

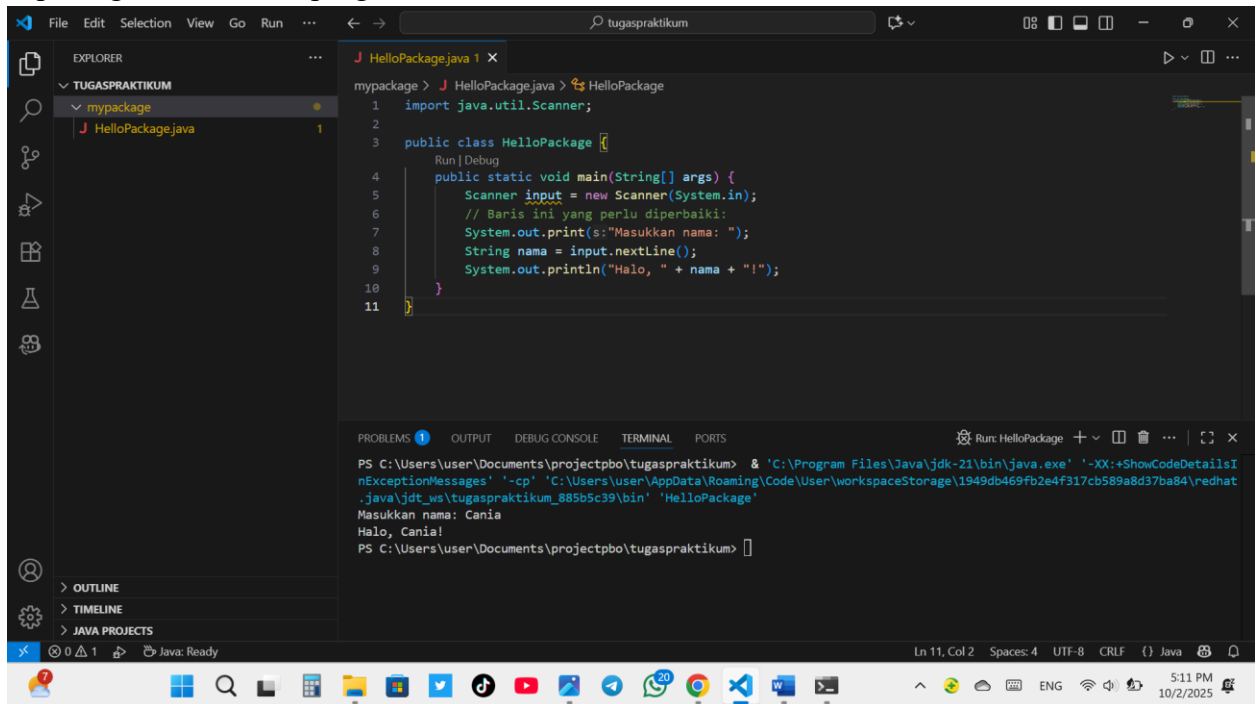
## Laporan Praktikum 3 Dasar Pemrograman Java Lanjutan

### Pemrograman Berorientasi Objek

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Mata Kuliah : Pemrograman Berorientasi Objek

#### 1. Package dan Import

Dalam Java, package digunakan untuk mengelompokkan kelas-kelas agar lebih terstruktur. Sementara import digunakan untuk memanggil kelas dari package lain agar dapat digunakan dalam program.



```
File Edit Selection View Go Run ...  
tugaspraktikum  
EXPLORER  
TUGASPRAKTIKUM  
  mypackage  
    HelloPackage.java 1  
J HelloPackage.java 1 X  
mypackage > J HelloPackage.java > HelloPackage  
1 import java.util.Scanner;  
2  
3 public class HelloPackage {  
4     public static void main(String[] args) {  
5         Scanner input = new Scanner(System.in);  
6         // Baris ini yang perlu diperbaiki:  
7         System.out.print(s:"Masukkan nama: ");  
8         String nama = input.nextLine();  
9         System.out.println("Halo, " + nama + "!");  
10    }  
11  
Run | Debug  
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS  
Run: HelloPackage  
PS C:\Users\user\Documents\projectpbo\tugaspraktikum> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\user\AppData\Roaming\Code\User\workspaceStorage\1949db469fb2e4f317cb589a8d37ba84\redhat.java\jdk_ws\tugaspraktikum_885b5c39\bin' 'HelloPackage'  
Masukkan nama: Cania  
Halo, Cania!  
PS C:\Users\user\Documents\projectpbo\tugaspraktikum>  
Ln 11, Col 2 Spaces: 4 UTF-8 CRLF () Java
```

#### 2. Array dan Collection

Array di Java digunakan untuk menyimpan sekumpulan data dengan ukuran tetap. Sementara Collection (misalnya ArrayList, HashMap) lebih fleksibel dan sering digunakan dalam pemrograman modern.

