**4.** Write a Java Program to Demonstrate a Basic Calculator using Applet

Problem Description  
We have to write a program in Java such that it creates a calculator which allows basic operations of addition, subtraction, multiplication and division.

Expected Input and Output  
For creating a calculator, we can have the following different sets of input and output.

To Perform Addition :  
When the addition expression "58+10" is typed,  
it is expected that the result is displayed as "58+10=68.0".  
2. To Perform Subtraction :

When the subtraction expression "100.0-28.25" is typed,  
it is expected that the result is displayed as "100.0-28.25=71.75".  
3. To Perform Multiplication :

When an multiplication expression "113.6539" is typed,it is expected that the result is displayed as "113.6539=4432.35".  
4. To Perform Division : When the denominator is non-zero

When an division expression "25126.0/3" is typed,  
it is expected that the result is displayed as "25126.0/3=8375.33".  
5. To Perform Division : When the denominator is zero

When an division expression "169.0/0" is typed,  
it is expected that the error is displayed as "169.0/0=Zero Divison Error".

import java.awt.\*;

import java.applet.\*;

import java.awt.event.\*;

public class Calculator extends Applet implements ActionListener

{

TextField inp;

public void init()

{

setBackground(Color.white);

setLayout(null);

int i;

inp = new TextField();

inp.setBounds(150,100,270,50);

this.add(inp);

Button button[] = new Button[10];

for(i=0;i<10;i++)

{

button[i] = new Button(String.valueOf(9-i));

button[i].setBounds(150+((i%3)\*50),150+((i/3)\*50),50,50);

this.add(button[i]);

button[i].addActionListener(this);

}

Button dec=new Button(".");

dec.setBounds(200,300,50,50);

this.add(dec);

dec.addActionListener(this);

Button clr=new Button("C");

clr.setBounds(250,300,50,50);

this.add(clr);

clr.addActionListener(this);

Button operator[] = new Button[5];

operator[0]=new Button("/");

operator[1]=new Button("\*");

operator[2]=new Button("-");

operator[3]=new Button("+");

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

for(i=0;i<4;i++)

{

operator[i].setBounds(300,150+(i\*50),50,50);

this.add(operator[i]);

operator[i].addActionListener(this);

}

operator[4].setBounds(350,300,70,50);

this.add(operator[4]);

operator[4].addActionListener(this);

}

String num1="";

String op="";

String num2="";

//Function to calculate the expression

public void actionPerformed(ActionEvent e)

{

String button = e.getActionCommand();

char ch = button.charAt(0);

if(ch>='0' && ch<='9'|| ch=='.')

{

if (!op.equals(""))

num2 = num2 + button;

else

num1 = num1 + button;

inp.setText(num1+op+num2);

}

else if(ch=='C')

{

num1 = op = num2 = "";

inp.setText("");

}

else if (ch =='=')

{

if(!num1.equals("") && !num2.equals(""))

{

double temp;

double n1=Double.parseDouble(num1);

double n2=Double.parseDouble(num2);

if(n2==0 && op.equals("/"))

{

inp.setText(num1+op+num2+" = Zero Division Error");

num1 = op = num2 = "";

}

else

{

if (op.equals("+"))

temp = n1 + n2;

else if (op.equals("-"))

temp = n1 - n2;

else if (op.equals("/"))

temp = n1/n2;

else

temp = n1\*n2;

inp.setText(num1+op+num2+" = "+temp);

num1 = Double.toString(temp);

op = num2 = "";

}

}

else

{

num1 = op = num2 = "";

inp.setText("");

}

}

else

{

if (op.equals("") || num2.equals(""))

op = button;

else

{

double temp;

double n1=Double.parseDouble(num1);

double n2=Double.parseDouble(num2);

if(n2==0 && op.equals("/"))

{

inp.setText(num1+op+num2+" = Zero Division Error");

num1 = op = num2 = "";

}

else

{

if (op.equals("+"))

temp = n1 + n2;

else if (op.equals("-"))

temp = n1 - n2;

else if (op.equals("/"))

temp = n1/n2;

else

temp = n1\*n2;

num1 = Double.toString(temp);

op = button;

num2 = "";

