Experiment No. 9
Implement a program on Exception handling.
Date of Performance:
Date of Submission:

Aim: Implement a program on Exception handling.

Objective: To able handle exceptions occurred and handle them using appropriate keyword

Theory:

The Exception Handling in Java is one of the powerful mechanisms to handle the runtime errors so that the normal flow of the application can be maintained.

Exception Handling is a mechanism to handle runtime errors such as ClassNotFoundException, IOException, SQLException, RemoteException, etc.

Java Exception Keywords

Java provides five keywords that are used to handle the exception. The following table describes each.

Keyword	Description
try	The "try" keyword is used to specify a block where we should place an exception code. It means we can't use try block alone. The try block must be followed by either catch or finally.
catch	The "catch" block is used to handle the exception. It must be preceded by try block which means we can't use catch block alone. It can be followed by finally block later.
finally	The "finally" block is used to execute the necessary code of the program. It is executed whether an exception is handled or not.
throw	The "throw" keyword is used to throw an exception.
throws	The "throws" keyword is used to declare exceptions. It specifies that there may occur an exception in the method. It doesn't throw an exception. It is always used with method signature.

```
public class JavaExceptionExample{

 public static void main(String args[]){

  try{

    //code that may raise exception

    int data=100/0;
```

```
      }catch(ArithmeticException e){System.out.println(e);}

       //rest code of the program

       System.out.println("rest of the code...");

      }

}
```

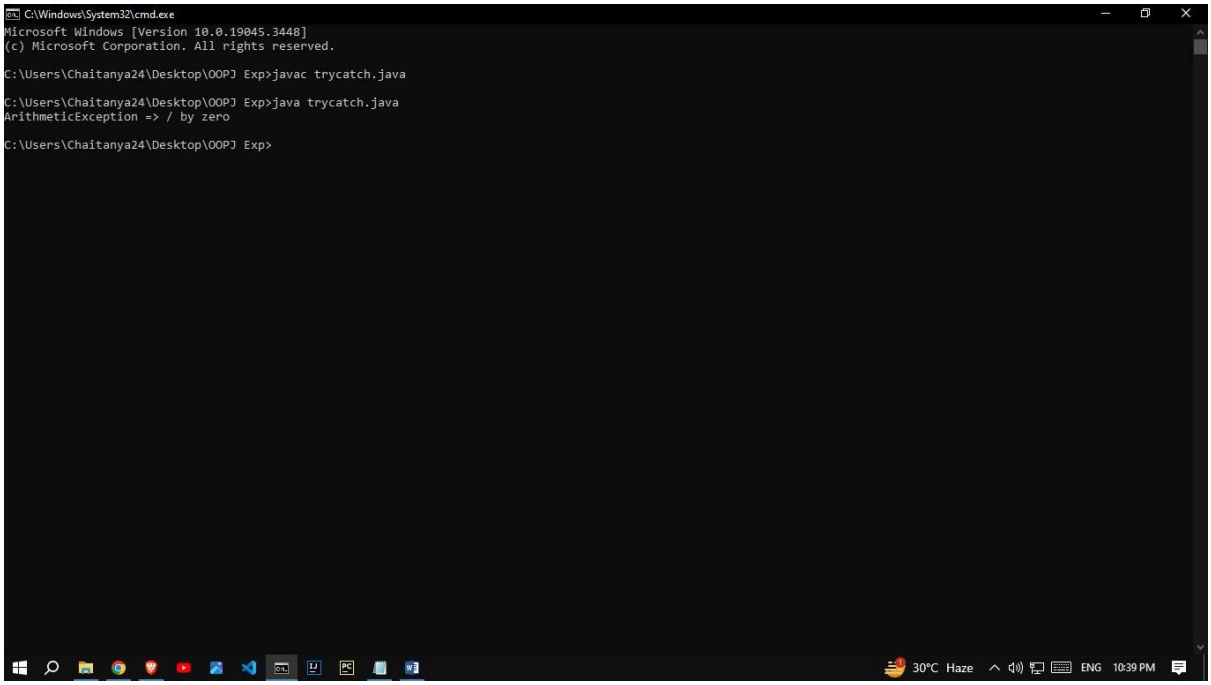
Output:

```
Exception in thread main java.lang.ArithmeticException:/ by zero
rest of the code...
```

Code:

