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Assignment 2

Array, Linked List, Stack and Queue

Lab Algorithm and Data Structures CS-1

1. A. Receive input from users using n sizes (determined by user) array then sum up all the inserted number.

   Source Code : https://onlinegdb.com/UdsMMsnKd

```java
package Assignment_2;

import java.util.*; //input package included

public class Main {
    Run | Debug
    public static void main(String[] args){

    Scanner input = new Scanner(System.in);
    System.out.printf("Entered desired amount of number you want to sum: ");
    //array declaration and array size
    int arraySize = input.nextInt();
    int[] array = new int[arraySize];
    int sum = 0;//to sum up

    for(int i = 0; i < arraySize; i++){ //itterate input and sum
        System.out.printf("Enter the number in consecutive order: ");
        array[i] = input.nextInt();
        sum += array[i]; //sum process
    }

    System.out.printf("Summed up value is : " + sum); //output the value
    }
}
```

   Output:

```
Entered desired amount of number you want to sum: 10
Enter the number in consecutive order: 1
Enter the number in consecutive order: 2
Enter the number in consecutive order: 3
Enter the number in consecutive order: 4
Enter the number in consecutive order: 5
Enter the number in consecutive order: 6
Enter the number in consecutive order: 7
Enter the number in consecutive order: 8
Enter the number in consecutive order: 9
Enter the number in consecutive order: 10
Summed up value is : 55
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```

   B. Implement same concept with Linked

   Source Code: https://onlinegdb.com/3fE6O9okN

```java
package Assignment_2;

import java.util.*; //input package included

public class Array {
    Run | Debug
    public static void main(String[] args){

    Scanner input = new Scanner(System.in);
    System.out.printf("Entered desired amount of number you want to sum: ");
    //array declaration and array size
    int arraySize = input.nextInt();
    int[] array = new int[arraySize];
    int sum = 0;//to sum up

    for(int i = 0; i < arraySize; i++){ //itterate input and sum
        System.out.printf("Enter the number in consecutive order: ");
        array[i] = input.nextInt();
        sum += array[i]; //sum process
    }

    System.out.printf("Summed up value is : " + sum); //output the value
    }
```

Output:

```
Entered desired amount of number you want to sum: 10
Enter the number in consecutive order: 7
Enter the number in consecutive order: 3
Enter the number in consecutive order: 5
Enter the number in consecutive order: 8
Enter the number in consecutive order: 9
Enter the number in consecutive order: 2
Enter the number in consecutive order: 4
Enter the number in consecutive order: 1
Enter the number in consecutive order: 4
Enter the number in consecutive order: 5
The total value of inserted integers is: 48
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```

2. Create array that stores 10 numbers, then triple all inserted number.

   Source Code: https://onlinegdb.com/bc5sHllln

```java
package Assignment_2;

import java.util.*;

public class Number2 {
    Run | Debug
    public static void main(String[] args){
        Scanner input = new Scanner(System.in);
        int[] array = new int[10]; //array declaration

        System.out.printf("Enter data seperated by spaces: ");
        for(int i = 0;i < 10; i++){ //itterate input
            array[i] = input.nextInt();
            array[i] *= 3; //data multipled by 3
        }
        System.out.println("The Data inside array after multiplied by 3 is given as: ");
        for(int i = 0;i < 10; i++){ //itterate output
            System.out.printf(array[i] + " ");
        }
    }
}
```

Output:

```
C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java\bin
Enter data seperated by spaces: 1 2 3 4 5 6 7 8 9 10
The Data inside array after multiplied by 3 is given as:
3 6 9 12 15 18 21 24 27 30
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```

3. Create a program that reversed the input string from user.

Source Code: https://onlinegdb.com/AKAlfSpz0