Contoh penggunaan Array:

The screenshot shows an IDE with a project named 'tugaspraktikum'. The Explorer panel on the left shows a package 'mypackage' containing two files: 'HelloPackage.java' and 'ArrayExample.java'. The 'ArrayExample.java' file is open in the editor. The code is as follows:

```
1 public class ArrayExample {
2     public static void main(String[] args) {
3         int[] angka = {1, 2, 3, 4, 5};
4         for (int a : angka) {
5             System.out.println("Angka: " + a);
6         }
7     }
8 }
9
```

The terminal at the bottom shows the command to run the program and its output:

```
PS C:\Users\user\Documents\projectpbo\tugaspraktikum> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\user\AppData\Roaming\Code\User\workspaceStorage\1949db469fb2e4f317cb589a8d37ba84\redhat.java\jdt_ws\tugaspraktikum_885b5c39\bin' 'ArrayExample'
Angka: 1
Angka: 2
Angka: 3
Angka: 4
Angka: 5
PS C:\Users\user\Documents\projectpbo\tugaspraktikum>
```

Contoh penggunaan ArrayList dan HashMap:

The screenshot shows the same IDE with the 'CollectionExample.java' file open. The code is as follows:

```
1 import java.util.ArrayList; import java.util.HashMap;
2 public class CollectionExample {
3     public static void main(String[] args) {
4         // ArrayList
5         ArrayList<String> list = new ArrayList<>();
6         list.add(e:"Java");
7         list.add(e:"Python");
8         list.add(e:"C++");
9         for (String bahasa : list) {
10             System.out.println(bahasa);
11         }
12         // HashMap
13         HashMap<String, Integer> umur = new HashMap<>();
14         umur.put(key:"Andi", value:20);
15         umur.put(key:"Budi", value:22);
16         umur.put(key:"Citra", value:19);
17         System.out.println("Umur Budi: " + umur.get(key:"Budi"));
18     }
19 }
20
```

The terminal at the bottom shows the command to run the program and its output:

```
.java\jdt_ws\tugaspraktikum_885b5c39\bin' 'CollectionExample'
Java
Python
C++
Umur Budi: 22
PS C:\Users\user\Documents\projectpbo\tugaspraktikum>
```

### 3. Exception Handling

Exception adalah kondisi error yang terjadi saat program berjalan. Java menyediakan mekanisme try - catch - finally, serta kata kunci throw dan throws untuk menangani error agar program tidak langsung berhenti.

Contoh penggunaan try catch finally:

The screenshot shows an IDE with a project named 'TUGASPRAKTIKUM'. The Explorer panel on the left shows a package 'mypackage' containing three files: 'ArrayExample.java', 'CollectionExample.java', and 'ExceptionExample.java'. The 'ExceptionExample.java' file is selected and open in the editor. The code in the editor is as follows:

```
1 public class ExceptionExample {
2     public static void main(String[] args) {
3         try {
4             int hasil = 10 / 0; // Akan menimbulkan ArithmeticException
5         } catch (ArithmeticException e) {
6             System.out.println("Terjadi error: " + e.getMessage());
7         } finally {
8             System.out.println("Blok finally selalu dijalankan.");
9         }
10    }
11 }
12
```

The output window at the bottom shows the execution results:

```
PS C:\Users\user\Documents\projectpbo\tugaspraktikum> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\user\AppData\Roaming\Code\User\workspaceStorage\1949db469fb2e4f317cb589a8d37ba84\redhat.java\jdt_ws\tugaspraktikum_885b5c39\bin' 'ExceptionExample'
Terjadi error: / by zero
Blok finally selalu dijalankan.
PS C:\Users\user\Documents\projectpbo\tugaspraktikum>
```

Contoh penggunaan throw dan throws:

The screenshot shows the same IDE with the 'TUGASPRAKTIKUM' project. The Explorer panel shows the same package 'mypackage' with the same three files. The 'ThrowExample.java' file is now selected and open in the editor. The code in the editor is as follows:

```
1 public class ThrowExample {
2     public static void cekUmur(int umur) throws Exception {
3         if (umur < 18) {
4             throw new Exception(message:"Umur belum cukup!");
5         } else {
6             System.out.println("Umur valid.");
7         }
8     }
9     public static void main(String[] args) {
10        try {
11            cekUmur(umur:15);
12        } catch (Exception e) {
13            System.out.println("Error: " + e.getMessage());
14        }
15    }
16 }
```

The output window at the bottom shows the execution results:

```
PS C:\Users\user\Documents\projectpbo\tugaspraktikum> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\user\AppData\Roaming\Code\User\workspaceStorage\1949db469fb2e4f317cb589a8d37ba84\redhat.java\jdt_ws\tugaspraktikum_885b5c39\bin' 'ThrowExample'
Error: Umur belum cukup!
PS C:\Users\user\Documents\projectpbo\tugaspraktikum>
```

Referensi:

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Link : <https://github.com/caniaye/PraktikumPBO/>