scanner sc = new Scanner(System.in);
    public static void main(String[] args) {
        System.out.println("String ??");
        String str = sc.next();
        while(str.contains("abc")) {
            str = str.replace("abc", "");
        }
        System.out.println("Answer : ");
        if(str.length()==0) {
            System.out.print(true);
        }
        else {
            System.out.print(false);
        }
    }
}
```

Output 1:-

String ?? ababcc
Answer : True

Output 2:-

String ?? abcabcababcc
Answer : true

Output 3:-

String ?? abccba
Answer : false

Output 4:-

String ?? cababc
Answer : false

Problem 5:

```

package Stack;
import java.util.*;
public class Problem_s5 {
    static Scanner sc = new Scanner(System.in);
    public static void main(String[] args) {
        System.out.print("Enter the size : ");
        int n = sc.nextInt();
        int a[] = new int[n];
        ArrayList<Integer> l = new ArrayList<Integer>();
        System.out.print("Enter the Elements: ");
        for(int i = 0; i < n; i++) {
            a[i] = sc.nextInt();
            if(a[i] == 1) {
                l.add(i);
            }
        }
        System.out.print("Enter the k value: ");
        int k = sc.nextInt();
        int min = n+1;
        //System.out.println(l);
        int j = 0;
        for(int i = 0; i < l.size()-1 && j < l.size();i++) {
            int min1 = 0;
            for( j = i+1; j < k+i && j < l.size(); j++) {

                min1 = min1 + l.get(j)-l.get(j-1)-1;
            }
            //System.out.println(min1);
            if(min1 < min){
                min = min1;
            }
        }
        System.out.println("Number of Swaps required: "+min);
    }
}

```

Output 1:-

```

Enter the size : 6
Enter the Elements: 1 0 0 1 0 1
Enter the k value: 2
Number of Swaps required: 1

```