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Tugas 11 – Pemrograman Berorientasi Object

### Percobaan 1

```
public class Exception {  
    public static void main(String[] args) { int  
        a[]=new int[5]; try  
        {  
            a[5]=100;  
        }  
    catch(Exception e)  
    {  
        System.out.println("Terjadi pelanggaran  
memory");  
    }  
}  
}
```

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-X  
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.P  
raktikum_2.MyException'  
Terjadi pelanggaran memory  
PS D:\Coding\Java\OOP\Myfirstproject>
```

## Percobaan 2

```
public class Exception2 {
    public static void main(String[] args) {
        int i=0;
        String greetings[]={
            "Hello World!",
            "No,I mean it!",
            "HELLO WORLD!"
        };
        while(i<4)
        {
            try
            {
                System.out.println(greetings[i]);
                i++;
            }
            catch (ArrayIndexOutOfBoundsException e)
            {
                System.out.println("Resetting index value");
                i=0;
            }
        }
    }
}
```

**Output :**

```
HELLO WORLD!
Resetting index value
Hello World!
No,I mean it!
HELLO WORLD!
Resetting index value
Hello World!
No,I mean it!
HELLO WORLD!
```

Hal ini terjadi karena nilai i akan menjadi =0 ketika terjadi error `IndexOutOfBoundsException`. Bila nilai i menjadi  $\geq 4$  maka akan menghasilkan output:

```
PS D:\Coding\Java\OOP\Myfirstproject> d:; cd 'd:\Coding\Java\OOP\Myfirstproject'; & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.Praktikum_2.MyException2'
Hello World!
No,I mean it!
HELLO WORLD!
Resetting index value
PS D:\Coding\Java\OOP\Myfirstproject> █
```

### Percobaan 3

```
public class Exception3 {  
  
    public static void main(String[] args) {  
        int bil=10;  
        try  
        {  
            System.out.println(bil/0);  
        }  
        catch(Exception e)  
        {  
            System.out.println("Ini menhandle error yang terjadi");  
        }  
    }  
}
```

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-X  
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.P  
raktikum_2.MyException3'  
Ini menhandle error yang terjadi  
PS D:\Coding\Java\OOP\Myfirstproject>
```

## Percobaan 4

```
public class CobaException4 {  
    public static void main(String[] args) {  
        int bil=10;  
        String b[]={"a","b","c"};  
        try  
        {  
            System.out.println(bil/0);
```

```
            System.out.println(b[3]);  
        }  
        catch(ArithmeticException e)  
        {  
            System.out.println("Terjadi Aritmatika error");  
        }  
        catch(ArrayIndexOutOfBoundsException e)  
        {  
            System.out.println("Melebihi jumlah array");  
        }  
        catch(Exception e)  
        {  
            System.out.println("Ini menghandle error yang terjadi");  
        }  
    }  
}
```

## Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-X  
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.P  
raktikum_2.MyException4'  
Terjadi Aritmatika error  
PS D:\Coding\Java\OOP\Myfirstproject>
```

## Percobaan 5

```
public class Exception5 {  
  
    public static void main(String[] args) {  
        int bil=10;  
        try  
        {  
            System.out.println(bil/0);  
        }  
        catch(ArithmeticException e)  
        {  
            System.out.println("Pesan error: ");  
            System.out.println(e.getMessage());  
            System.out.println("Info stack erase");  
            e.printStackTrace();  
            e.printStackTrace(System.out);  
        }  
        catch(Exception e)  
        {  
            System.out.println("Ini menghandle error yang terjadi");  
        }  
    }  
}
```

### Analisis :

Ketika variabel bil yang bernilai 10 dibagi dengan 0 pada try, akan terdeteksi error yaitu ArithmeticException. Selanjutnya program akan menampilkan output yang ada di dalam catch ArithmeticException.

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> d:;& cd 'd:\Coding\Java\OOP\Myfirstproject'; & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.Praktikum_2.MyException5'  
Pesan error:  
/ by zero  
Info stack erase  
java.lang.ArithmeticException: / by zero  
    at Nusput.Praktikum_2.MyException5.main(MyException5.java:10)  
java.lang.ArithmeticException: / by zero  
    at Nusput.Praktikum_2.MyException5.main(MyException5.java:10)  
PS D:\Coding\Java\OOP\Myfirstproject>
```

```
public class ThrowExample {  
  
    static void demo()  
    {  
        NullPointerException t;  
        t=new NullPointerException("Coba Throw");  
        throw t;  
    }  
}
```

