ASSIGNMENT

08-08-2023

QUESTION 1

```
import java.util.Scanner;


interface AdvancedArithmetic{
	int divisor_sum(int n);
}


class MyCalculator implements AdvancedArithmetic
{

	@Override
	public int divisor_sum(int n) {
		// TODO Auto-generated method stub
		int sum = 0;
		for (int i = 1; i <= n; i++)
		{
			if ((n%i) == 0)
			{
				sum += i;
			}
		}
		return sum;
	}
```

```
}
public class oops1 {

	public static void main(String[] args) {
		Scanner sc = new Scanner(System.in);
		int n = sc.nextInt();
		MyCalculator c = new MyCalculator();
		System.out.println(c.divisor_sum(n));

	}

}
```

QUESTION 2

```
import java.util.ArrayList;
import java.util.Scanner;

public class oops2 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc = new Scanner(System.in);
		int n = sc.nextInt();
		int k = sc.nextInt();
		String arr[] = new String[n];
		ArrayList<String> arr1 = new ArrayList<>();
```

```
		for (int i = 0; i < n; i++)
		{
			arr[i] = sc.next();
			arr1.add(arr[i]);

		}
		String order = sc.next();
		int flag = 1;
		for (int i = 0; i < n; i++)
		{
			for(int j = i+1; j < n; j++)
			{
				char a = arr[i].charAt(0);
				char b = arr[j].charAt(0);

				for (int t = 0; t < k; t++)
				{
					for (int t1 = t+1; t1 < k; t1++)
					{
						//System.out.println(a+" "+b+"
"+order[t1]+" "+order[t]);
						if (order.charAt(t1)==a &&
order.charAt(t)==b)
						{
							System.out.println("yes");
							flag = 0;
						}
					}
				}
```

```
                }


            }
            System.out.println(flag);



      }

}
```

QUESTION 3

```
interface MenuItem
{
      float cheeseburger();
      float spinachsalad();

      float orangesoda();
      float clubsandwhich();
      float cosleslaw();
      float Cappucino();

}
class Sandwhich implements MenuItem
{
      boolean checkname(String name)
      {
            if (name.equals("cheeseburger") || name.equals("clubsandwhich"))
                  return true;
```

```
		return false;
	}
	@Override
	public float spinachsalad() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float orangesoda() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float cosleslaw() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float Cappucino() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float cheeseburger() {
		// TODO Auto-generated method stub
		return 2.75f;
	}
	@Override
	public float clubsandwhich() {
```

```
		// TODO Auto-generated method stub
		return 2.75f;
	}
	String cheeseburger(String name)
	{
		return "cheeseburger";
	}
	String clubsandwhich(String name)
	{
		return "clubsandwhich";
	}

}
class Salad implements MenuItem
{
	boolean checkname(String name)
	{
		if (name.equals("spinachsalad") || name.equals("coleslaw"))
			return true;
		return false;
	}
	@Override
	public float cheeseburger() {
		// TODO Auto-generated method stub
		return 0;
	}

	@Override
	public float spinachsalad() {
```

```
		// TODO Auto-generated method stub
		return 1.15f;
	}

	@Override
	public float orangesoda() {
		// TODO Auto-generated method stub
		return 0;
	}

	@Override
	public float clubsandwhich() {
		// TODO Auto-generated method stub
		return 0;
	}

	@Override
	public float cosleslaw() {
		// TODO Auto-generated method stub
		return 3.50f;
	}
	String cosleslaw(String name)
	{
		return "cosleslaw";
	}
	String spinachsalad(String name)
	{
		return "spinachsalad";
	}
```

```
	@Override
	public float Cappucino() {
		// TODO Auto-generated method stub
		return 0;
	}
}
class Drink implements MenuItem
{
	boolean checkname(String name)
	{
		if (name.equals("orangesoda") || name.equals("cappucino"))
			return true;
		return false;
	}

	@Override
	public float cheeseburger() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float spinachsalad() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float orangesoda() {
		// TODO Auto-generated method stub
```

```
		return 1.25f;
	}
	@Override
	public float clubsandwhich() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float cosleslaw() {
		// TODO Auto-generated method stub
		return 0;
	}
	@Override
	public float Cappucino() {

		// TODO Auto-generated method stub
		return 2.30f;
	}
	String cappucino(String name)
	{
		return "cappucino";
	}
	String orangesoda(String name)
	{
		return "orangesoda";
	}
}
class menu
{
```

```
	void create(String a, String b, String c)
	{
		Sandwhich s1 = new Sandwhich();
		Salad s2 = new Salad();
		Drink d1 = new Drink();
		if (s1.checkname(a) && s2.checkname(b) && d1.checkname(c))
		{
			System.out.println(s1+"\\"+s2+"\\"+d1);
		}
		else
		{
			System.out.println("Choosen Trio is incorrect! Please choose
correct trio");
		}

	}
	float generateBill(String a, String b, String c)
	{
		Sandwhich s1 = new Sandwhich();
		Salad s2 = new Salad();
		Drink d1 = new Drink();
		float f1 = 0;
		float f2 = 0;
		float f3 = 0;
		if (s1.cheeseburger(a).equals(a))
		{
			f1 = s1.cheeseburger();
		}
		if (s1.clubsandwhich(a).equals(a))
```

```
{
	f1 = s1.clubsandwhich();
}
if (s2.spinachsalad(b).equals(b))
{
	f2 = s2.spinachsalad();
}
if (s2.cosleslaw(b).equals(b))
{
	f2 = s2.cosleslaw();
}
if (d1.orangesoda(c).equals(c))
{
	 f3 = d1.orangesoda();
}
if (d1.cappucino(c).equals(c))
{
	f3 = d1.Cappucino();
}
float sum = 0;
float second = 0;
if ( f1 > f2)
{
	sum += f1;
	second = f2;
}
else
{
	sum += f2;
```

```
                second = f1;
            }
            if (f3 > second)
            {
                sum += f3;
            }
            else
            {
                sum += f2;
            }
            System.out.println(sum);
            return sum;
        }
}
public class oops3 {

        public static void main(String[] args) {
            // TODO Auto-generated method stub
            menu m1 = new menu();
            m1.create("cheeseburger", "spinachsalad", "orangesoda");
            m1.generateBill("cheeseburger", "spinachsalad", "orangesoda");



        }


}
```

