1. Write a program that displays ten numbers in the following pattern

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | 1 |  |  |
|  | 2 | 3 | 4 |  |
| 5 | 6 | 7 | 8 | 9 |
|  |  |  |  |  |

…

import java.util.Scanner;

class Pattern1{

public static void main(String args[]){

int end;

int k;

int i;

int j;

int no=0;

Scanner in=new Scanner(System.in);

System.out.println("Enter the Number of Lines");

end=in.nextInt();

for(i=1;i<=end;i++){

for(k=end;k>=i;k--)

System.out.print("\t");

for(j=1;j<=i;j++){

no++;

System.out.print(no);

System.out.print("\t");

}

for(int l=j-2;l>0;l--){

no++;

System.out.print(no);

System.out.print("\t");

}

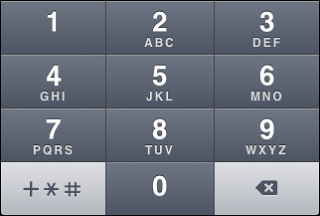
System.out.print("\n");

}

}

}

4. The international standard letter/number mapping found on the telephone is shown below:



Write a program that prompts the user to enter a letter and displays its corresponding number.

import java.util.\*;

import java.util.Scanner;

class Telephone {

public static void main(String args[]) {

String a;

Scanner s1=new Scanner(System.in);

System.out.println(" Enter the Small letter only");

a=s1.next();

if(a.equals("a") || a.equals("b") || a.equals("c"))

System.out.println("2");

else if(a.equals("d") || a.equals("e") || a.equals("f"))

System.out.println("3");

else if(a.equals("g") || a.equals("h") || a.equals("i"))

System.out.println("4");

else if(a.equals("j") || a.equals("k") || a.equals("l"))

System.out.println("5");

else if(a.equals("m") || a.equals("n") || a.equals("o"))

System.out.println("6");

else if(a.equals("p") || a.equals("q") || a.equals("r") || a.equals("s"))

System.out.println("7");

else if(a.equals("t") || a.equals("u") || a.equals("v"))

System.out.println("8");

else if(a.equals("w") || a.equals("x") || a.equals("y") || a.equals("z"))

System.out.println("9");

else

System.out.println("INCORRECT INPUT");

}

}

6. ISBN-13 is a new standard for identifying books. It uses 13 digits d2d3d4d5d6d7d8d9d10d11d12d13.

The last digit d13 is a checksum, which is calculated from the other digits using the following formula:

10 - (d1 + 3d2 + d3 + 3d4 + d5 + 3d6 + d7 + 3d8 + d9 + 3d10 + d11 + 3d12)%10

If the checksum is 10, replace it with 0. Your program should read the input as a string and tell whether the

given string is an ISBN number or not.

[Example valid ISBN : 978013213080, Invalid ISBN : 978013215080 ]

import java.util.Scanner;

class ISBN{

public static void main(String args[]){

long no;

System.out.println("Enter the ISBN Number");

Scanner in=new Scanner(System.in);

no=in.nextLong();

if(checkIsbn(no))

System.out.println("VALID");

else

System.out.println("INVALID");

}

public static boolean checkIsbn(long no){

int k=12;

int sum=0;

int digit;

int csum=0;

csum=(int)(no%10);no=no/10;

while(no>0){

digit=(int)(no%10);

if(k%2==0)

digit\*=3;

k--;

sum=sum+digit;

no=no/10;

}

if(k!=0)

return false;

sum=Math.abs(10-sum%10);

if(sum==10)

sum=0;

if(csum==sum)

return true;

else

return false;

}

}

9. Write a program to display the analog clock/ digital clock using applets.

/\*<applet code="Clock" width=1100 height=400>

</applet>\*/

import java.awt.\*;

import java.applet.\*;

import java.util.Calendar;

public class Clock extends Applet implements Runnable{

Thread t;

String hour\_str,min\_str,sec\_str;

int width,height;

int sec,min,hrs;

int xcoord,ycoord;

public void init(){

setBackground(Color.black);

width=300;

height=300;

t=new Thread(this);

}

public void start(){

t.start();

}

public void run(){

while(true){

try{Thread.sleep(1000);}

catch(InterruptedException e){}

repaint();

}

}

void secHand(double angle, int radius, Graphics g){

angle-=0.5\*Math.PI;

xcoord=(int)(radius\*Math.cos(angle));

ycoord=(int)(radius\*Math.sin(angle));

g.drawLine(width/2,height/2,width/2+xcoord,height/2+ycoord);