}

}

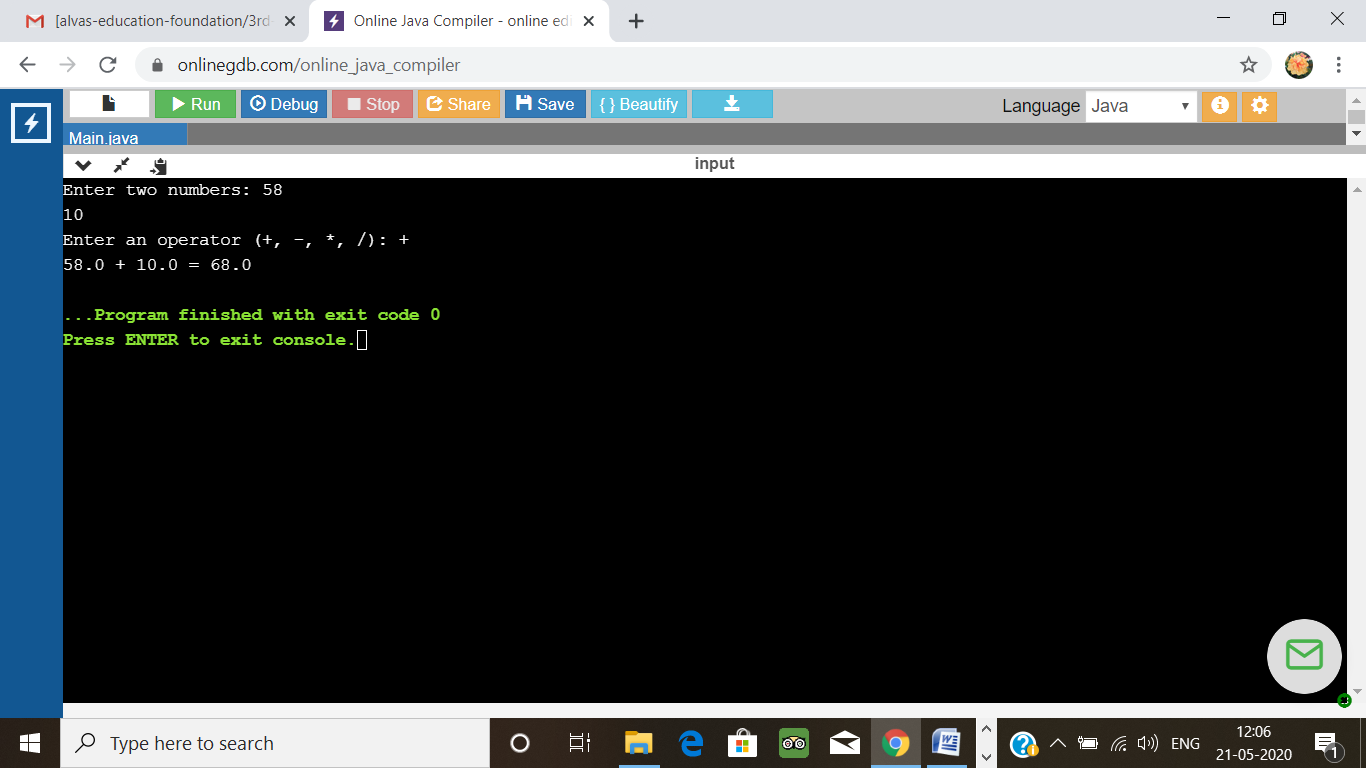
inp.setText(num1+op+num2);

