Jobsheet 6

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Class	TI 2i
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Subject	Object Oriented Programming
Type	Assignment
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Experiment 1

- Code

```
package jobsheet_6;

public class ClassA {
    public int x;
    public int y;

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilai(){
        System.out.println("Nilai x = " + x);
        System.out.println("Nilai y = " + y);
    }

}
```

```java
package jobsheet_6;

public class ClassB {
    public int z;

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilaiZ(){
        System.out.println("Nilai z = " + z);
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getJumlah(){
        System.out.println("Jumlah :" + (x + y + z));
    }
```

```java
package jobsheet_6;

public class Percobaan1 {
    Run | Debug | Codeium: Refactor | Explain | Generate Javadoc
    public static void main(String[] args) {
        ClassB hitung = new ClassB();
        hitung.x = 20;
        hitung.y = 30;
        hitung.z = 5;
        hitung.getNilai();
        hitung.getNilaiZ();
        hitung.getJumlah();
    }
}
```

- Result

```
ceptionMessages' '-cp' 'E:\document\POLINEMA\Sem 3\OOP prak\week 7\demo\targe
t\classes' 'jobsheet_6.Experiment1.Percobaan1'
Exception in thread "main" java.lang.Error: Unresolved compilation problems:
        x cannot be resolved or is not a field
        y cannot be resolved or is not a field
        The method getNilai() is undefined for the type ClassB

        at jobsheet_6.Experiment1.Percobaan1.main(Percobaan1.java:6)
```

Questions 1

1. In experiment 1 above, an error occurred in the program being run, then fix it so that the program can be run and there are no errors!

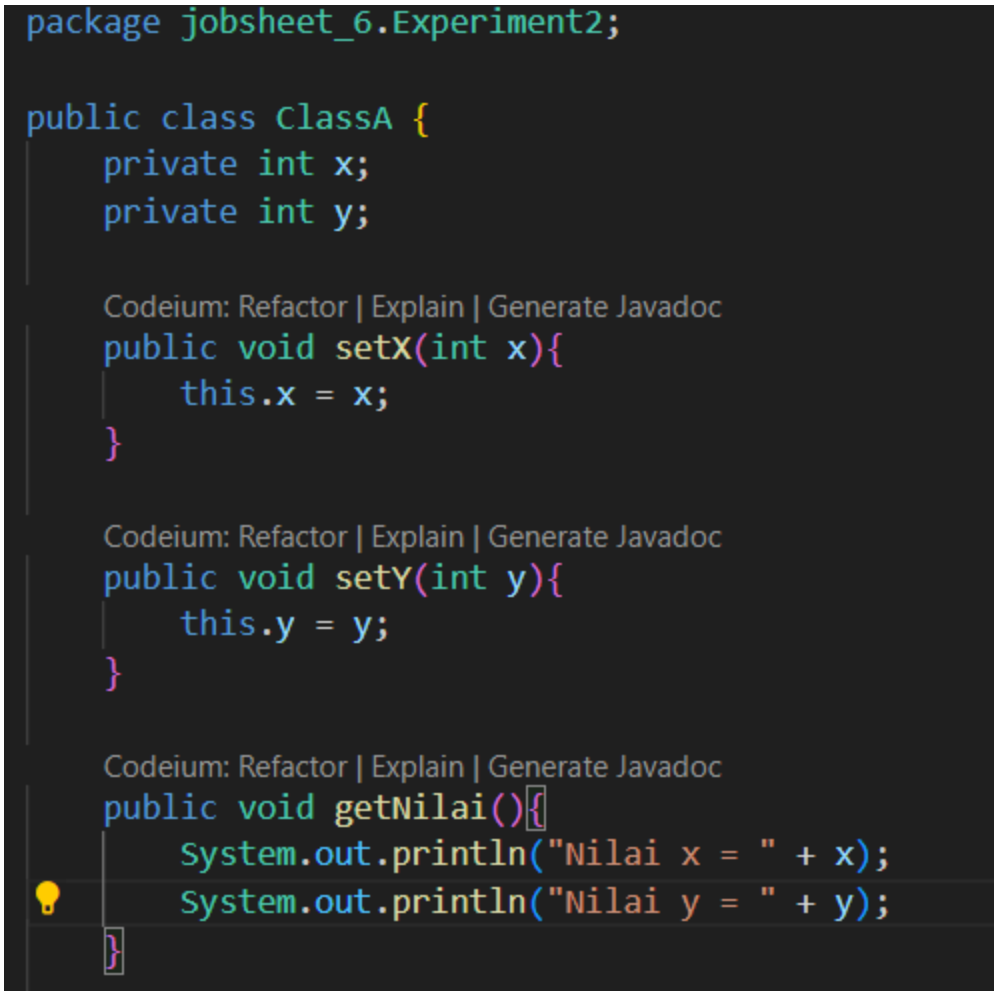
```java
package jobsheet_6;

public class ClassB extends ClassA{ {
    public int z;

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilaiZ(){
        System.out.println("Nilai z = " + z);
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getJumlah(){
        System.out.println("Jumlah :" + (x + y + z));
    }

}
```

```
Sem 3\OOP prak\week 7'; & 'C:\Users\Davis\AppData\Local\Progra
tium\jdk-17.0.8.101-hotspot\bin\java.exe' '-XX:+ShowCodeDetail
sages' '-cp' 'E:\document\POLINEMA\Sem 3\OOP prak\week 7\demo\
 'jobsheet_6.Experiment1.Percobaan1'
Nilai x = 20
Nilai y = 30
Nilai z = 5
Jumlah :55
```