## Percobaan 6

```
// Baris ini tidak lagi dikerjakan;  
System.out.println("Ini tidak lagi dicetak");  
}  
  
public static void main(String[] args) {  
    try  
    {  
        demo();  
        System.out.println("Selesai");  
    }  
    catch (NullPointerException e)  
    {  
        System.out.println("Ada pesan error: "+e);  
    }  
}
```

### Analisis :

Fungsi demo() memiliki kesalahan yang dibuat manual yaitu NullPointerException, ketika pada blok try NullPointerException akan dilemparkan dan ditangkap oleh bertipe NullPointerException.

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' X:+ShowCodeDetailsInExceptionMessages' -cp 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nuspraktikum_2.ThrowExample'  
Ada pesan error: java.lang.NullPointerException: Coba Throw  
PS D:\Coding\Java\OOP\Myfirstproject>
```

```
public class ThrowExample2 {  
  
    public static void main(String[] args) {  
        try  
        {  
            throw new Exception("Here's my Exception");  
        }  
        catch (Exception e)  
        {  
            System.out.println("Caught Exception");  
            System.out.println("e.getMessage() : "+e.getMessage());  
            System.out.println("e.toString() : "+e.toString());  
            System.out.println("e.printStackTrace() :");  
            e.printStackTrace();  
        }  
    }  
}
```

### Analisa :

Pada blok try akan dilemparkan Exception manual dan ditangkap pada catch

## Percobaan 7

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> d:; cd 'd:\Coding\Java\OOP\Myfirstproject'; & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.Praktikum_2.ThrowExample2'
Caught Exception
e.getMessage():Here's my Exception
e.toString():java.lang.Exception: Here's my Exception
e.printStackTrace():
java.lang.Exception: Here's my Exception
    at Nusput.Praktikum_2.ThrowExample2.main(ThrowExample2.java:9)
PS D:\Coding\Java\OOP\Myfirstproject>
```

```
import java.io.*;

public class Test3 {
    public void methodA(){
        System.out.println("Method A");
    }
    public void methodB() throws IOException
    {
        System.out.println(20/0);
        System.out.println("Method B");
    }
}
```

```
class Utama
{
    public static void main(String[] args)
    {
        Test3 o=new Test3();
        o.methodA();
        try
        {
            o.methodB();
        }
        catch(Exception e)
        {
            System.out.println("Error di Method B");
        }
        finally
        {
            System.out.println("Ini selalu dicetak");
        }
    }
}
```

### Analisis :

Pada program di atas dibuat objek o dari kelas Test3. Kemudian dipanggil methodA yang ada di objek o. Lalu pada try dipanggil methodB yang ada di objek o, akan tetapi terdapat error



## Percobaan 8

“20/0”. Karena terdeteksi error kemudian program akan dilanjutkan ke catch Exception yang menampilkan output “Error di Method B”. Setelah itu program akan menampilkan output “Ini selalu dicetak” yang dimana akan selalu dibaca walau tidak terdapat error.

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'NusputPraktikum_2.Utama'
Method A
Exception in thread "main" java.lang.ArithmeticException: / by zero
    at Nusput.Praktikum_2.Test3.methodB(Test3.java:11)
    at Nusput.Praktikum_2.Utama.main(Test3.java:20)
PS D:\Coding\Java\OOP\Myfirstproject>
```

```
PS D:\Coding\Java\OOP\Myfirstproject> d:; cd 'd:\Coding\Java\OOP\Myfirstproject'; & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.Praktikum_2.Propagate'
The String was blank
All done
PS D:\Coding\Java\OOP\Myfirstproject>
```



## Percobaan 9