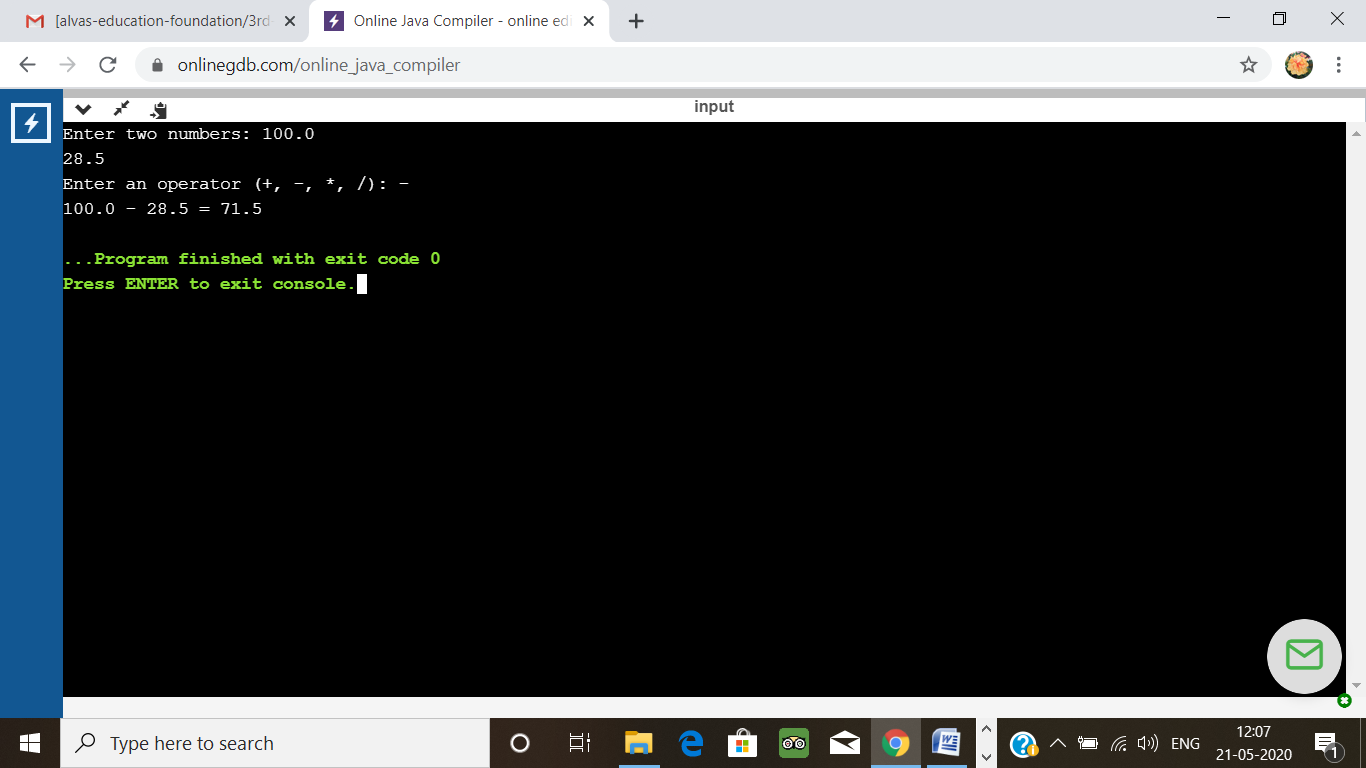
}

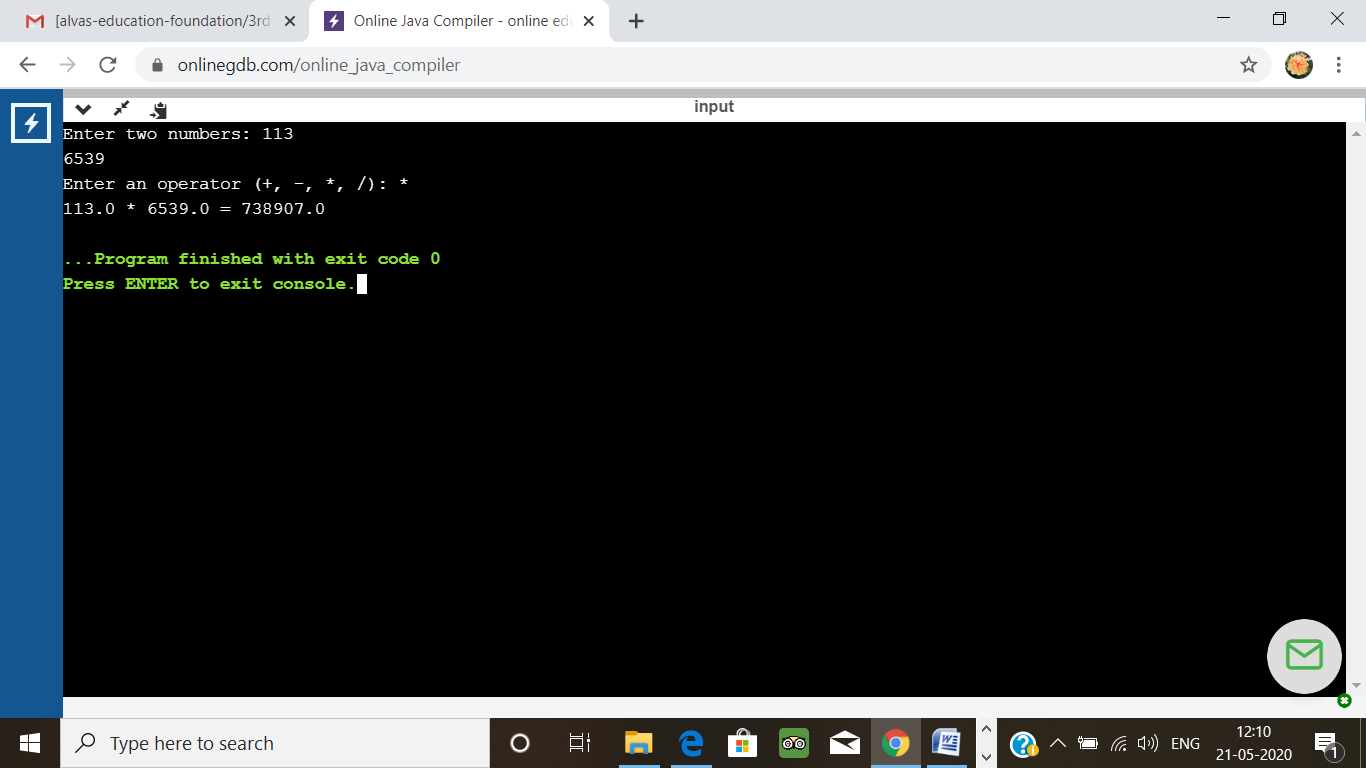