2. Explain what caused the program in experiment 1 when it was run to have an error!
    - Because basically, the ClassB is a child or subclass. So, we have to add “extend” after “public class ClassB”.

Experiment 2

- Code



```
package jobsheet_6.Experiment2;

public class ClassA {
    private int x;
    private int y;

    Codeium: Refactor | Explain | Generate Javadoc
    public void setX(int x){
        this.x = x;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void setY(int y){
        this.y = y;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilai(){
        System.out.println("Nilai x = " + x);
        System.out.println("Nilai y = " + y);
    }
```

```java
package jobsheet_6.Experiment2;

public class ClassB {
    private int z;

    Codeium: Refactor | Explain | Generate Javadoc
    public void setZ(int z){
        this.z = z;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilaiZ(){
        System.out.println("Nilai z = " + z);
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getJumlah(){
        System.out.println("Jumlah :" + (x + y + z));
    }
}
```

```java
package jobsheet_6.Experiment2;

public class Percobaan2 {
    Run | Debug | Codeium: Refactor | Explain | Generate Javad
    public static void main(String[] args) {
        ClassB hitung = new ClassB();
        hitung.setX(20);
        hitung.setY(30);
        hitung.setZ(z:5);
        hitung.getNilai();
        hitung.getNilaiZ();
        hitung.getJumlah();
    }
}
```

- Result

```
17.0.8.101-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp'
POLINEMA\Sem 3\OOP prak\week 7\demo\target\classes' 'jobsheet_6.Experiment2.Perc
Exception in thread "main" java.lang.Error: Unresolved compilation problems:
        The method setX(int) is undefined for the type ClassB
        The method setY(int) is undefined for the type ClassB
        The method getNilai() is undefined for the type ClassB

        at jobsheet_6.Experiment2.Percobaan2.main(Percobaan2.java:6)
PS E:\document\POLINEMA\Sem 3\OOP prak\week 7>
```