```
class Propagate {  
  
    public static void main(String[] args)  
    {  
        try  
        {  
            System.out.println(reverse("This is a string"));  
        }  
        catch(Exception e)  
        {  
            System.out.println("The String was blank");  
        }  
        finally  
        {  
            System.out.println("All done");  
        }  
    }  
  
    public static String reverse(String s) throws Exception  
    {  
        if(s.length()==0)  
  
        {  
            throw new Exception();  
        }  
        String reverseStr = "";  
        for(int i=s.length()-1 ; i>=0 ; --i){  
            reverseStr+=s.charAt(i);  
        }  
        return reverseStr;  
    }  
}
```

### Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> d.; cd 'd:\Coding\Java\OOP\Myfirstproject'; & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.Praktikum_2.Propagate'  
gnirts a si sihT  
All done  
PS D:\Coding\Java\OOP\Myfirstproject>
```

Pada saat fungsi reverse dikosongkan menjadi reverse("") terdeteksi error sehingga program akan menampilkan output yang terdapat di catch sehingga akan menampilkan output sebagai berikut :

## Percobaan 10

```
class RandomAccessRevisi
{
    public static void main(String[] args) {

        String bookList[]={"Satu","Dua","Tiga"};
        int yearList[]={1920,1230,1940};
        try
        {
            RandomAccessFile books = new RandomAccessFile
("books.txt","rw");

            for(int i=0;i<3;i++)
            {
                books.writeUTF(bookList[i]);
                books.writeInt(yearList[i]);
            }
            books.seek(0);
            System.out.println(books.readUTF()+" "+books.readInt());
            System.out.println(books.readUTF()+ " "+books.readInt());
            books.close();

        }
        catch(IOException e)
        {
            System.out.println("Indeks melebihi batas");
        }
        System.out.println("test");
    }
}
```

## Output :



```
PS D:\Coding\Java\OOP\Myfirstproject> d:; cd 'd:\Coding\Java\OOP\Myfirstproject'; & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.Praktikum_2.RandomAccessRevisi'
Satu 1920
Dua 1230
test
PS D:\Coding\Java\OOP\Myfirstproject>
```

Muncul file tipe txt dengan nama books.

## Percobaan 11

```
class RangeErrorException extends Throwable
{
    public RangeErrorException(String s)
    {
        super(s);
    }
}
```

```
public static void main(String[] args)
{
    int position=1;
    try
    {
        if(position>0)
        {
            throw new RangeErrorException("Position " +position);
        }
    }
    catch(RangeErrorException e)
    {
        System.out.println("Range error: " +e.getMessage());
    }
    System.out.println("This is the last program.");
}
```

## Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-X
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.P
raktikum_2.RangeErrorException'
Range error: Position 1
This is the last program.
PS D:\Coding\Java\OOP\Myfirstproject>
```

## Percobaan 12

```
class MyException extends Exception{

    private String Teks;
    MyException(String s)
    {
        Teks="Exception generated by: "+s;
        System.out.println(Teks);
    }
}

class Eksepsi
{
    static void tampil(String s) throws Exception
    {
        System.out.println("Tampil");
        if(s.equals("amir"))
        {
            throw new MyException(s);
        }
        System.out.println("OK!");
    }

    public static void main(String[] args) throws Exception
    {
        try
        {
            tampil("ali");
            tampil("amir");
        }
        catch(MyException ex)
        {
            System.out.println("Tangkap:"+ex);
        }
    }
}
```

## Output :

```
PS D:\Coding\Java\OOP\Myfirstproject> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-X
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'D:\Coding\Java\OOP\Myfirstproject\bin' 'Nusput.P
raktikum_2.Eksepsi'
Tampil
OK!
Tampil
Exception generated by: amir
Exception in thread "main" Nusput.Praktikum_2.MyException12
    at Nusput.Praktikum_2.Eksepsi.tampil(MyException12.java:19)
    at Nusput.Praktikum_2.Eksepsi.main(MyException12.java:27)
PS D:\Coding\Java\OOP\Myfirstproject>
```