2013 icse

- **Define a class called FruitJuice with the following description:**

Instance variables/data members:
int product_code – stores the product code number
String flavour – stores the flavor of the juice. (orangle, apple, etc.)
String pack_type – stores the type of packaging (tetra-pack, bottle, etc.)
int pack_size – stores package size (200ml, 400ml, etc.)
int product_price – stores the price of the product
Member methods:
FruitJuice() – default constructor to initialize integer data members to zero and string data members to “”
void input() – to input and store the product code, flavor, pack type, pack size and product price
void discount() – to reduce the product price by 10
void display() – to display the product code, flavor, pack type, pack size and product price

.

```
import java.util.*;
class FruitJuice
{
    // instance variables / data members
    int product_code;
    String flavour;
    String pack_type;
    int pack_size, product_price;

    // zero-argument constructor
    public FruitJuice()
    {
        product_code = 0;
        flavour = "";
        pack_type = "";
        pack_size = 0;
        product_price = 0;
    }

    // input and store the member details
    public void input()
    {
        product_code = askInt("Enter the product code: ");
        flavour = askString("Enter the flavour: ");
        pack_type = askString("Enter the pack type: ");
        pack_size = askInt("Enter the pack size: ");
        product_price = askInt("Enter the product price: ");
    }

    // compute the discount
    public void discount()
    {
        product_price -= 10;
    }

    // display the object details
    public void display()
    {
        System.out.println("Product code : " + product_code);
        System.out.println("Flavour      : " + flavour);
        System.out.println("Pack type    : " + pack_type);
        System.out.println("Pack size    : " + pack_size + " ml.");
        System.out.println("Product price: " + product_price + " Rs.");
        System.out.println();
    }
```

```
    // utility method to ask user to enter an int
    // and return the int value entered
    public int askInt(String prompt)
    {
        Scanner sc = new Scanner( System.in );
        System.out.print(prompt);
        int n = sc.nextInt();
        String temp = sc.nextLine(); // read the end of line
        return n;
    }

    // utility method to ask user to enter a String
    // and return the String value entered
    public String askString(String prompt)
    {
        Scanner sc = new Scanner( System.in );
        System.out.print(prompt);
        String s = sc.nextLine();
        return s;
    }

    // main method to execute the class
    public static void main(String[] args)
    {
        FruitJuice obj = new FruitJuice();
        obj.input();    // (1) ask user data for one juice
        obj.display(); // (2) display
        obj.discount(); // (3) compute discount
        obj.display();  // (4) display discounted price
    }
}
```

Sample Output:

```
Enter the product code: 101
Enter the flavour: Water Melon
Enter the pack type: Tetra Pack
Enter the pack size: 200
Enter the product price: 100
Product code : 101
Flavour      : Water Melon
Pack type    : Tetra Pack
Pack size    : 200 ml.
Product price: 100 Rs.

Product code : 101
Flavour      : Water Melon
Pack type    : Tetra Pack
Pack size    : 200 ml.
Product price: 90 Rs.
```

- **The International Standard Book Number (ISBN) is a unique numeric book identifier which is printed on every book. The ISBN is based upon a 10-digit code. The ISBN is legal if 1*digit1 + 2*digit2 + 3*digit3 + 4*digit4 + 5*digit5 + 6*digit6 + 7*digit7 + 8*digit8 + 9*digit9 + 10*digit10 is divisible by 11.**

Example: For an ISBN 1401601499
Sum=1*1 + 2*4 + 0*0 + 4*1 + 5*6 + 6*0 + 7*1 + 8*4 + 9*9 + 10*9 = 253 which is divisible by 11.
Write a program to:
(i) input the ISBN code as a 10-digit number
(ii) If the ISBN is not a 10-digit number, output the message "Illegal ISBN" and terminate the program

(iii) If the number is 10-digit, extract the digits of the number and compute the sum as explained above.
If the sum is divisible by 11, output the message "Legal ISBN". If the sum is not divisible by 11, output the message "Illegal ISBN".

```
import java.util.*;
class Q5
{
    public static void main(String[] args)
    {
        // input the 10-digit ISBN number
        Scanner sc = new Scanner( System.in );
        System.out.print("Enter the 10-digit ISBN number: ");
        long isbn = sc.nextLong();
        String temp = sc.nextLine(); // for the trailing newline

        // check the length is 10, else terminate the program
        String s = "" + isbn;
        if( s.length() != 10 )
        {
            System.out.println("Illegal ISBN");
            return; // terminate the program
        }

        // compute the sum of the digits
        int sum = 0;
        for(int i=0; i < s.length(); i++)
        {
            int digit = Integer.parseInt(s.substring(i, i+1));
            int digitNo = i + 1;
            int term = digitNo * digit;
            sum += term;
        }

        // check if divisible by 11 and output
        // an appropriate message
        if( (sum%11) != 0 )
        {
            System.out.println("Illegal ISBN");
        }
        else
        {
            System.out.println("Legal ISBN");
        }
    }
}
```

The output over multiple executions is shown below:

```
Enter the 10-digit ISBN number: 123456789
Illegal ISBN
Enter the 10-digit ISBN number: 9876543210
Legal ISBN
Enter the 10-digit ISBN number: 1234567890
Illegal ISBN
Enter the 10-digit ISBN number: 1401601499
Legal ISBN
```