

SISTEM TERDISTRIBUSI
TUTORIAL JAVA STREAM



SEMESTER 5

DISUSUN OLEH
ABDILLAH HENDRA RAHMATULLAH
2111082001
TRPL 3B

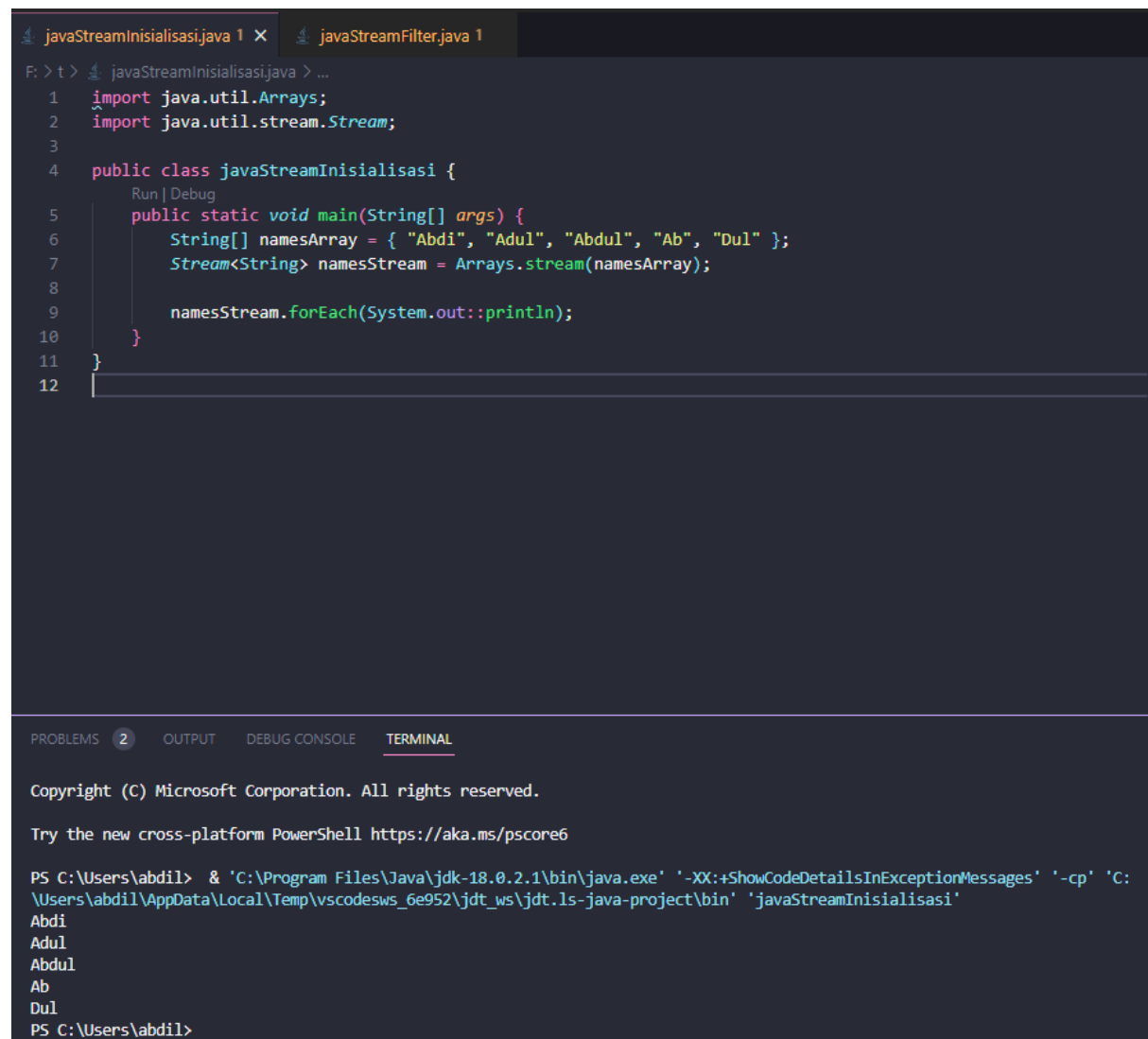
JURUSAN TEKNOLOGI INFORMASI
PROGRAM STUDI D4 TRPL
POLITEKNIK NEGERI PADANG

Tutorial Java Stream dengan Contoh Program

Java Stream adalah sebuah alat yang kuat untuk memanipulasi dan mengelola data dalam koleksi Java. Stream memungkinkan Anda melakukan operasi fungsional pada data, seperti filter, map, reduce, dan banyak lagi. Berikut adalah tutorial dan beberapa contoh program untuk membantu Anda memahami penggunaan Java Stream.