```java
package Assignment_2;

import java.util.*;

public class Number3{
    Run | Debug
    public static void main(String[] args){
        //linked list implementation
        LinkedList<Character> words = new LinkedList<Character>();
        Scanner input = new Scanner(System.in); //input
        System.out.print("Enter the words you want to reverse: ");
        String word = input.nextLine();
        int size = word.length();

        for(int i = 0; i < size; i++){
            words.add(word.charAt(i)); //push string to linked list by char
        }
        for(int i = size-1; i >= 0; i--){
            System.out.print(words.get(i)); //sysout the reversed order
        }
    }
}
```

Output:

```
Enter the words you want to reverse: ramzy
yzmar
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```

4. Create a program to check whether the string is palindrome or not.

Source Code: https://onlinegdb.com/_j7Itzsfi

```java
package Assignment_2;

import java.util.*;

public class Number4{
    Run | Debug
    public static void main(String[] args){
        //linked list declaration
        LinkedList<Character> words = new LinkedList<Character>();
        Scanner input = new Scanner(System.in);
        //input
        System.out.print("Palindrome Checker : ");
        String word = input.nextLine();
        //size declaration
        int size = word.length();
        int front = 0;
        int back = size - 1;
        //itterate to check
        boolean ifPal = true;
        for(int i = 0; i < size; i++){
            words.add(word.charAt(i));
        }
        while(front <=  back){
            if(words.get(front) == words.get(back))
                ifPal = true;
            else{
                ifPal = false;
                break;
            }
            front++;
            back--;
        }
        if(ifPal == true)
            System.out.println("Palindrome");
        else
            System.out.println("NOT Palindrome");
    }
}
```

Output:

```
Palindrome Checker : ramzyizza
NOT Palindrome
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```

```
Palindrome Checker : tocacot
Palindrome
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```

5. Create a program that calculates the parking fee that must be paid for each car in the parking lot. Each car has the information on the car model and the parking time. Assume the rate is Rp. 2000 per hour.

   Source Code: https://onlinegdb.com/-0L_kAgXC

```java
package Assignment_2;

import java.util.*;

public class Number5 {
    Run | Debug
    public static void main(String[] args){
        String[] carModel = new String[5];
        carModel[0] = "La Ferarri";
        carModel[1] = "Toyota Avanza";
        carModel[2] = "Aston Martin DBS";
        carModel[3] = "Toyota Agya";
        carModel[4] = "Bugatti Divo";

        int[] carTime = new int[5];
        carTime[0] = 60; //minutes
        carTime[1] = 120; //minutes
        carTime[2] = 180; //minutes
        carTime[3] = 240; //minutes
        carTime[4] = 270; //minutes

        int position = 1;
        System.out.println("Welcome to Ramzy's Parking System! \n");
        System.out.println("Please Choose your car below:");
        for(int i = 0; i< 5; i++){
            System.out.println("Car Model " + position + " : " + carModel[i]);
            System.out.println("Time Parked : " + carTime[i] + " Minutes.\n");
            position++;
        }

        System.out.print("Enter model number: ");
        Scanner input = new Scanner(System.in);
        int model = input.nextInt();
        int price = carTime[model-1]/60 * 2000;

        System.out.println("Car Model: " + carModel[model-1]);
        System.out.println("Time Parked: " + carTime[model-1] + " Minutes");
        System.out.println("Total Price: " + price);
    }
}
```

Output:

```
Welcome to Ramzy's Parking System!

Please Choose your car below:
Car Model 1 : La Ferarri
Time Parked : 60 Minutes.

Car Model 2 : Toyota Avanza
Time Parked : 120 Minutes.

Car Model 3 : Aston Martin DBS
Time Parked : 180 Minutes.

Car Model 4 : Toyota Agya
Time Parked : 240 Minutes.

Car Model 5 : Bugatti Divo
Time Parked : 270 Minutes.

Enter model number: 3
Car Model: Aston Martin DBS
Time Parked: 180 Minutes
Total Price: 6000
PS C:\Users\themi\Downloads\Assignment 2 - Lab ASD\Main.java>
```