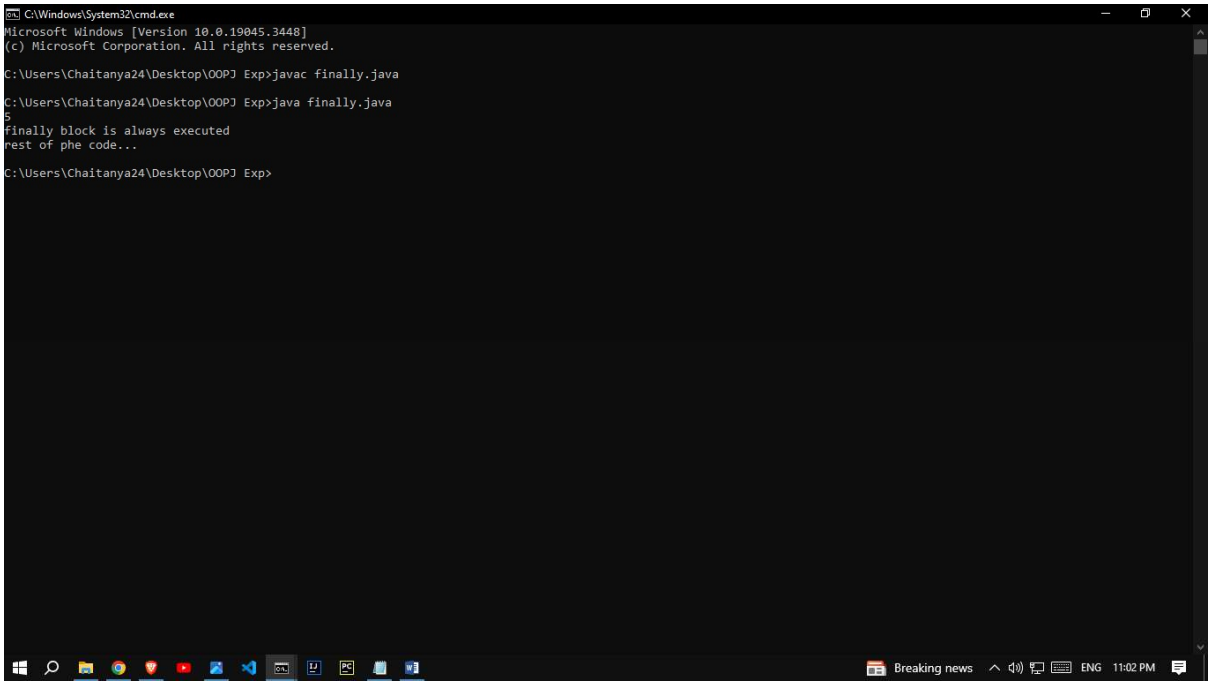
1} Try-catch

```
class Main2
{
public static void main(String args[])
{
try{
  int divideByZero = 8/0;
  System.out.println("Rest of code in try block");
    }

   catch (ArithmeticException e) {
     System.out.println("ArithmeticException => " + e.getMessage());
   }
  }
}
```



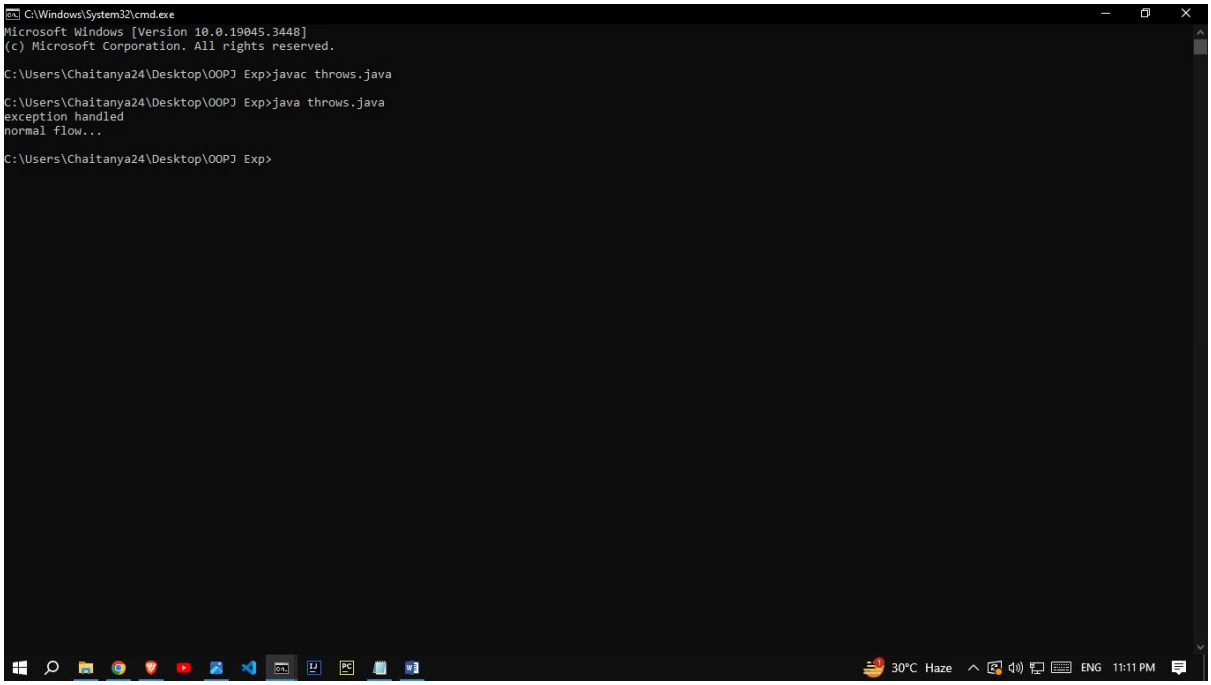
2} finally

```
class TestFinallyBlock {
  public static void main(String args[]){
  try{
   int data=25/5;
   System.out.println(data);
  }
  catch(NullPointerException e){
System.out.println(e);
}
 finally {
System.out.println("finally block is always executed");
}

System.out.println("rest of phe code...");
  }
}
```