}

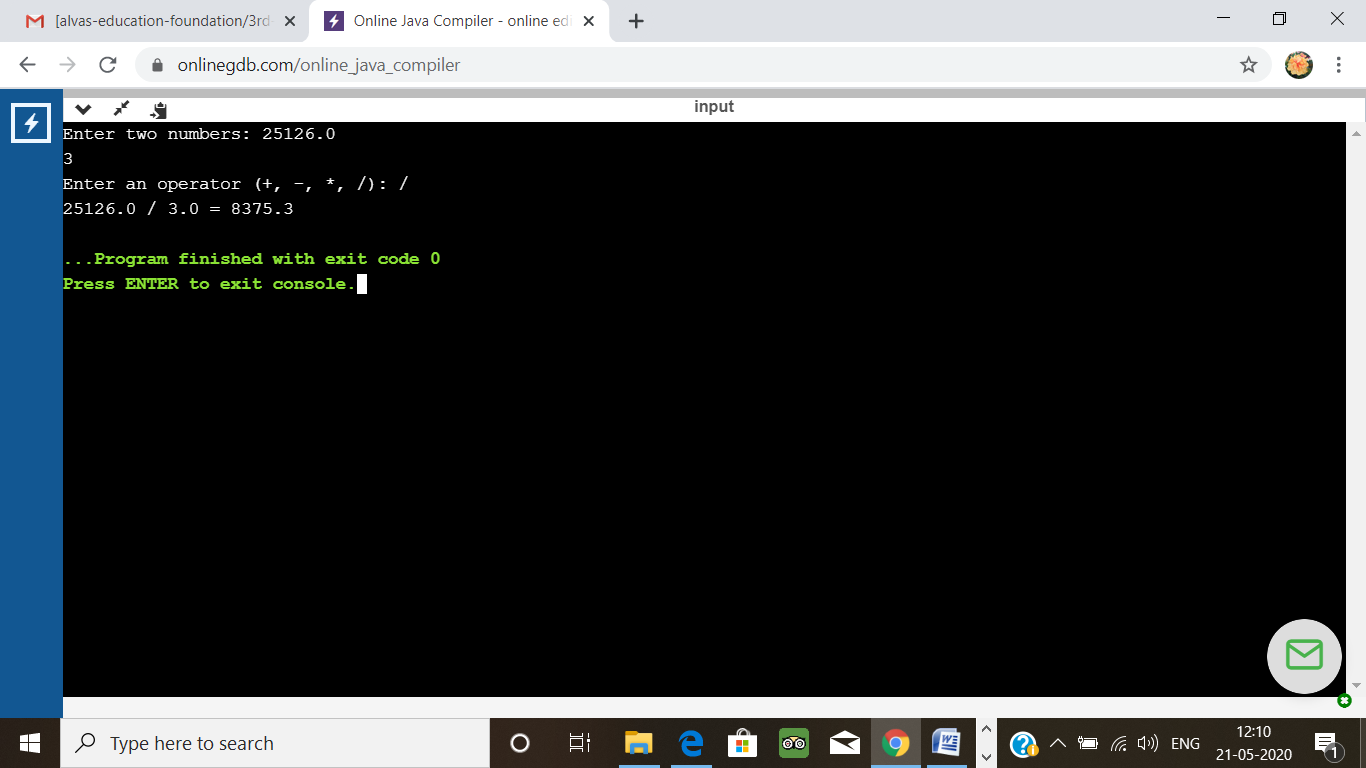
}

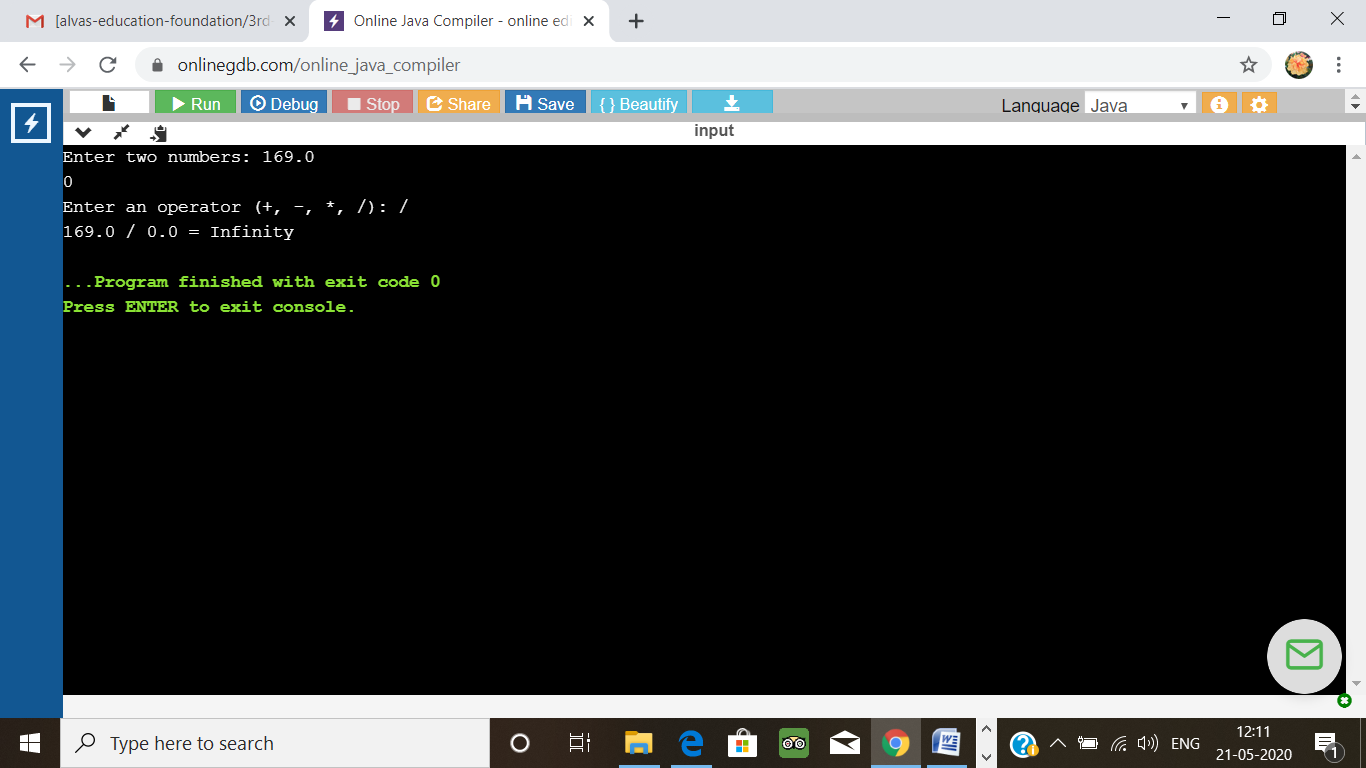
Output:

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