

JOBSHEET 6

OVERLOADING DAN OVERRIDING

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Github link :

<https://github.com/hemoabdullah/Semester-3/tree/main/week7/src>

1. Kompetensi

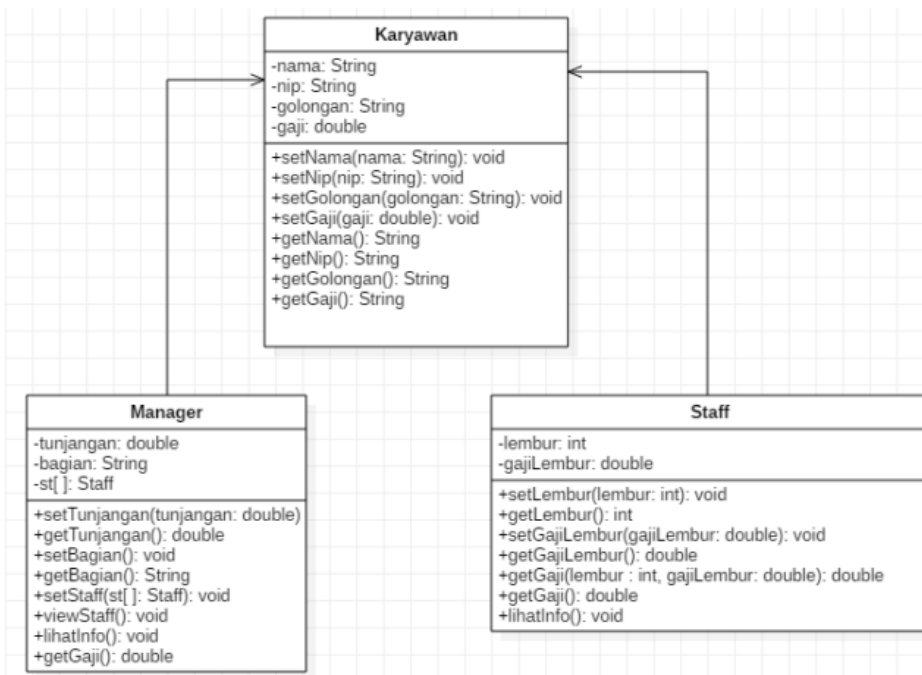
After completing this chapter, students are able to:

- Understand overloading and overriding concept,
 - Undertand the difference of overloading and overriding,
 - Identify overloading and overriding method correctly
 - Perform the instruction correctly
 - Implement overloading and overriding method
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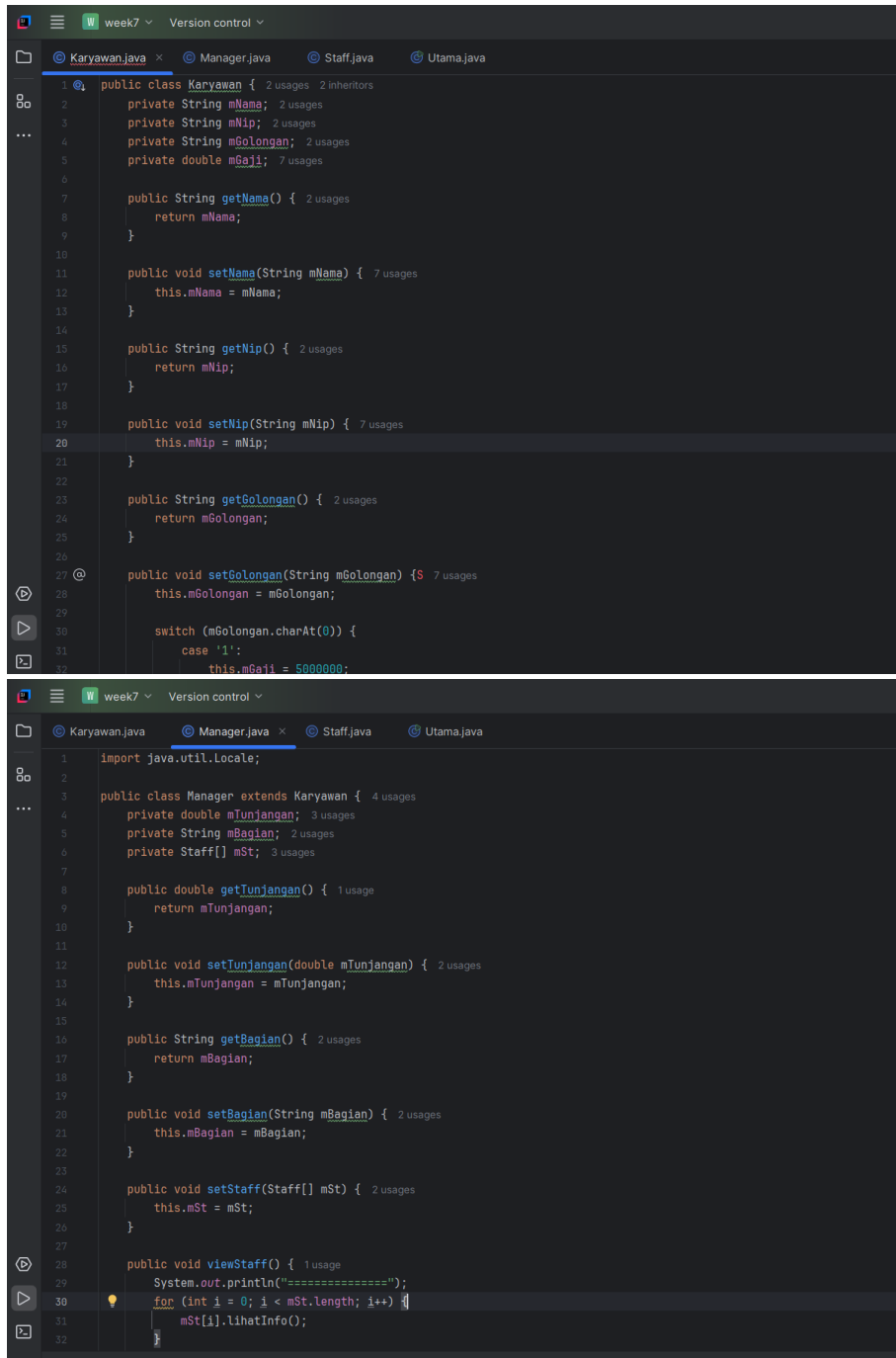
3. Praktikum

3.1 Percobaan 1

For this experiment case, there are three classes, Karyawan, Manager and Staff. Karyawan class is a superclass of Manager and Staff in which subclass Manager and Staff each has different method to calculate different



Here is the full codes of all the files :
karayawan , manager , utama and staff



The image displays two screenshots of an IDE, likely IntelliJ IDEA, showing Java code for a project. The top screenshot shows the `Karyawan.java` file, and the bottom screenshot shows the `Manager.java` file.

Karyawan.java

```
1 public class Karyawan { 2 usages 2 inheritors
2     private String mName; 2 usages
3     private String mNip; 2 usages
4     private String mGolong; 2 usages
5     private double mGaji; 7 usages
6
7     public String getName() { 2 usages
8         return mName;
9     }
10
11     public void setName(String mName) { 7 usages
12         this.mName = mName;
13     }
14
15     public String getNip() { 2 usages
16         return mNip;
17     }
18
19     public void setNip(String mNip) { 7 usages
20         this.mNip = mNip;
21     }
22
23     public String getGolong() { 2 usages
24         return mGolong;
25     }
26
27     public void setGolong(String mGolong) { 7 usages
28         this.mGolong = mGolong;
29
30         switch (mGolong.charAt(0)) {
31             case '1':
32                 this.mGaji = 5000000;
```