Question 2

1. In experiment 2 above, an error occurred in the program being run, then fix it so that the program can be run and there are no errors!

```java
package jobsheet_6.Experiment2;

public class ClassA {
    private int x;
    private int y;

    Codeium: Refactor | Explain | Generate Javadoc
    public void setX(int x){
        this.x = x;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void setY(int y){
        this.y = y;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public int getX(){
        return x;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public int getY(){
        return y;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilai(){
        System.out.println("Nilai x = " + x);
        System.out.println("Nilai y = " + y);
    }

}
```

```java
package jobsheet_6.Experiment2;

public class ClassB extends ClassA {
    private int z;

    Codeium: Refactor | Explain | Generate Javadoc
    public void setZ(int z){
        this.z = z;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getNilaiZ(){
        System.out.println("Nilai z = " + z);
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void getJumlah(){
        System.out.println("Jumlah :" + (getX() + getY() + z));
    }
}
```

```
PS E:\document\POLINEMA\Sem 3\OOP prak\week 7>  e:; cd '
Sem 3\OOP prak\week 7'; & 'C:\Users\Davis\AppData\Local\
tium\jdk-17.0.8.101-hotspot\bin\java.exe' '-XX:+ShowCode
sages' '-cp' 'E:\document\POLINEMA\Sem 3\OOP prak\week 7
 'jobsheet_6.Experiment2.Percobaan2'
Nilai x = 20
Nilai y = 30
Nilai z = 5
```

2. Explain what caused the program in Experiment 1 when it was run to have an error
    - Because the attribute X and the attribute Y is private, we can't use those in the different class. So, we have to create 2 getters for the X and Y attributes.

Experiment 3

```java
package jobsheet_6.Experiment3;

public class Bangun {
    protected double phi;
    protected int r;
}
```

```java
package jobsheet_6.Experiment3;

public class Tabung extends Bangun {
    protected int t;
    Codeium: Refactor | Explain | Generate Javadoc
    public void setSuperPhi(double phi){
        super.phi = phi;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void setSuperR(int r){
        super.r = r;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void setT(int t){
        this.t = t;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void volume(){
        System.out.println("Volume tabung adalah : " + (super.phi * super.r * super.r * this.t));
    }
}
```

```java
package jobsheet_6.Experiment3;

public class Percobaan3 {
    Run | Debug | Codeium: Refactor | Explain | Generate Javadoc
    public static void main(String[] args) {
        Tabung tabung = new Tabung();
        tabung.setSuperPhi(phi:3.14);
        tabung.setSuperR(r:10);
        tabung.setT(t:3);
        tabung.volume();
    }
}
```

```
t\classes' 'jobsheet_6.Experiment3.Percobaan3'
Volume tabung adalah : 942.0
PS E:\document\POLINEMA\Sem 3\OOP prak\week 7>
```

Question 3

1. Explain the "super" function in the following program fragment in the Tube class!
    - to call the attribute of the superclass
2. Explain the "super" and "this" functions in the following program fragment in the Tube class!

- “super” to call the attributes of the “Bangun” class
- “this” to call the local attribute

3. Explain why the Tube class does not declare the attributes "phi" and "r" but class can access these attributes!
    - Because the “Tabung” class extends to the superclass or “Bangun” class. So, we could use the superclass attributes by using “super”.

Experiment 4

```java
package jobsheet_6.Experiment4;

public class ClassA {
    ClassA(){
        System.out.println(x:"Konstruktor A dijalankan");
    }
}
```

```java
package jobsheet_6.Experiment4;

public class ClassB extends ClassA{
    ClassB(){
        System.out.println(x:"Konstruktor B dijalankan");
    }
}
```

```java
package jobsheet_6.Experiment4;

public class ClassC extends ClassB{
    ClassC(){
        System.out.println(x:"Konstruktor C dijalankan");
    }
}
```

```java
package jobsheet_6.Experiment4;

public class Percobaan4 {
    Run | Debug | Codeium: Refactor | Explain | Generate Javadoc
    public static void main(String[] args) {
        ClassC test = new ClassC();
    }
}
```

```
Sem 3\OOP prak\week 7'; & 'C:\Users\Davis\AppData\Local\Programs\Ec
tium\jdk-17.0.8.101-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInEx
sages' '-cp' 'E:\document\POLINEMA\Sem 3\OOP prak\week 7\demo\targe
 'jobsheet_6.Experiment4.Percobaan4'
Konstruktor A dijalankan
Konstruktor B dijalankan
Konstruktor C dijalankan
```