QUESTION 4

```
interface DigitalTree
```

```
{
	int absorbSunlight(int hours);
	String getTreeDetails();
}
class Binarytree implements DigitalTree
{

	@Override
	public int absorbSunlight(int hours) {
		// TODO Auto-generated method stub
		return 2*hours;
	}

	@Override
	public String getTreeDetails() {
		// TODO Auto-generated method stub
		return "BinaryOakTree";
	}

}
class Quantumtree implements DigitalTree
{

	@Override
	public int absorbSunlight(int hours) {
		// TODO Auto-generated method stub
		return 3*hours^2;
	}
```

```
	@Override
	public String getTreeDetails() {
		// TODO Auto-generated method stub
		return "QuantumPineTree";
	}

}
class Neuraltree implements DigitalTree
{

	@Override
	public int absorbSunlight(int hours) {
		// TODO Auto-generated method stub
		return hours^3;
	}

	@Override
	public String getTreeDetails() {
		// TODO Auto-generated method stub
		return "NeuralTeekTree";
	}
}
class ForestManager
{
	Quantumtree t1 = new Quantumtree();
	Binarytree t2 = new Binarytree();
	Neuraltree t3 = new Neuraltree();
	int produceEnergyForForest(int hours)
	{
```

```
            return t1.absorbSunlight(hours) + t2.absorbSunlight(hours) +
t3.absorbSunlight(hours);

      }

      void getForestReport()

      {

            System.out.println("The trees in forest are:");

            System.out.println(t1.getTreeDetails() +" "+t2.getTreeDetails()+"
"+t3.getTreeDetails());

      }

}

public class oops4 {


      public static void main(String[] args) {

            // TODO Auto-generated method stub

            ForestManager f1 = new ForestManager();

            System.out.println("Total Energy Produced is:");

            int k = f1.produceEnergyForForest(2);

            System.out.println(k);

            f1.getForestReport();









      }


}
```