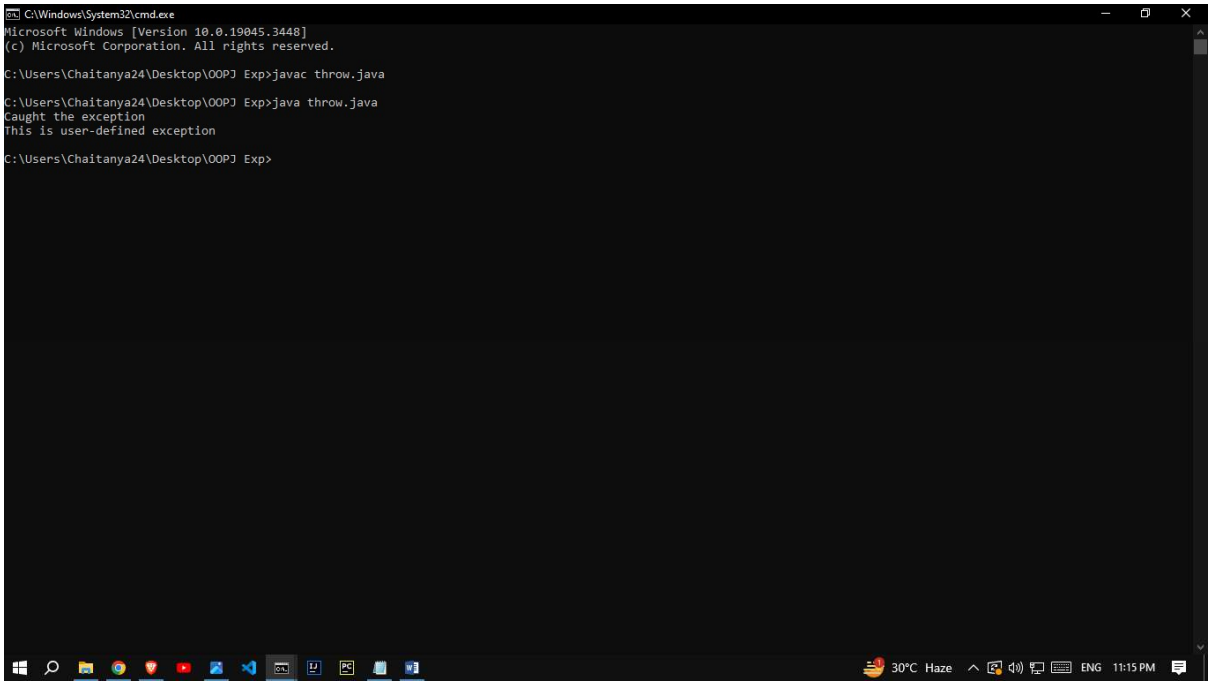
3}throws

```
import java.io.IOException;
 class Testthrows2{
   public static void main(String args[]){
    try{
     M m=new M();
     m.method();
    }catch(Exception e){System.out.println("exception handled");}

    System.out.println("normal flow...");
  }
}
class M {
    void method() throws IOException {
        throw new IOException("device error");
    }
}
```



4} throw

```
class TestThrow3
{
   public static void main(String args[])
   {
      try
      {
         throw new UserDefinedException("This is user-defined exception");
      }
      catch (UserDefinedException ude)
      {
         System.out.println("Caught the exception");
         System.out.println(ude.getMessage());
      }
   }
}
class UserDefinedException extends Exception
{
   public UserDefinedException(String str)
   {
      super(str);
   }
}
```



Conclusion:

Comment on how exceptions are handled in JAVA.

In Java, exceptions are handled using a combination of the try, catch, finally, and throw keywords. Exception handling is a crucial aspect of Java programming, as it allows you to gracefully deal with runtime errors and maintain the stability and reliability of your programs.

Java handles exceptions through a structured mechanism:

- Exceptions can be categorized as checked (must be caught or declared) and unchecked.
- Exceptions are caught and handled using **try-catch** blocks.
- The **finally** block allows for cleanup or resource release.
- Custom exceptions can be created for application-specific errors.
- Use specific exceptions, log them, and close resources properly.
- Java provides a robust way to handle errors and improve code reliability.