Question 4

1. In experiment 4, state which classes are superclasses and subclasses, then explain why!
    - Superclass = ClassA, ClassB
    - Subclass = ClassC, ClassB
    - Why the ClassB is Superclass?, Because the ClassC extends to the ClassB
    - Why the ClassB is Subclass?, Because the Class B extends to the ClassA
2. Change the contents of the ClassC default constructor as follows.

```java
package jobsheet_6.Experiment4;

public class ClassC extends ClassB{
    ClassC(){
        System.out.println("Konstruktor C dijalankan");
    }
}
```

3. Explain the order in which the constructor runs when the test object is created!
    - The ClassC contractor will be called, because ClassC is a subclass of ClassB, the ClassB constructor will also be called. Likewise with ClassA because ClassB is a subclass of ClassA.
4. What is the super() function in the program snippet below in ClassC
    - The super() function can be used to call the constructor of the superclass/parentclass

Tugas

```java
package jobsheet_6.Tugas;

public class Pegawai {
    private String nip;
    private String nama;
    private String alamat;
    private int gaji;

    public Pegawai(String nip, String nama, String alamat) {
        this.nip = nip;
        this.nama = nama;
        this.alamat = alamat;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public String getNama() {
        return nama;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public int getGaji() {
        return gaji;
    }
}
```

```java
package jobsheet_6.Tugas;

public class Dosen extends Pegawai{
    private int jumlahSKS;
    private int TARIF_SKS;

    public Dosen(String nip, String nama, String alamat) {
        super(nip, nama, alamat);
        TARIF_SKS = 100000;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void setJumlahSKS(int jumlahSKS) {
        this.jumlahSKS = jumlahSKS;
    }

    Codeium: Refactor | Explain | Generate Javadoc
    @Override
    public int getGaji() {  int jumlahSKS
        return TARIF_SKS * jumlahSKS;
    }
}
```

```java
package jobsheet_6.Tugas;

public class DaftarGaji {
    Pegawai[] listPegawai;

    public DaftarGaji(int jumlahPegawai) {
        listPegawai = new Pegawai[jumlahPegawai];
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void addPegawai(Pegawai pegawai) {
        for (int i = 0; i < listPegawai.length; i++) {
            if (listPegawai[i] == null) {
                listPegawai[i] = pegawai;
                break;
            }
        }
    }

    Codeium: Refactor | Explain | Generate Javadoc
    public void printSemuaGaji(){
        for (int i = 0; i < listPegawai.length; i++) {
            if (listPegawai[i] != null) {
                System.out.println("Nama: " + listPegawai[i].getNama());
                System.out.println("Gaji: " + listPegawai[i].getGaji());
                System.out.println();
            }
        }
    }
}
```

```java
package jobsheet_6.Tugas;

public class Main {
    Run | Debug | Codeium: Refactor | Explain | Generate Javadoc
    public static void main(String[] args) {
        DaftarGaji daftarGaji = new DaftarGaji(jumlahPegawai:20);
        Dosen dosen1 = new Dosen(nip:"123456", nama:"Rusdi", alamat:"Jalan Ngawi Timur");
        Dosen dosen2 = new Dosen(nip:"456789", nama:"Fuad", alamat:"Jalan Ngawi Utara");
        Dosen dosen3 = new Dosen(nip:"999999", nama:"Selapur", alamat:"Jalan Sawahan");

        dosen1.setJumlahSKS(jumlahSKS:10);
        dosen2.setJumlahSKS(jumlahSKS:20);
        dosen3.setJumlahSKS(jumlahSKS:30);
        daftarGaji.addPegawai(dosen1);
        daftarGaji.addPegawai(dosen2);
        daftarGaji.addPegawai(dosen3);
        daftarGaji.printSemuaGaji();
    }
}
```

```
PS E:\document\POLINEMA\Sem 3\OOP pra
eek 7\demo\target\classes' 'jobsheet_
Nama: Rusdi
Gaji: 1000000

Gaji: 2000000

Nama: Selapur
Gaji: 3000000
```