1. Inisialisasi Stream

Anda dapat membuat stream dari berbagai tipe data, seperti array atau koleksi. Berikut adalah contoh cara membuat stream dari array:



The screenshot shows a VS Code editor with two tabs: `javaStreamInisialisasi.java` and `javaStreamFilter.java`. The `javaStreamInisialisasi.java` tab is active, displaying the following code:

```
1 import java.util.Arrays;
2 import java.util.stream.Stream;
3
4 public class javaStreamInisialisasi {
5     public static void main(String[] args) {
6         String[] namesArray = { "Abdi", "Adul", "Abdul", "Ab", "Dul" };
7         Stream<String> namesStream = Arrays.stream(namesArray);
8
9         namesStream.forEach(System.out::println);
10    }
11 }
12
```

Below the code editor, the `TERMINAL` tab is selected, showing the output of the program:

```
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\abdil> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\abdil\AppData\Local\Temp\vscodesws_6e952\jdt_ws\jdt.ls-java-project\bin' 'javaStreamInisialisasi'
Abdi
Adul
Abdul
Ab
Dul
PS C:\Users\abdil>
```

2. Filter dan Menggunakan Predikat

Menggunakan filter dan predikat untuk menyaring elemen dalam stream.

```
javaStreamInisialisasi.java 1 x javaStreamFilter.java 1 x
F: > t > javaStreamFilter.java > ...
1  import java.util.stream.Stream;
2
3  public class javaStreamFilter {
4      Run | Debug
5      public static void main(String[] args) {
6          Stream<String> namesStream = Stream.of(...values:"Abdi", "Jdul", "Abdul", "Ab", "Dul");
7
8          namesStream.filter(name -> name.startsWith(prefix:"J"))
9                      .forEach(System.out::println);
10     }
11 }
```

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
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PS C:\Users\abdil> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\abdil\AppData\Local\Temp\vscodesws_6e952\jdt_ws\jdt.ls-java-project\bin' 'javaStreamFilter'
Jdul
PS C:\Users\abdil>

