File Reader/Writer

Program

```java
import java.util.Scanner;
import java.io.File;
import java.io.IOException;
import java.io.FileReader;
import java.io.FileWriter;
public class CopyToFileDemo{
        public static void main(String[] args) {
                Scanner sc=new Scanner(System.in);
                try {
                    File f=new File("sample.txt");
                    if(f.exists()==false) {
                    if(f.createNewFile()) {
                        System.out.println("File created sucessfully....");
                        FileWriter fr=new FileWriter(f);
                        System.out.println("Enter the text to continue...");
                        String text=sc.nextLine();
                        fr.write(text);
                        fr.flush();
                        fr.close();
                        System.out.println("\nData saved sucessfully...");
                        System.out.println("The contents of file ' sample.txt ' is..\n");
                        FileReader Fr=new FileReader(f);
                        int chara;
                        while((chara=Fr.read())!=-1) {
                        System.out.print((char)chara);
                        }
                        Fr.close();
                        File f1=new File("new_sample.txt");
                        if(f1.exists()==false) {
                        if(f1.createNewFile()) {
                        System.out.println("\n\nFile 'new_sample.txt' created sucessfully....");
                        FileReader Fr1=new FileReader(f);
                        FileWriter Fw1=new FileWriter(f1);
                        int character;
                        while((character=Fr1.read())!=-1)
                        {
                           Fw1.write(character);
                        }
                        Fr1.close();
                        Fw1.close();
                        System.out.println("The contents are copied successfully\n");
                        System.out.println("The contents of file ' new_sample.txt ' is.. \n");
                        FileReader Fr2=new FileReader(f1);
                        int charac;
                        while((charac=Fr2.read())!=-1) {
                        System.out.print((char)charac);
```

```java
                        }
                        Fr2.close();
                }
                else
                        System.out.println("File not created....");
        }
        else
          System.out.println("File not created....");

                }
                else
                        System.out.println("File not created....");
        }
        else
                System.out.println("File not created....");

    }
    catch(IOException e) {
        System.out.println("File not created..\t File already exists...");
        e.printStackTrace();
    }
  }
}
```
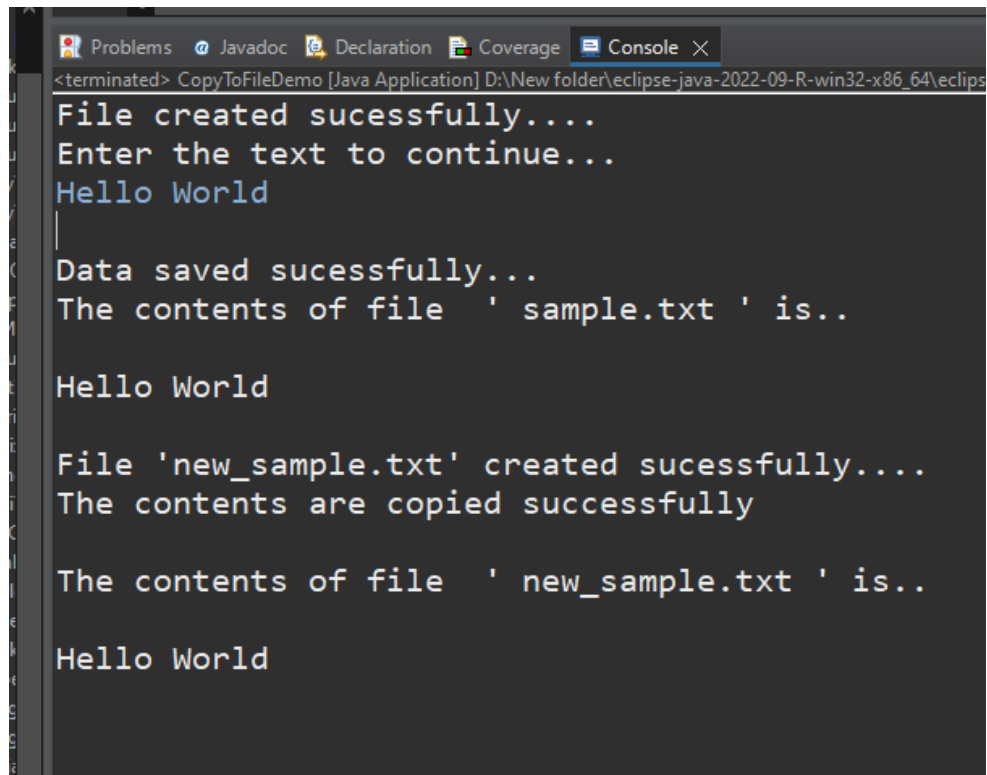
Output


```
Problems  @ Javadoc  Declaration  Coverage  Console ✕
<terminated> CopyToFileDemo [Java Application] D:\New folder\eclipse-java-2022-09-R-win32-x86_64\eclipse
File created sucessfully....
Enter the text to continue...
Hello World

Data saved sucessfully...
The contents of file  ' sample.txt ' is..

Hello World

File 'new_sample.txt' created sucessfully....
The contents are copied successfully

The contents of file  ' new_sample.txt ' is..

Hello World
```