}

void hourHand(double angle, int radius, Graphics g){

angle-=0.5\*Math.PI;

xcoord=(int)(radius\*Math.cos(angle));

ycoord=(int)(radius\*Math.sin(angle));

g.drawLine(width/2,height/2,width/2+xcoord,height/2+ycoord);

}

void minHand(double angle, int radius, Graphics g){

angle-=0.5\*Math.PI;

xcoord=(int)(radius\*Math.cos(angle));

ycoord=(int)(radius\*Math.sin(angle));

g.drawLine(width/2,height/2,width/2+xcoord,height/2+ycoord);

}

public void paint(Graphics g){

g.setColor(Color.pink);

g.setFont(new Font("Serief",Font.BOLD,50));

g.drawString("ANALOG",50,350);

g.drawString("DIGITAL",600,350);

Calendar c=Calendar.getInstance();

hrs=c.get(Calendar.HOUR\_OF\_DAY);

if(hrs>12)hrs-=12;

min=c.get(Calendar.MINUTE);

sec=c.get(Calendar.SECOND);

g.setColor(Color.blue);

g.fillOval(0,0,width,height);

//g.setColor(Color.green);

//g.fillRect(350,50,700,200);

g.setColor(Color.green);

g.fillOval(width/2-5,width/2-5,10,10);

hourHand(2\*Math.PI\*hrs/12,width-215,g);

minHand(2\*Math.PI\*min/60,width-185,g);

secHand(2\*Math.PI\*sec/60,width-160,g);

hour\_str=""+c.get(Calendar.HOUR);

min\_str=""+c.get(Calendar.MINUTE);

sec\_str=""+c.get(Calendar.SECOND);

g.setColor(Color.red);

g.setFont(new Font("Sans\_Serief",Font.BOLD,150));

if(c.get(Calendar.HOUR)>=0&&c.get(Calendar.HOUR)<=9)

hour\_str="0"+c.get(Calendar.HOUR);

if(c.get(Calendar.MINUTE)>=0&&c.get(Calendar.MINUTE)<=9)

min\_str="0"+c.get(Calendar.MINUTE);

if(c.get(Calendar.SECOND)>=0&&c.get(Calendar.SECOND)<=9)

sec\_str="0"+sec\_str;

g.drawString(hour\_str+":"+min\_str+":"+sec\_str,400,200);

}

}

10. Write an applet to display a student registration form having fields Student Name, Roll no,

Qualification, branch, Gender. The form should have two button “Submit” and “Reset”.

/\*<applet code="Registration" height=200 width=350>

</applet>\*/

import java.awt.\*;

import java.awt.event.\*;

import java.applet.\*;

public class Registration extends Applet implements ActionListener,ItemListener{

String str="";

String s="";

String msg="";

Label l1,l2,l3,List,Choice;

TextField tf1,tf2;

Button Reset,Submit;

Checkbox male,female;

Choice qual;

List branch;

public void init(){

l1=new Label("Student name");

l2=new Label("Roll no");

l3=new Label("Gender");

tf1=new TextField(30);

tf2=new TextField(30);

male=new Checkbox("MALE");

female=new Checkbox("FEMALE");

Choice =new Label("Qualification");

qual=new Choice();

qual.add("BTECH");

qual.add("BE");

qual.add("BSC");

List=new Label("Branch");

branch=new List();

branch.add("CSE");

branch.add("IT");

branch.add("ECE");

Submit=new Button("SUBMIT");

Reset=new Button("RESET");

add(l1);

add(tf1);

add(l2);

add(tf2);

add(l3);

add(male);

add(female);

add(Choice);

add(qual);

add(List);

add(branch);

add(Submit);

add(Reset);

Submit.addActionListener(this);

Reset.addActionListener(this);

male.addItemListener(this);

female.addItemListener(this);

branch.addItemListener(this);

qual.addItemListener(this);

}

public void actionPerformed(ActionEvent ae){

String str=ae.getActionCommand();

if(str.equals("SUBMIT")){

showStatus("APPLICATION SUBMITTED");

}//close of if

else if(str.equals("RESET")){

tf1.setText(" ");

tf2.setText(" ");

showStatus("ALL FIELDS CLEARED");

}

}

public void itemStateChanged(ItemEvent ie){

if(male.getState()==true)

showStatus("YOU ARE MALE");

else if(female.getState()==true)

showStatus("YOU ARE FEMALE");

else

showStatus("");

