



Laborator 4 – Aplicatii Java

1. Programarea vizuala

Scrieti, compilati si rulati toate exemplele din acest laborator:

1. Fisierul se numeste *testSchimbareCulori.java*:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

class SchimbareCulori extends JFrame implements ActionListener
{
    Container x;
    SchimbareCulori(String titlu)
    {
        super(titlu);
        setBounds(100,100,300,180);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        x = getContentPane();
        x.setLayout(null);
        JButton b1 = new JButton("Rosu");
        b1.setBounds(10,10,100,25);
        b1.addActionListener(this);
        x.add(b1);
        JButton b2 = new JButton("Verde");
        b2.setBounds(10,45,100,25);
        b2.addActionListener(this);
        x.add(b2);
        JButton b3 = new JButton("Albastru");
        b3.setBounds(10,80,100,25);
        b3.addActionListener(this);
        x.add(b3);
        JButton b4 = new JButton("Gri");
        b4.setBounds(10,115,100,25);
        b4.addActionListener(this);
        x.add(b4);
        setVisible(true);
    }
    public void actionPerformed(ActionEvent ev)
    {
        String t = ev.getActionCommand();
        if(t.compareTo("Rosu")==0)
            x.setBackground(Color.RED);
        if(t.compareTo("Verde")==0)
```

```

        x.setBackground(Color.GREEN);
        if(t.compareTo("Albastru")==0)
        x.setBackground(Color.BLUE);
        if(t.compareTo("Gri")==0)
        x.setBackground(new Color(236,236,236));
    }
}

public class testSchimbareCulori
{
    public static void main(String arg[])
    {
        SchimbareCulori f = new SchimbareCulori("Schimba culoarea de
fundal");
    }
}

```

2. Fisierul se numeste *testCasetaCombo.java*:

```

import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

class CasetaCombo extends JFrame implements ActionListener
{
    JComboBox lista;
    CasetaCombo(String titlu)
    {
        super(titlu);
        setBounds(100,100,300,135);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        Container x = getContentPane();
        x.setLayout(null);
        JLabel et = new JLabel("Alege disciplina preferata");
        et.setBounds(20,10,160,20);
        x.add(et);
        lista = new JComboBox();
        lista.addItem("Programarea calculatoarelor");
        lista.addItem("Proiectarea Algoritmilor");
        lista.addItem("Programare orientata pe obiecte");
        lista.addItem("Baze de date");
        lista.addItem("Proiectarea bazelor de date");
        lista.addItem("Tehnologii web");
        lista.addItem("Aplicatii Java");
        lista.addItem("Alta disciplina");
        lista.setBounds(170,10,100,20);
        x.add(lista);
        JButton b1 = new JButton("Arata alegerea");
    }
}

```

```

        b1.setBounds(75,60,150,25);
        b1.addActionListener(this);
        x.add(b1);
        setVisible(true);
    }

    public void actionPerformed(ActionEvent ev)
    {
        String t = (String)lista.getSelectedItemAt();
        JOptionPane.showMessageDialog(this,"Ai ales "+t);
    }
}

public class testCasetaCombo
{
    public static void main(String arg[])
    {
        CasetaCombo f = new CasetaCombo("Caseta combo: ");
    }
}

```

3. Fisierul se numeste *testButonRadio.java*:

```

import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.util.*;

class ButonRadio extends JFrame implements ActionListener
{
    ButtonGroup bg;
    ButonRadio(String titlu)
    {
        super(titlu);
        setBounds(100,100,300,180);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        Container x = getContentPane();
        x.setLayout(null);
        JLabel l1 = new JLabel("Selecteaza disciplina preferata...");
        l1.setBounds(10,10,200,15);
        x.add(l1);
        JRadioButton rb1 = new JRadioButton("Programare");
        rb1.setBounds(20,30,100,15);
        x.add(rb1);
        JRadioButton rb2 = new JRadioButton("Algebra",true);
        rb2.setBounds(20,50,100,15);
        x.add(rb2);
        JRadioButton rb3 = new JRadioButton("Analiza matematica");
    }
}

```

```

        rb3.setBounds(20,70,100,15);
        x.add(rb3);
        JRadioButton rb4 = new JRadioButton("Fizica");
        rb4.setBounds(20,90,100,15);
        x.add(rb4);
        JButton b1 = new JButton("Ce-am selectat?");
        b1.setBounds(75,120,150,25);
        b1.addActionListener(this);
        x.add(b1);
        bg = new ButtonGroup();
        bg.add(rb1); bg.add(rb2);
        bg.add(rb3); bg.add(rb4);
        setVisible(true);
    }
    public void actionPerformed(ActionEvent ev)
    {
        String s="";
        Enumeration en = bg.getElements();
        while(en.hasMoreElements())
        {
            JRadioButton rb = (JRadioButton)en.nextElement();
            if(rb.isSelected() ) s = s + rb.getText()+" ";
        }
        JOptionPane.showMessageDialog(this,"Ai selectat disciplinele:\n"+s);
    }
}

public class testButonRadio
{
    public static void main(String arg[])
    {
        ButonRadio f = new ButonRadio("Butoane radio: ");
    }
}

```

2. Exceptii in Java

1. Fisierul se numeste *Exceptii_1.java*:

```
import java.util.Scanner;

class Eroare15 extends Exception
{
    Eroare15()
    {
        super("Numarul introdus nu este in intervalul [1,5]...");
    }
}

public class Exceptii_1
{
    public static int citire_numar() throws Eroare15
    {
        System.out.print("dati numarul natural = ");
        int n = new Scanner(System.in).nextInt();
        if (n>=1 && n<=5) return n;
        else throw new Eroare15();
    }
    static public void main(String arg[])
    {
        try{
            System.out.print(" Introdu un numar: ");
            int numar = citire_numar();
            System.out.println(" Numarul citit este: "+numar);
        }
        catch(Eroare15 er)
        {
            System.out.println(" Exceptie: "+er.getMessage());
        }
        catch(NumberFormatException er)
        {
            System.out.println(" Exceptie: Valoarea introdusa nu poate fi
            considerata numar intreg");
        }
    }
}
```

2. Fisierul se numeste *Exceptii_2.java*:

```
import java.util.*;

class Alfanumeric extends RuntimeException
{
    String mesaj()
    {
        return "Sirul nu este alfabetic....";
    }
}

public class Exceptii_2
{
    static String citSirAlfa()
    {
        String sir;
        Scanner in = new Scanner(System.in);
        sir = in.nextLine();
        boolean gasit = false;
        for(int i=0; i<sir.length(); i++)
            if ( (sir.charAt(i)<'A' || sir.charAt(i)<'Z') && (sir.charAt(i)<'a'
                || sir.charAt(i)<'z') && sir.charAt(i)!=' ')
                gasit=true;
            if (gasit)
                throw new Alfanumeric();
            else return sir;
    }
    static public void main(String arg[])
    {
        boolean corect = false;
        try{
            System.out.print(" Introdu un sir de caractere: ");
            String s = citSirAlfa();
            System.out.println(" sirul citit este: "+s);
        }
        catch(Alfanumeric er)
        {
            System.out.println(" Exceptie: "+er.mesaj());
        }
    }
}
```

3. Fisierul se numeste *Exceptii_3.java*:

```
import java.util.*;
class Eroare extends Exception
{
    Eroare(String mesaj)
    {
        super(mesaj);
    }
}

class Fractie
{
    int numitor, numarator;
    Fractie(int n, int m) throws Eroare
    {
        numarator = n;
        if (m!=0) numitor=m;
        else throw new Eroare("Numitorul nu poate fi ZERO");
    }

    Fractie adunare(Fractie f) throws Eroare
    {
        int n=numarator*f.numitor + f.numarator*numitor;
        int m=numitor*f.numitor;
        return new Fractie(n,m);
    }

    void afisare()
    {
        System.out.println(" "+numarator+"/"+numitor+" ");
    }
}

public class Exceptie_3
{
    static public void main(String arg[])
    {
        try{
            System.out.print(" Introdu un numaratorul primei fractii: ");
            int n = new Scanner(System.in).nextInt();
            System.out.print(" Introdu un numitorul primei fractii: ");
            int m = new Scanner(System.in).nextInt();
            Fractie f1 = new Fractie(n,m);
            System.out.print(" Introdu un numaratorul celei de-a doua
fractii: ");
            int n = new Scanner(System.in).nextInt();
```

```

        System.out.print(" Introdu un numitorul celei de-a doua
        fractii: ");
        int m = new Scanner(System.in).nextInt();
        Fractie f2 = new Fractie(n,m);
        System.out.print("Suma celor doua fractii este :");
        f1.adunare(f2).afisare();
    }
    catch(Eroare er)
    {
        System.out.println(" Exceptie: "+er.getMessage());
    }
}
}

```

Probleme propuse spre rezolvare

1. Adăugați programului 3 alte metode care permit calculul diferenței, produsului și împărțirii a doua fracții.
2. Se se scrie un program care implementează principalele operații aritmetice pentru numerele complexe (adunare, scădere, înmulțire, împărțire). Coeficienții numerelor complexe vor fi numere reale.

Referinte:

<http://www.javatpoint.com/java-awt>

http://www.tutorialspoint.com/awt/awt_event_handling.htm

Curs practic de Java, Cristian Frasinaru – capitolul Exceptii

<https://docs.oracle.com/javase/tutorial/essential/exceptions/>