File Exception Handling

Program

```java
import java.util.Scanner;

import java.io.File;

import java.io.FileReader;

import java.io.FileWriter;

import java.io.IOException;

import java.io.FileReader;

public class EvenOddFile{

public static void main(String[] args){

 int array[];

 Scanner sc=new Scanner(System.in);

 try

 {

  File f=new File("numbers.txt");

  if(f.createNewFile())

  {

   System.out.println("File created Successfully!!");

   System.out.println("How many Numbers are you going to enter?");

   FileWriter FW=new FileWriter(f);

   int size=sc.nextInt();

   array=new int[size];

   System.out.println("Enter the numbers");

   for(int i=0;i<size;i++)

   {
```

```java
  array[i]=sc.nextInt();

 FW.write(array[i]);

}

FW.flush();

FW.close();

System.out.println("The contents of the file are ...");

FileReader Fr=new FileReader(f);

int num;

while((num=Fr.read())!=-1)

{

 System.out.println(num);

}

Fr.close();

System.out.println("Differentiating Even and Odd numbers from file.....");

 File f1=new File("even.txt");

 if(f1.createNewFile())

 {

  File f2=new File("odd.txt");

  if(f2.createNewFile())

  {

   System.out.println(" 'even.txt' created succesfully");

   System.out.println(" 'odd.txt' created successfully...");

   FileWriter Fw1=new FileWriter(f1);

   FileWriter Fw2=new FileWriter(f2);

   FileReader Fr1=new FileReader(f);
```

```java
int numb;

while((numb=Fr1.read())!=-1)

{

        if(numb%2==0)

  Fw1.write(numb);

  else

  Fw2.write(numb);

}

Fw1.flush();

Fw1.close();

Fw2.flush();

Fw2.close();

System.out.println("The contents of the file 'even.txt' are ...");

FileReader Fr2=new FileReader(f1);

int num1;

while((num1=Fr2.read())!=-1)

{

  System.out.println(num1);

}

Fr2.close();

System.out.println("The contents of the file 'odd.txt' are ...");

FileReader Fr3=new FileReader(f2);

int num2;

while((num2=Fr3.read())!=-1)

{
```

```java
        System.out.println(num2);

        }

       Fr3.close();

        }

      else

        System.out.println("File not created. The file may already exists");

    }

   else

        System.out.println("File not created. The file may already exists");

  }

 else

 {

  System.out.println("File not created.......The file may already exists");

 }


 }
 catch(IOException e)

 {

  e.printStackTrace();

 }

 }

}
```

Output

```
File created Successfully!!
How many Numbers are you going to enter?
6
Enter the numbers
2
3
4
5
6
7
The contents of the file are ...
2
3
4
5
6
7
Differentiating Even and Odd numbers from file.....
 'even.txt' created succesfully
 'odd.txt' created successfully...
The contents of the file 'even.txt' are ...
2
4
6
The contents of the file 'odd.txt' are ...
3
5
7
```