}

}

11. Write a program to perform simple arithmetic calculator.

/\*<applet code="Calculator" width=320 height=540>

</applet>\*/

import java.applet.\*;

import java.awt.\*;

import java.awt.event.\*;

import javax.swing.\*;

import javax.swing.event.\*;

public class Calculator extends Applet implements ActionListener{

Button b[]=new Button[20];

TextArea ta;

String str="";

public Insets getInsets(){

return new Insets(30,5,5,5);

}

public void init(){

setBackground(Color.black);

setForeground(Color.black);

ta=new TextArea(1,10);

ta.setVisible(true);

Font f=new Font("Monospaced",Font.BOLD,25);

Font f1=new Font("Monospaced",Font.BOLD,30);

ta.setFont(f1);

setFont(f);

setLayout(new BorderLayout());

add(ta,BorderLayout.NORTH);

Panel p1=new Panel();

Panel p2=new Panel();

p1.setLayout(new GridBagLayout());

p2.setLayout(new GridBagLayout());

GridBagConstraints gbc=new GridBagConstraints();

gbc.ipadx=50;

gbc.ipady=60;

b[1]=new Button("1");

gbc.gridx=0;

gbc.gridy=0;

p1.add(b[1],gbc);

b[1].addActionListener(this);

b[2]=new Button("2");

gbc.gridx=1;

gbc.gridy=0;

p1.add(b[2],gbc);

b[2].addActionListener(this);

b[3]=new Button("3");

gbc.gridx=2;

gbc.gridy=0;

p1.add(b[3],gbc);

b[3].addActionListener(this);

b[4]=new Button("4");

gbc.gridx=0;

gbc.gridy=1;

p1.add(b[4],gbc);

b[4].addActionListener(this);

b[5]=new Button("5");

gbc.gridx=1;

gbc.gridy=1;

p1.add(b[5],gbc);

b[5].addActionListener(this);

b[6]=new Button("6");

gbc.gridx=2;

gbc.gridy=1;

p1.add(b[6],gbc);

b[6].addActionListener(this);

b[7]=new Button("7");

gbc.gridx=0;

gbc.gridy=3;

p1.add(b[7],gbc);

b[7].addActionListener(this);

b[8]=new Button("8");

gbc.gridx=1;

gbc.gridy=3;

p1.add(b[8],gbc);

b[8].addActionListener(this);

b[9]=new Button("9");

gbc.gridx=2;

gbc.gridy=3;

p1.add(b[9],gbc);

b[9].addActionListener(this);

b[10]=new Button(".");

gbc.gridx=0;

gbc.gridy=4;

p1.add(b[10],gbc);

b[10].addActionListener(this);

b[11]=new Button("0");

gbc.gridx=1;

gbc.gridy=4;

p1.add(b[11],gbc);

b[11].addActionListener(this);

b[12]=new Button("x");

gbc.gridx=2;

gbc.gridy=4;

p1.add(b[12],gbc);

b[12].addActionListener(this);

b[13]=new Button("+");

gbc.gridx=0;

gbc.gridy=0;

gbc.ipadx=30;

gbc.ipady=60;

p2.add(b[13],gbc);

b[13].addActionListener(this);

b[14]=new Button("-");

gbc.gridx=0;

gbc.gridy=1;

gbc.ipadx=30;

gbc.ipady=30;

p2.add(b[14],gbc);

b[14].addActionListener(this);

b[15]=new Button("/");

gbc.gridx=0;

gbc.gridy=2;

gbc.ipadx=30;

gbc.ipady=30;

p2.add(b[15],gbc);

b[15].addActionListener(this);

b[16]=new Button("\*");

gbc.gridx=0;

gbc.gridy=3;

gbc.ipadx=12;

gbc.ipady=30;

gbc.fill=GridBagConstraints.HORIZONTAL;

p2.add(b[16],gbc);

b[16].addActionListener(this);

b[17]=new Button("=");

gbc.gridx=0;

gbc.gridy=4;

gbc.ipadx=12;

gbc.ipady=55;

p2.add(b[17],gbc);

b[17].addActionListener(this);

b[18]=new Button("CLEAR");

add(b[18],BorderLayout.SOUTH);

b[18].setBackground(new Color(255,140,0));

b[18].addActionListener(this);

add(p1,BorderLayout.WEST);

add(p2,BorderLayout.EAST);

}

public void actionPerformed(ActionEvent ae){

if(ae.getSource()==b[18])

{

str="";

ta.setText("");

}

if(ae.getSource()==b[1])

{

ta.setText(str+='1');

}

if(ae.getSource()==b[2])

{

ta.setText(str+='2');

}

if(ae.getSource()==b[3])

{

ta.setText(str+='3');