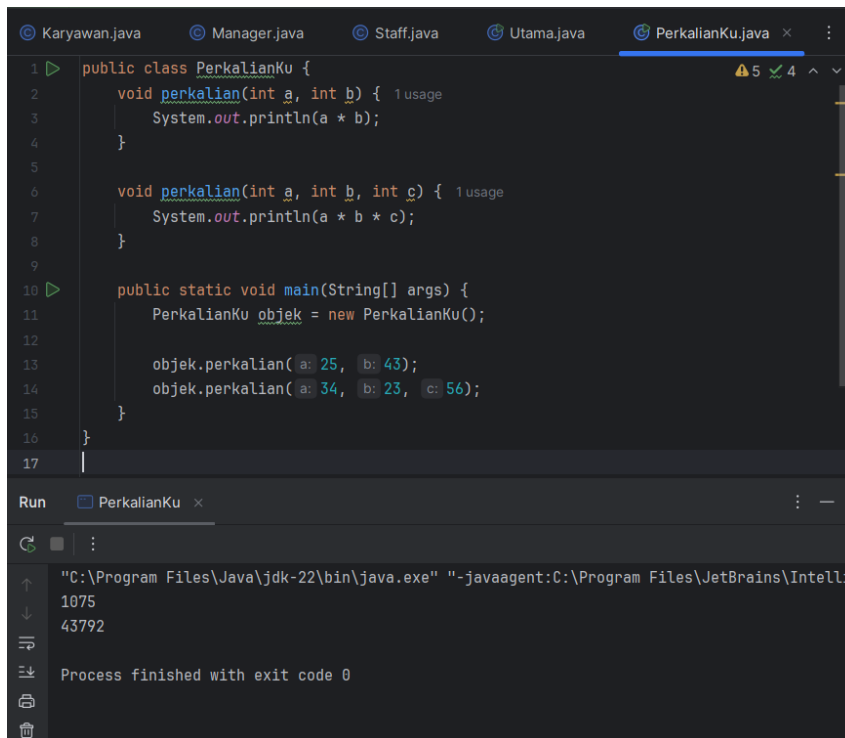
Manager.java

```
1 import java.util.Locale;
2
3 public class Manager extends Karyawan { 4 usages
4     private double mTunjangan; 3 usages
5     private String mBagian; 2 usages
6     private Staff[] mSt; 3 usages
7
8     public double getTunjangan() { 1 usage
9         return mTunjangan;
10    }
11
12    public void setTunjangan(double mTunjangan) { 2 usages
13        this.mTunjangan = mTunjangan;
14    }
15
16    public String getBagian() { 2 usages
17        return mBagian;
18    }
19
20    public void setBagian(String mBagian) { 2 usages
21        this.mBagian = mBagian;
22    }
23
24    public void setStaff(Staff[] mSt) { 2 usages
25        this.mSt = mSt;
26    }
27
28    public void viewStaff() { 1 usage
29        System.out.println("=====");
30        for (int i = 0; i < mSt.length; i++) {
31            mSt[i].lihatInfo();
32        }
```

```
week7 Version control
Karyawan.java Manager.java Staff.java Utama.java

1 import java.util.Locale;
2
3 public class Staff extends Karyawan { 11 usages
4     private int mLembur; 3 usages
5     private double mGajiLembur; 2 usages
6
7     public int getLembur() { 1 usage
8         return mLembur;
9     }
10
11     public void setLembur(int mLembur) { 5 usages
12         this.mLembur = mLembur;
13     }
14
15     public double getGajiLembur(int mLembur, double mGajiLembur) { no usages
16         return super.getGaji() + mGajiLembur * mLembur;
17     }
18
19     public double getGajiLembur() { 1 usage
20         return super.getGaji() + mLembur * mGajiLembur;
21     }
22
23     public void setGajiLembur(double mGajiLembur) { 5 usages
24         this.mGajiLembur = mGajiLembur;
25     }
26
27     public void lihatInfo() { 1 usage
28         System.out.println("NIP\t\t\t: " + this.getNip());
29         System.out.println("Nama\t\t\t: " + this.getName());
30         System.out.println("Golongan\t\t: " + this.getGolongan());
31         System.out.println("Jml Lembur\t\t: " + this.getLembur());
32         System.out.printf(Locale.ITALY, "Gaji Lembur\t: Rp %,0f\n", this.getGajiLembur());
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```

4. Exercise



