Experiment - 10
Implement program on user defined Exception
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Aim: Implement program on User Defined Exception.

Objective: To illustrate the creation and handling of custom exceptions in Java for enhanced error management.

Theory:

An exception is an issue (run time error) that occurred during the execution of a program. When an exception occurred the program gets terminated abruptly and, the code past the line that generated the exception never gets executed.

Java provides us the facility to create our own exceptions which are basically derived classes of Exception. Creating our own Exception is known as a custom exception or user-defined exception. Basically, Java custom exceptions are used to customize the exception according to user needs. In simple words, we can say that a User-Defined Exception or custom exception is creating your own exception class and throwing that exception using the 'throw' keyword.

For example, My Exception in the below code extends the Exception class.

Why use custom exceptions?

Java exceptions cover almost all the general types of exceptions that may occur in the programming. However, we sometimes need to create custom exceptions.
Following are a few of the reasons to use custom exceptions:

- Tocatchandprovidespecifictreatmenttoasubsetofexistingjavaexceptions.
- Business logic exceptions: These are the exceptions related to business logic and workflow . It is useful for the application users or the developers to understand the exact problem.

In order to create a customexception ,we need to extend the Exception class that belongs to java.lang package.
Example: We pass the string to the constructor of the superclass- Exception which is obtained using the "getMessage()" function on the object created.

// A Class that represents use-defined exception

```
class MyException extends Exception {

        public MyException(String s)

        {

                // Call constructor of parent Exception

                super(s);

        }

}


// A Class that uses above MyException

public class Main {

        // Driver Program

        public static void main(String args[])

        {

                try{

                        // Throw an object of user defined exception

                        throw new MyException("UserDefined Exception");

                }

                catch (MyException ex) {
                        System.out.println("Caught");



                        // Print the message from MyException object

                        System.out.println(ex.getMessage());

                }

        }

}
```

Output:

```
Caught
UserDefined Exception
```

Code:

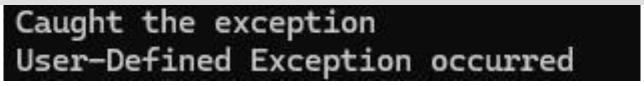
```
// A Class that uses the above MyException
public class UserDefinedException {
   // Driver Program
   public static void main(String args[]) {
      try{
         // Throw an object of user-defined exception
         throw new MyException("User-Defined Exception occurred");
      } catch (MyException ex) {
         // Exception is caught here
         System.out.println("Caught the exception");

         // Print the message from MyException object
         System.out.println(ex.getMessage());
      }
   }
}

// A Class that represents user-defined exception
class MyException extends Exception {
   // Constructor that accepts a string message
   public MyException(String s) {
      // Call the constructor of the parent Exception class
      super(s);
   }
}
```

Output:

```
Caught the exception
User-Defined Exception occurred
```



```
Caught the exception
User-Defined Exception occurred
```

Conclusion:

User-defined exceptions in Java allow developers to create custom exceptions for specific scenarios, which aren't covered by built-in exceptions. By extending the Exception class, a custom exception can be thrown using the throw keyword and handled in a try-catch block. This is useful for providing detailed exception messages, specific business logic errors, or custom error handling, making the code easier to understand and maintain.