Custom Exception

Program

```java
import java.util.Scanner;
class InvalidAmountException extends Exception
{
  InvalidAmountException(String msg)
  {
   super(msg);
  }
}
class InsufficientFundsException extends Exception
{
 InsufficientFundsException(String msg)
 {
  super(msg);
 }
}
class Bank
{
 String name;
 int accountnum;
 float balance;
 Scanner sc=new Scanner(System.in);
 public void create(int m)
 {
  accountnum=m;
  System.out.println("Enter the name");
  name=sc.nextLine();
  System.out.println("Enter the balance");
  balance=sc.nextFloat();
 }
 public void display()
 {
  System.out.println("\nThe details of the user");
  System.out.println("\nAccount number:"+accountnum);
  System.out.println("Name of the account user="+name);
  System.out.println("Balance:"+balance);
 }
 public void withdraw() throws InsufficientFundsException,InvalidAmountException
 {
  System.out.println("Enter the amount to withdraw");
  int amt=sc.nextInt();
  if(amt>balance)
  {
   throw new InsufficientFundsException("Insufficient balance");
```

```java
  }
  else if(amt<=0)
  {
   throw new InvalidAmountException("Amount is not valid");
  }
  else
  {
   balance=balance-amt;
   System.out.println("Balance amount="+balance);
  }
 }
 public void deposit() throws InvalidAmountException
 {
  System.out.println("Enter the amount to deposit");
  int amt1=sc.nextInt();
  if(amt1<=0)
  {
   throw new InvalidAmountException("Amount is not valid");
  }
  else
  {
   balance=balance+amt1;
   System.out.println("Balance amount="+balance);
  }
 }
}
public class BamkingMain {
public static void main(String[] args) {
Scanner sc=new Scanner(System.in);
System.out.print("Enter the number of accounts you want to Create : ");
int n=sc.nextInt();
Bank b[];
b=new Bank[n];
for(int i=0;i<n;i++)
{
 System.out.println("\nEnter the details");
 b[i]=new Bank();
 b[i].create(i+1111);
 b[i].display();
}
 int y;
 int l;
do
{
System.out.println("Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details
5-Exit");
```

```java
y=sc.nextInt();
switch(y)
{
case 1:
  System.out.print("Enter the your account number :");
  int r=sc.nextInt();
  for(int i=0;i<n;i++)
  {
   if(r==b[i].accountnum)
   {
    try
    {
     b[i].deposit();
    }
    catch(InvalidAmountException e)
    {
     System.out.println(e);
    }
   }
  }
 break;
 case 2:
  System.out.print("Enter the your account number :");
  int r1=sc.nextInt();
  for(int i=0;i<n;i++)
  {
   if(r1==b[i].accountnum)
   {
    try
    {
     b[i].withdraw();
    }
    catch(InsufficientFundsException e)
    {
     System.out.println(e);
    }
    catch(InvalidAmountException e)
    {
     System.out.println(e);
    }
   }
  }
 break;
 case 3:
  System.out.print("Enter the your account number :");
  int acn=sc.nextInt();
```

```
     for(int i=0;i<n;i++)
     {
      if(acn==b[i].accountnum)
      {
       b[i].display();
      }
     }
     break;
    case 4:
             for(int i=0;i<n;i++)
              {
               {
                b[i].display();
               }
              }
              break;
    case 5:
             return;
     }
     System.out.print("Do you want to continue.1 for yes 0 for no : ");
     l=sc.nextInt();
     }while(l==1);
     }
    }
```

Output

```
Enter the number of accounts you want to Create : 1

Enter the details
Enter the name
John
Enter the balance
1000

The details of the user

Account number:1111
Name of the account user=John
Balance:1000.0
Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details  5-Exit
1
Enter the your account number :1111
Enter the amount to deposit
0
InvalidAmountException: Amount is not valid
Do you want to continue.1 for yes 0 for no : 1
Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details  5-Exit
1
Enter the your account number :1111
Enter the amount to deposit
1000
Balance amount=2000.0
Do you want to continue.1 for yes 0 for no : 1
Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details  5-Exit
2
Enter the your account number :1111
Enter the amount to withdraw
3000
InsufficientFundsException: Insufficient balance
Do you want to continue.1 for yes 0 for no : 1
Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details  5-Exit
2
Enter the your account number :1111
Enter the amount to withdraw
1000
Balance amount=1000.0
Do you want to continue.1 for yes 0 for no : 1
Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details  5-Exit
3
Enter the your account number :1111

The details of the user

Account number:1111
Name of the account user=John
Balance:1000.0
Do you want to continue.1 for yes 0 for no : 1
Enter the operation: 1-Deposit  2-Withdrawal  3-Search  4-Display Details  5-Exit
5
```
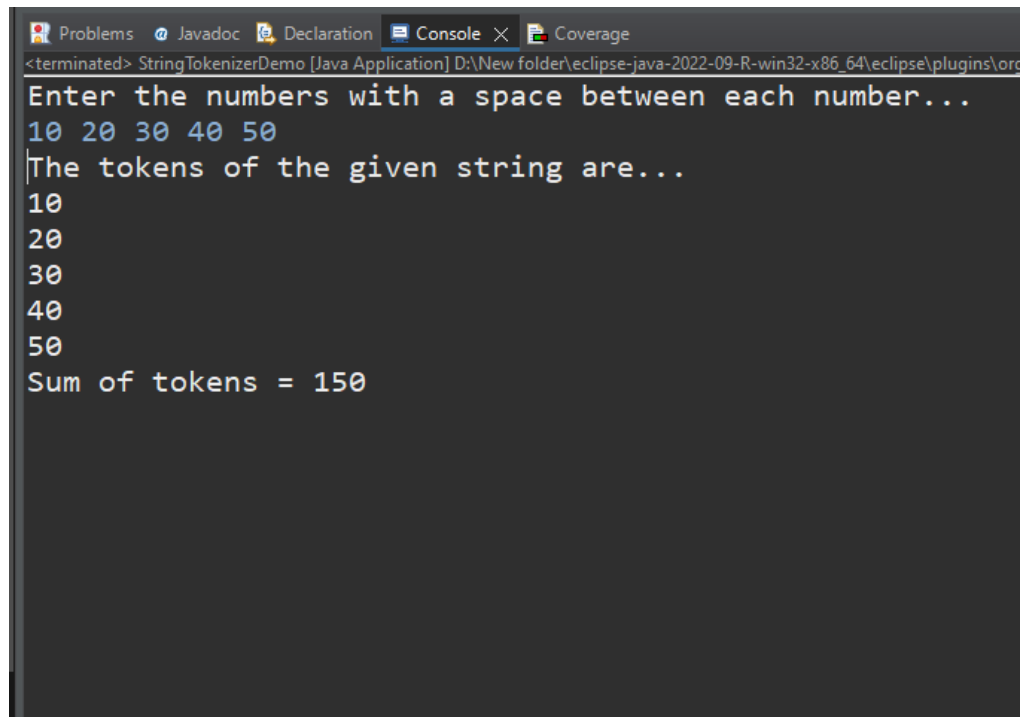
String Tokenizer