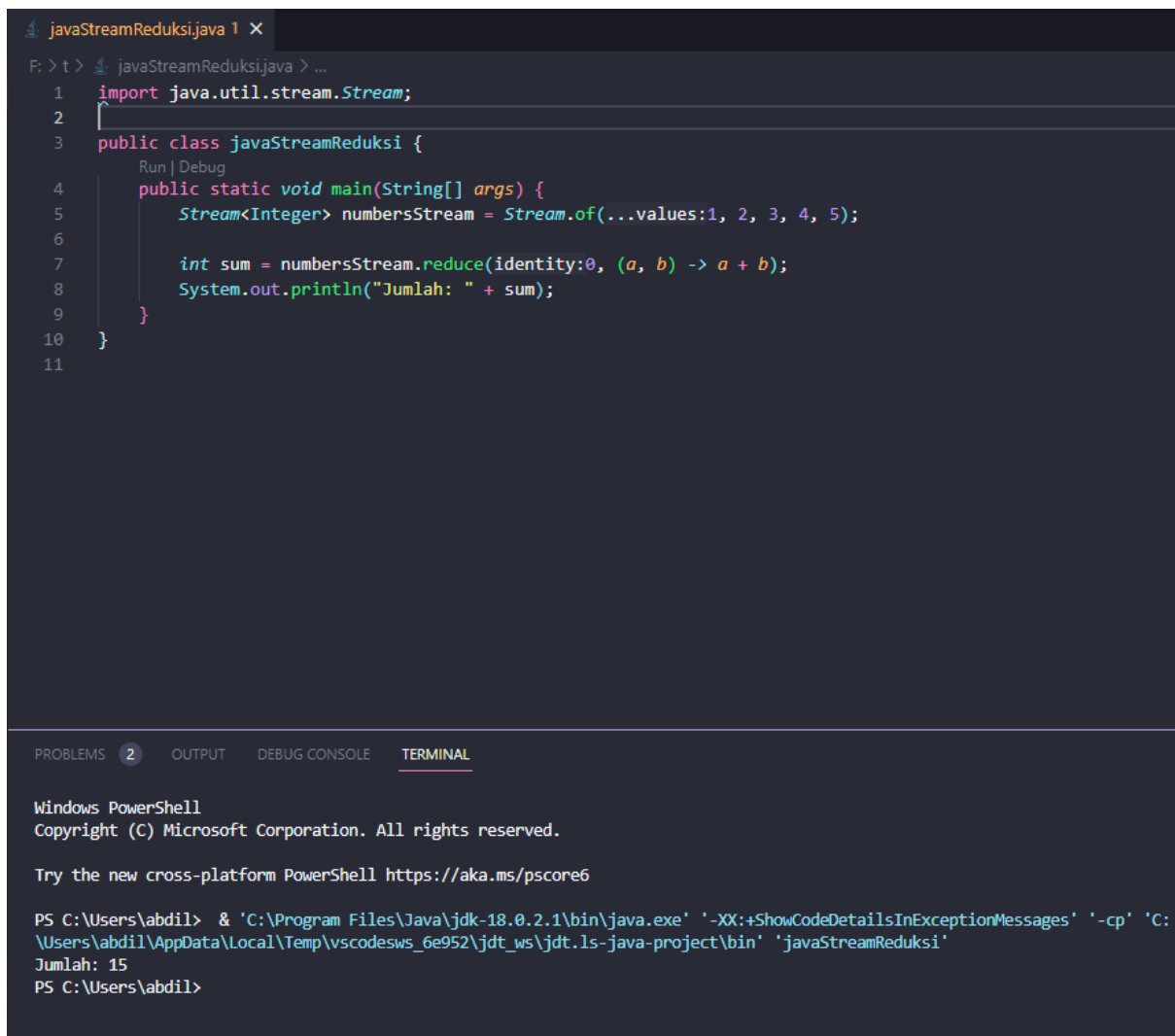
3. Pemetaan (Mapping) Data

Menggunakan map untuk mengubah elemen dalam stream ke bentuk lain.

```
javaStreamMap.java 1 X
F: > t > javaStreamMap.java > javaStreamMap > main(String[])
1  import java.util.stream.Stream;
2
3  public class javaStreamMap {
4      Run | Debug
5      public static void main(String[] args) {
6          Stream<String> namesStream = Stream.of(...values:"Abdi", "Adu1", "Abdu1", "Ab", "Du1");
7
8          namesStream.map(String::toUpperCase)
9              .forEach(System.out::println);
10     }
11
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL
ADUL
ABDUL
AB
DUL
PS C:\Users\abdil> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\abdil\AppData\Local\Temp\vscodesws_6e952\jdt_ws\jdt.ls-java-project\bin' 'javaStreamMap'
ABDI
ADUL
ABDUL
AB
DUL
PS C:\Users\abdil>
```

4. Reduksi (Reduction)

Melakukan operasi reduksi pada elemen dalam stream, misalnya menjumlahkan nilai.



```
1 import java.util.stream.Stream;
2
3 public class javaStreamReduksi {
4     public static void main(String[] args) {
5         Stream<Integer> numbersStream = Stream.of(...values:1, 2, 3, 4, 5);
6
7         int sum = numbersStream.reduce(identity:0, (a, b) -> a + b);
8         System.out.println("Jumlah: " + sum);
9     }
10 }
11
```

Windows PowerShell
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PS C:\Users\abdil> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\abdil\AppData\Local\Temp\vscodesws_6e952\jdt_ws\jdt.ls-java-project\bin' 'javaStreamReduksi'
Jumlah: 15
PS C:\Users\abdil>

5. Operasi Pengurutan (Sorting)

Menggunakan sorted untuk mengurutkan elemen dalam stream.

```
javaStreamSorting.java 1 X
E: > t > javaStreamSorting.java > javaStreamSorting > main(String[])
1  import java.util.stream.Stream;
2
3  public class javaStreamSorting {
4      public static void main(String[] args) {
5      Stream<String> namesStream = Stream.of(...values:"Abdi", "Adul", "Abdul", "Ab", "Dul");
6
7      namesStream.sorted()
8      .forEach(System.out::println);
9  }
10 }
11

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

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PS C:\Users\abdil> & 'C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\abdil\AppData\Local\Temp\vscodesws_6e952\jdt_ws\jdt.ls-java-project\bin' 'javaStreamSorting'
Ab
Abdi
Abdul
Adul
Dul
PS C:\Users\abdil>
```