Competitive Programming Lab - 12

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Pig Latin language Problem :

Q1.) Pig Latin is a language or language game. Here are the steps with any word. First, move the first consonant or consonant cluster to the end of the word. Second, add "ay" to the end of the word. For example, the word "banana" would become "ananabay."

Write a method in Java that turns a string that contains words into the equivalent in Pig Latin.

CODE :

```
import java.util.*;
public class PigLatinLang {
     public String pigLatin(String str){
     String nrmStr = str.toUpperCase();
     String pigStr = "";
     int code=1;
     for(int i=0;i<nrmStr.length();i++)
     {
          char x=nrmStr.charAt(i);
          if(x=='A' || x=='E' || x=='I' || x=='O' ||x=='U')
          {
               pigStr=nrmStr.substring(i)+nrmStr.substring(0,i)+"AY";
               code=1;
               break;
          }
          if(code==0)
          {
          pigStr=nrmStr+"AY";
          }
     }
     return pigStr;
     }
     public static void main(String args[]) {
```

```
      Scanner sc = new Scanner(System.in);
      PigLatinLang p = new PigLatinLang();
      for(int i=0;i<5;i++){
            System.out.print("Enter word: ");
            String str = sc.nextLine();
      System.out.println(str+" in Piglatin format is "+p.pigLatin(str));
      }

      }
}
```

OUTPUT:

Result

compiled and executed in 76.357 sec(s)

```
Enter the word: raghuvaran
raghuvaran in Piglatin format is AGHUVARANRAY

Enter the word: taran
taran in Piglatin format is ARANTAY

Enter the word: 19bce7346
19bce7346 in Piglatin format is E734619BCAY

Enter the word: programming
programming in Piglatin format is OGRAMMINGPRAY

Enter the word: global
global in Piglatin format is OBALGLAY
```

Result

compiled and executed in 83.867 sec(s)

```
Enter the word: america
america in Piglatin format is AMERICAAY

Enter the word: hello world
hello world in Piglatin format is ELLO WORLDHAY

Enter the word: thank you
thank you in Piglatin format is ANK YOUTHAY

Enter the word: donseenu
donseenu in Piglatin format is ONSEENUDAY

Enter the word: sai kumar
sai kumar in Piglatin format is AI KUMARSAY
```

N PAIRS OF BALANCED PARENTHESES

Q2.) Write a program to print all the LEADERS in the array. An element is leader if it is greater than all the elements to its right side. And the rightmost element is always a leader. For example in the array {16, 17, 4, 3, 5, 2}, leaders are 17, 5 and 2. Let the input array be arr[] and size of the array be size.

CODE:

```
import java.util.Scanner;
public class LeadersOfArray
{
```

```
    public static void main(String[] args)
    {
        Scanner sr = new Scanner(System.in);
        System.out.print("Enter Size of an array : ");
        int n = sr.nextInt();
        int a[] = new int[n];
        System.out.print("\nEnter "+n+" Elements of an array : \nArray : [");
        a[0] = sr.nextInt();
        for(int i=1;i<n;i++)
        {
            System.out.print(",");
            a[i] = sr.nextInt();
        }
        System.out.print("]\nLeaders Elements are : ");
        int cur_max = -1;
        for(int i=n-1;i>=0;i--)
        {
          if(a[i]>cur_max)
          {
              System.out.print(a[i]+" ");
              cur_max = a[i];
          }
        }
     }
}
```

OUTPUT:

Result
compiled and executed in 67.884 sec(s)

```
Enter Size of an array : 5

Enter 5 Elements of an array :
Array : [8 ,2 ,4 ,1 ,7 ]
Leaders Elements are : 7 8
```

Result
compiled and executed in 30.37 sec(s)

```
Enter Size of an array : 7

Enter 7 Elements of an array :
Array : [8 ,9 ,2 ,4 ,1 ,6 ,7 ]
Leaders Elements are : 7 9
```

Result
compiled and executed in 39.853 sec(s)

```
Enter Size of an array : 9

Enter 9 Elements of an array :
Array : [6 ,2 ,11 ,9 ,12 ,6 ,3 ,1 ,8 ]
Leaders Elements are : 8 12
```

Rearrange the array elements alternatively

Q3.) Given a sorted array of positive integers. Your task is to rearrange the array elements alternatively i.e first element should be max value, second should be min value, third should be second max, fourth should be second min and so on. Note: Modify the original array itself.

Example 1:

Input:

```
N = 6

arr[] = {1,2,3,4,5,6}
```

Output: 6 1 5 2 4 3

Explanation:
Max element = 6, min = 1, second max = 5, second min = 2, and so on...

Modified array is : 6 1 5 2 4 3.

Example 2:

Input :

```
N = 11

arr[]={10,20,30,40,50,60,70,80,90,100,110}
```

Output : 110 10 100 20 90 30 80 40 70 50 60

Explanation :
Max element = 110, min = 10, second max = 100, second min = 20, and so on...

Modified array is :
110 10 100 20 90 30 80 40 70 50 60.

CODE:

```
import java.util.*;
```

```
public class MyClass {
      public static void maxMinCombi(int array[]){
      int temp[] = new int [array.length];
      int N = array.length;
      for (int i=0; i<N; i++)
            {
                  temp[i] = 0;
            }
      int low=0, high=N-1;
      int X = 1;
      for (int i=0; i<N; i++)
      {
            if(X==1)
                  {
                  temp[i] = array[high--];
                  }
            else
                  {
                  temp[i] = array[low++];
                  }
            if(X==1)
            {
                  X=0;
            }
            else
            {
                  X=1;
            }
      }
      for (int i=0; i<N; i++)
      {
            array[i] = temp[i];
      }
      }
      public static void main(String args[]) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter Size of an array : ");
      int n = sc.nextInt();
      int array[] = new int[n];
      System.out.print("\nEnter "+n+" Elements : \nArray : [ ");
      array[0] = sc.nextInt();
      for(int i=1;i<n;i++)
```

```
	{
		System.out.print(",");
		array[i] = sc.nextInt();
	}
	System.out.print("]\nMaximum Minimum combination an array is :");
	maxMinCombi(array);
	System.out.print("[ "+array[0]);

	for(int i=1;i<n;i++)
	{
		System.out.print(", "+array[i]);
	}
	System.out.print(" ]\n");
	}
}
```

OUTPUT:

Result

compiled and executed in 23.401 sec(s)

```
Enter Size of an array : 6
Enter 6 Elements :
Array : [ 4 ,2 ,5 ,8 ,1 ,3 ]
Maximum Minimum combination an array is :[ 3, 4, 1, 2, 8, 5 ]
```

Result

compiled and executed in 29.961 sec(s)

```
Enter Size of an array : 8
Enter 8 Elements :
Array : [ 3 ,2 ,1 ,9 ,21 ,45 ,7 ,5 ]
Maximum Minimum combination an array is :[ 5, 3, 7, 2, 45, 1, 21, 9 ]
```

Result

compiled and executed in 28.431 sec(s)

```
Enter Size of an array : 5
Enter 5 Elements :
Array : [ 8 ,-2 ,9 ,5 ,7 ]
Maximum Minimum combination an array is :[ 7, 8, 5, -2, 9 ]
```