Program

```java
import java.util.StringTokenizer;
import java.util.Scanner;
public class StringTokenizerDemo {
public static void main(String[] args) {
    int sum=0;
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the numbers with a space between each number...");
    String numbers=sc.nextLine();
    StringTokenizer str=new StringTokenizer(numbers);
    System.out.println("The tokens of the given string are...");
    while(str.hasMoreTokens())
      {
        int num=Integer.parseInt(str.nextToken());
        System.out.println(num);
        sum=sum+num;
      }
    System.out.println("Sum of tokens = "+sum);
    sc.close();
 }
}
```

Output


```
Problems  @ Javadoc  Declaration  Console ×  Coverage
<terminated> StringTokenizerDemo [Java Application] D:\New folder\eclipse-java-2022-09-R-win32-x86_64\eclipse\plugins\org
Enter the numbers with a space between each number...
10 20 30 40 50
The tokens of the given string are...
10
20
30
40
50
Sum of tokens = 150
```

MultiThreading

Program

```java
import java.util.Random;
class ThreadA extends Thread
{
 public void run()
 {
  Random r=new Random();
  int a;
  for(int i=0;i<5;i++)
  {
   a=r.nextInt(100);
   try
   {
    ThreadA.sleep(1000);
   }
   catch(InterruptedException e)
   {
    e.printStackTrace();
   }
   System.out.println("Random generated integer : "+a);
   ThreadB b=new ThreadB(a);
   ThreadC c=new ThreadC(a);
   if(a%2==0)
   {
    b.start();
   }
   else
   {
    c.start();
   }
  }
 }
}
class ThreadB extends Thread
{
 int a;
 public ThreadB(int a)
 {
  this.a=a;
 }
 public void run()
 {
  System.out.println(a+" is EVEN ");
  System.out.println("Square of no: "+a+" is "+a*a);
```

```java
      System.out.println();
  }
}
class ThreadC extends Thread
{
  int a;
  public ThreadC(int a)
  {
    this.a=a;
  }
  public void run()
  {
    System.out.println(a+" is ODD ");
    System.out.println("Cube of no: "+a+" is "+a*a*a);
    System.out.println();
  }
}
public class MultiThreading {
public static void main(String[] args)
 {
   ThreadA a=new ThreadA();
   a.start();
 }
}
```