}

if(ae.getSource()==b[4])

{

ta.setText(str+='4');

}

if(ae.getSource()==b[5])

{

ta.setText(str+='5');

}

if(ae.getSource()==b[6])

{

ta.setText(str+='6');

}

if(ae.getSource()==b[7])

{

ta.setText(str+='7');

}

if(ae.getSource()==b[8])

{

ta.setText(str+='8');

}

if(ae.getSource()==b[9])

{

ta.setText(str+='9');

}

if(ae.getSource()==b[10])

{

ta.setText(str+='.');

}

if(ae.getSource()==b[11])

{

ta.setText(str+='0');

}

if(ae.getSource()==b[12])

{

ta.setText(str=str.substring(0,str.length()-1));

}

if(ae.getSource()==b[13])

{

ta.setText(str+='+');

}

if(ae.getSource()==b[14])

{

ta.setText(str+='-');

}

if(ae.getSource()==b[16])

{

ta.setText(str+='\*');

}

if(ae.getSource()==b[15])

{

ta.setText(str+='/');

}

if(ae.getSource()==b[17])

{

float result=0;

char x='w';

boolean op=false;

String first,second;

first=second="";

float a,b;a=b=1;

for(int i=0;i<=str.length()-1;i++){

if(str.charAt(i)=='+'||str.charAt(i)=='-'||str.charAt(i)=='\*'||str.charAt(i)=='/'){

op=true;

x=str.charAt(i);

continue;

}

if(op==false)

first=first+str.charAt(i);

else

second=second+str.charAt(i);

}

a=Float.valueOf(first);

b=Float.valueOf(second);

if(x=='+')

result=(a+b);

if(x=='-')

result=(a-b);

if(x=='\*')

result=(a\*b);

if(x=='/')

result=(a/b);

ta.setText(""+result);

}

}

}

12. Write a program to create a multi-banner applet.

/\* <applet code = "BannerApplet" width = 1000 height = 600> </applet> \*/

import java.applet.\*;

import java.applet.\*;

import java.awt.\*;

public class BannerApplet extends Applet implements Runnable{

String str,str1;

Thread t;

char c,c1;

public void init(){

str="HELLO WORLD...THIS IS ROBO 2.0 :-) ";

str1="WELCOME TO THE WORLD OF ROBOTS ;-)";

}

public void start(){

t=new Thread(this);

t.start();

}

public void run(){

while(true){

try{

Thread.sleep(100);

repaint();

}

catch(InterruptedException e){}

}

}

public void paint(Graphics g)

{

g.setFont(new Font("Monospaced",Font.BOLD,50));

g.setColor(Color.orange);

c=str.charAt(0);

str=str.substring(1,str.length())+c;

g.drawString(str,0,200);

g.setColor(Color.blue);

c1=str1.charAt(0);

str1=str1.substring(1,str1.length())+c1;

g.drawString(str1,0,400);

}}

14. Write a program to display a smiley inside the applet.

/\*<applet code="Smiley" width=1000 height=500>

</applet>\*/

import java.applet.\*;

import java.awt.\*;

public class Smiley extends Applet{

int x[]={500,460,540};

int y[]={200,300,300};

public void init(){

}

public void paint(Graphics g){

g.setColor(Color.yellow);

g.fillOval(300,50,400,400);

g.setColor(Color.white);

g.fillOval(340,150,120,40);

g.fillOval(540,150,120,40);

g.setColor(Color.black);

g.fillPolygon(x,y,3);

g.fillOval(380,150,35,40);

g.fillOval(580,150,35,40);

g.drawArc(330,130,150,60,0,180);

g.drawArc(530,130,150,60,0,180);

g.setColor(Color.red);

g.fillArc(405,300,200,100,0,-180);

//g.drawArc(405,300,200,100,0,-180);

}

}

15. Write a program to display the following pattern

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

import java.util.Scanner;

class Pattern2{

public static void main(String args[]){

int end;

int k;

int i;

int j;

int no=0;

Scanner in=new Scanner(System.in);

System.out.println("Enter the Number of Lines");

end=in.nextInt();

for(i=1;i<=end;i++){

for(k=end;k>i;k--)

System.out.print(" ");

for(j=1;j<=i;j++){

System.out.print("\*");

System.out.print(" ");

}

System.out.print("\n");

}

for(i=1;i<=end;i++){

for(k=1;k<=i;k++)

System.out.print(" ");

for(j=1;j<=(end-i);j++){

System.out.print("\*");

System.out.print(" ");

}

System.out.print("\n");

}

}

}