```
1 public class PerkalianKu {
2     void perkalian(int a, int b) { 1 usage
3         System.out.println(a * b);
4     }
5
6     void perkalian(int a, int b, int c) { 1 usage
7         System.out.println(a * b * c);
8     }
9
10    public static void main(String[] args) {
11        PerkalianKu objek = new PerkalianKu();
12
13        objek.perkalian(a: 25, b: 43);
14        objek.perkalian(a: 34, b: 23, c: 56);
15    }
16 }
17
```

Run PerkalianKu x

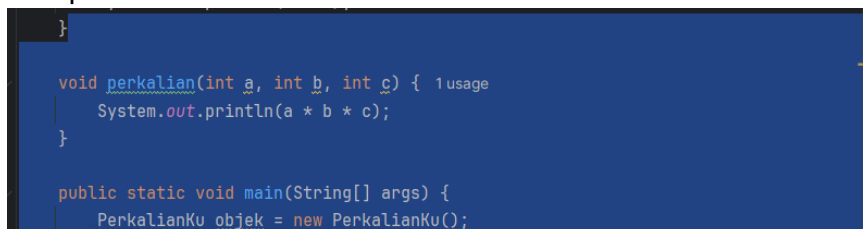
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\Intelli
1075
43792
Process finished with exit code 0

4.1 From the above source code, where is the overloading?

Overloading lies in the multiplication method.

4.2 If there any overloading, how many parameters are different?

The number of different parameters is 1, namely the addition of the int c parameter to the 2nd multiplication method.



```
void perkalian(int a, int b, int c) { 1 usage
    System.out.println(a * b * c);
}
```

```
public static void main(String[] args) {
    PerkalianKu objek = new PerkalianKu();
```

4.3 From the above source code, where is the overloading?

Overloading lies in the multiplication method where the 2nd multiplication method uses a different parameter data type, namely double.

4.4 If there any overloading, how many parameters are different?

The parameters that are different from the previous method are 2 parameters, namely parameters a and b, which were originally all int data types and have become double data types.

4.5 From the above source code, where is the overloading?

There is no overloading in this code, only method overriding. The swim() method in Piranha overrides the swim() method in Ikan.

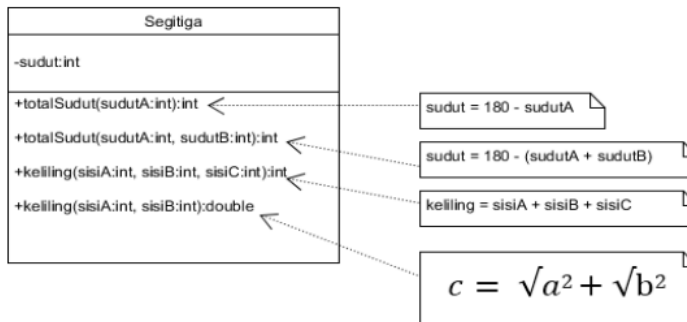
4.6 If there any overloading, how many parameters are different?

Since there is no overloading, there are no differences in parameters to mention. Both methods (swim() in Ikan and swim() in Piranha) have no parameters.

5. Task

5.1 Overloading

Implement overloading concept into this class diagram:



The code:

```
package overloading;
public class Segitiga {
    private int mSudut;

    public int totalSudut(int sudutA) {
        return mSudut = 180 - sudutA;
    }

    public int totalSudut(int sudutA, int sudutB) {
        return mSudut = 180 - (sudutA + sudutB);
    }

    public int keliling(int sisiA, int sisiB, int sisiC) {
        int keliling = sisiA + sisiB + sisiC;
        return keliling;
    }

    public double keliling(int sisiA, int sisiB) {
        double keliling = Math.sqrt(Math.pow(sisiA, 2) + Math.pow(sisiB, 2));
        return keliling;
    }
}
```

Run Main