Output


```
Problems  @ Javadoc  Declaration  Coverage  Console ✕
<terminated> MultiThreading [Java Application] D:\New folder\eclipse-java-2022-09-R-w

Random generated integer : 82
82 is EVEN
Square of no: 82 is 6724

Random generated integer : 77
77 is ODD
Cube of no: 77 is 456533

Random generated integer : 76
76 is EVEN
Square of no: 76 is 5776

Random generated integer : 85
85 is ODD
Cube of no: 85 is 614125

Random generated integer : 77
77 is ODD
Cube of no: 77 is 456533
```

```java
import java.awt.event.*;
import javax.swing.*;
public class CalculatorMain implements ActionListener {
JTextField t1;
JButton b1,b2,b3,b4,b5,b6,b7,b8,b9,b10,b11,b12,b13,b14,b15,b16;
int n,i,flag;
CalculatorMain() {
JFrame f=new JFrame("calculator");
JPanel p=new JPanel();
t1=new JTextField();
t1.setBounds(100,100,200,30);
b1=new JButton("1");
b1.setBounds(100,140,50,30);
b2=new JButton("2");
b2.setBounds(150,140,50,30);
b3=new JButton("3");
b3.setBounds(200,140,50,30);
b4=new JButton("+");
b4.setBounds(250,140,50,30);
b5=new JButton("4");
b5.setBounds(100,170,50,30);
b6=new JButton("5");
b6.setBounds(150,170,50,30);
b7=new JButton("6");
b7.setBounds(200,170,50,30);
b8=new JButton("-");
b8.setBounds(250,170,50,30);
b9=new JButton("7");
b9.setBounds(100,200,50,30);
b10=new JButton("8");
b10.setBounds(150,200,50,30);
b11=new JButton("9");
b11.setBounds(200,200,50,30);
b12=new JButton("*");
b12.setBounds(250,200,50,30);
b13=new JButton("/");
b13.setBounds(100,230,50,30);
b14=new JButton("0");
b14.setBounds(150,230,50,30);
b15=new JButton("=");
b15.setBounds(200,230,50,30);
b16=new JButton("C");
b16.setBounds(250,230,50,30);
p.add(t1);
p.add(b1);
p.add(b2);
```

```java
        p.add(b3);
        p.add(b4);
        p.add(b5);
        p.add(b6);
        p.add(b7);
        p.add(b8);
        p.add(b9);
        p.add(b10);
        p.add(b11);
        p.add(b12);
        p.add(b13);
        p.add(b14);
        p.add(b15);
        p.add(b16);
        b1.addActionListener(this);
        b2.addActionListener(this);
        b3.addActionListener(this);
        b4.addActionListener(this);
        b5.addActionListener(this);
        b6.addActionListener(this);
        b7.addActionListener(this);
        b8.addActionListener(this);
        b9.addActionListener(this);
        b10.addActionListener(this);
        b11.addActionListener(this);
        b12.addActionListener(this);
        b13.addActionListener(this);
        b14.addActionListener(this);
        b15.addActionListener(this);
        b16.addActionListener(this);
        f.setContentPane(p);
        f.setSize(400,500);
        f.setLayout(null);
        f.setVisible(true);
    }
    public void actionPerformed(ActionEvent e) {
        if(e.getSource()==b1)
            t1.setText(t1.getText()+"1");
        else if(e.getSource()==b2)
            t1.setText(t1.getText()+"2");
        else if(e.getSource()==b3)
            t1.setText(t1.getText()+"3");
        else if(e.getSource()==b5)
            t1.setText(t1.getText()+"4");
            else if(e.getSource()==b6)
                t1.setText(t1.getText()+"5");
```

```java
        else if(e.getSource()==b7)
        t1.setText(t1.getText()+"6");
         else if(e.getSource()==b9)
             t1.setText(t1.getText()+"7");
         else if(e.getSource()==b10)
        t1.setText(t1.getText()+"8");
         else if(e.getSource()==b11)
        t1.setText(t1.getText()+"9");
         else if(e.getSource()==b14)
        t1.setText(t1.getText()+"0");
         else if(e.getSource()==b4)
         {
        String s=t1.getText();
        n=Integer.parseInt(s);
        t1.setText("");
        i=1;
        }
          else if(e.getSource()==b8)
          {
        String s=t1.getText();
        n=Integer.parseInt(s);
        t1.setText("");
        i=2;
        }
          else if(e.getSource()==b12)
          {
        String s=t1.getText();
        n=Integer.parseInt(s);
        t1.setText("");
        i=3;
        }
          else if(e.getSource()==b13)
          {
        String s=t1.getText();
        n=Integer.parseInt(s);
        t1.setText("");
        i=4;
        }
          else if(e.getSource()==b15) {
        calc(n,i);
          }
        else {
        t1.setText("");
        }
        }
    void calc(int t,int e) {
```

```java
int res;
switch(e) {
case 1 : res=t+Integer.parseInt(t1.getText());
t1.setText("");
t1.setText(Integer.toString(res));
break;
case 2 : res=t-Integer.parseInt(t1.getText());
t1.setText("");
t1.setText(Integer.toString(res));
break;
case 3 : res=t*Integer.parseInt(t1.getText());
t1.setText("");
t1.setText(Integer.toString(res));
break;
case 4 : res=t/Integer.parseInt(t1.getText());
t1.setText("");
t1.setText(Integer.toString(res));
break;
default:
break;
}
}
public static void main(String[] args) {
new CalculatorMain();
}

}
```