```
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.3\lib\idea_rt.jar=50059:C:\Program Files\Java\jdk-22\bin" -Didea.config.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.3\config -Didea.copyright.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.3\copyright -Didea.home.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.3\bin -Didea.jre.path=C:\Program Files\Java\jdk-22\jre -Didea.platform.prefix=Java -Didea.vendor.id=JetBrains -Didea.version=2024.2.3 -Djava.awt.headless=true -Djava.class.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.2.3\bin\idea\idea_rt.jar=50059:C:\Program Files\Java\jdk-22\bin
1. Sudut = 180 - sudutA: 120
2. Sudut = 180 - (sudutA + sudutB): 50
3. Keliling = sisiA + sisiB + sisiC: 60
4. Ganti menjadi pythagoras = v(sisiA^2 + sisiB^2): 5.0
```

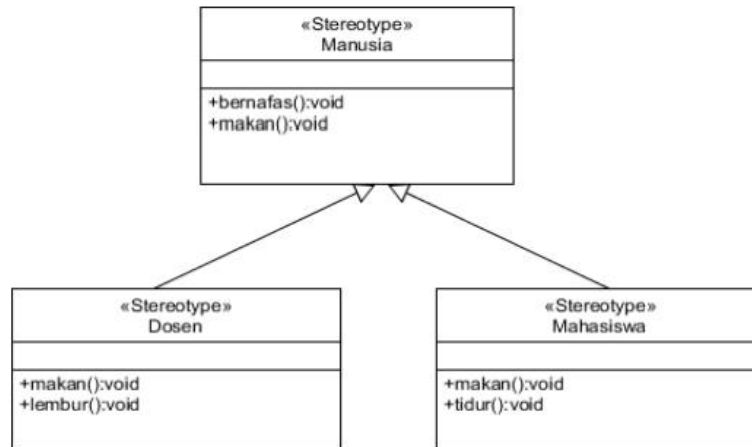
```
package overloading;
public class Main {
    public static void main(String[] args) {
        segitiga segitiga = new segitiga();

        System.out.println("1. Sudut = 180 - sudutA: " + segitiga.totalSudut(sudutA: 60));
        System.out.println("2. Sudut = 180 - (sudutA + sudutB): " + segitiga.totalSudut(sudutA: 60, sudutB: 70));
        System.out.println("3. Keliling = sisiA + sisiB + sisiC: " + segitiga.keliling(sisiA: 10, sisiB: 20, sisiC: 30));
        System.out.println("4. Ganti menjadi pythagoras = \u221A(sisiA\u00B2 + sisiB\u00B2): " + segitiga.keliling(sisiA: 4, sisiB: 3));
    }
}
```

```
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent
1. Sudut = 180 - sudutA: 120
2. Sudut = 180 - (sudutA + sudutB): 50
3. Keliling = sisiA + sisiB + sisiC: 60
4. Ganti menjadi pythagoras = v(sisiA^2 + sisiB^2): 5.0
```

5.2 Overriding

Implement overriding for these class using dynamic method dispatch :



The code:

```
© Dosen.java x © Mahasiswa.java overriding/Main.java © Manusia.java
1 package overriding;
2
3 public class Dosen extends Manusia { 2 usages
4     @Override 4 usages
5     public void bernafas() {
6         System.out.println("Dosen bernafas juga");
7     }
8
9     @Override 4 usages
10    public void makan() {
11        System.out.println("Dosen makan juga");
12    }
13 }
```

```
© Dosen.java © Mahasiswa.java x overriding/Main.java © Manusia.java
1 package overriding;
2
3
4 public class Mahasiswa extends Manusia { 2 usages
5     @Override 4 usages
6     public void bernafas() {
7         System.out.println("Mahasiswa juga bernafas");
8     }
9
10    @Override 4 usages
11    public void makan() {
12        System.out.println("Mahasiswa juga makan");
13    }
14 }
```

```

1 package overriding;
2
3
4 public class Manusia { no usages 2 inheritors
5     public void bernafas() { no usages 2 overrides
6         System.out.println("Manusia Bernafas");
7     }
8
9     public void makan() { no usages 2 overrides
10        System.out.println("Manusia Makan");
11    }
12 }
```

```

1 package overriding;
2
3 public class Main {
4     public static void main(String[] args) {
5         Manusia mns = new Manusia();
6         Dosen dsn = new Dosen();
7         Mahasiswa mhs = new Mahasiswa();
8
9         System.out.println("Normal");
10        mns.bernafas();
11        mns.makan();
12
13        System.out.println("\nDynamic Method Dispatch Dosen");
14        mns = dsn;
15        mns.bernafas();
16        mns.makan();
17
18        System.out.println("\nDynamic Method Dispatch Mahasiswa");
19        mns = mhs;
20        mns.bernafas();
21        mns.makan();
22
23        System.out.println("\nKembali normal");
24        mns = new Manusia();
25        mns.bernafas();
26        mns.makan();
27    }
28 }
```

Result:

```
Normal
Manusia Bernafas
Manusia Makan

Dynamic Method Dispatch Dosen
Dosen bernafas juga
Dosen makan juga

Dynamic Method Dispatch Mahasiswa
Mahasiswa juga bernafas
Mahasiswa juga makan

Kembali normal
Manusia Bernafas
Manusia Makan
```

Conclusion

The conclusions I got after completing the Experiment, Questions, and Assignments above are:

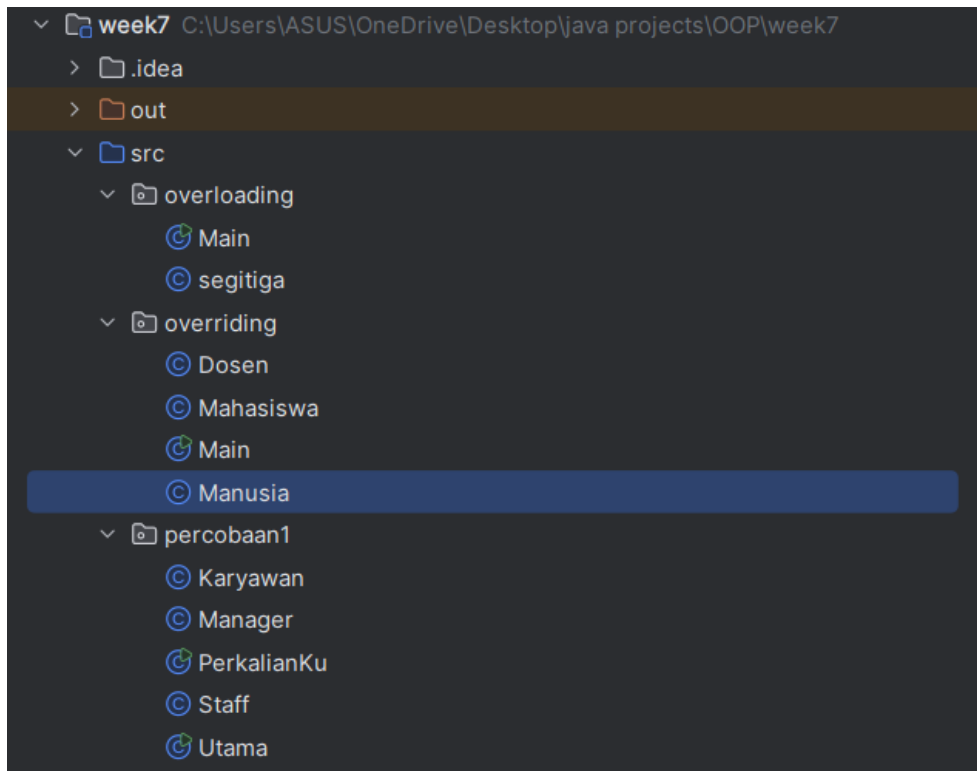
I'm able to understand the concept of overloading and overriding,

I'm able to understand the difference between overloading and overriding,

I'm able to identify the overriding and overloading methods correctly.

I'm able to practice the instructions on the job sheet correctly.

I'm able to implement the overloading and overriding methods.



These are the files of the codes .

Github links :

Overloading:

<https://github.com/hemoabdullah/Semester-3/tree/main/week7/src/overloading>

Overriding:

<https://github.com/hemoabdullah/Semester-3/tree/main/week7/src/overriding>

Percobaan and questions

<https://github.com/hemoabdullah/Semester-3/tree/main/week7/src/percobaan1>

Thank you !