

**OBJECT-ORIENTED PROGRAMMING WORK**

**MODULE 9**



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**INFORMATICS STUDY PROGRAM**

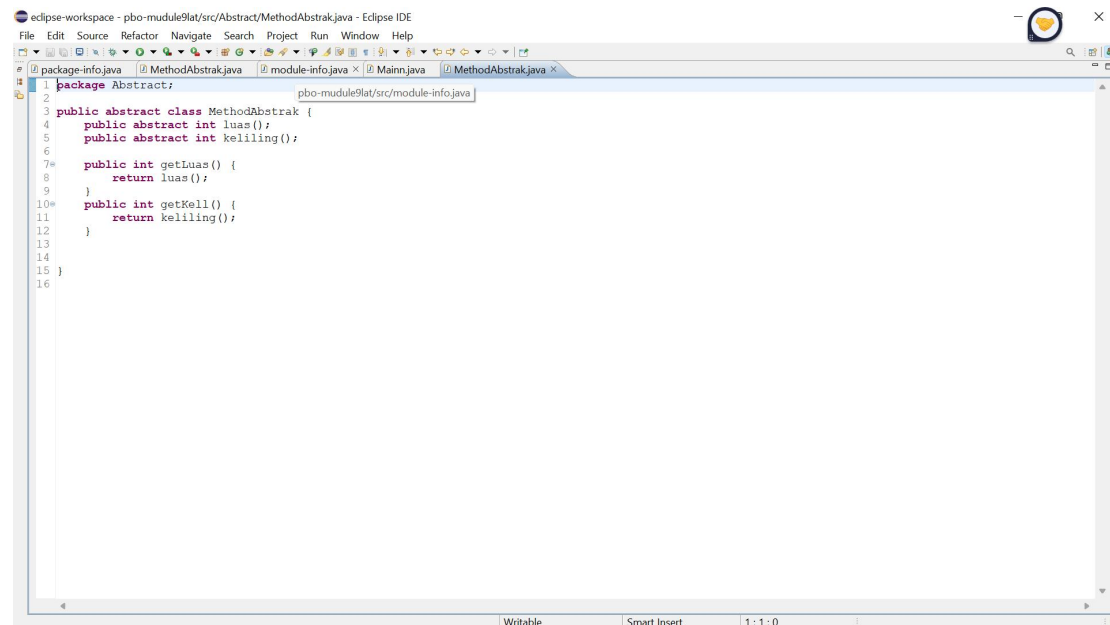
**FACULTY OF COMMUNICATION AND INFORMATION SCIENCE**

**MUHAMMADIYAH SURAKARTA UNIVERSITY**

## Exercise

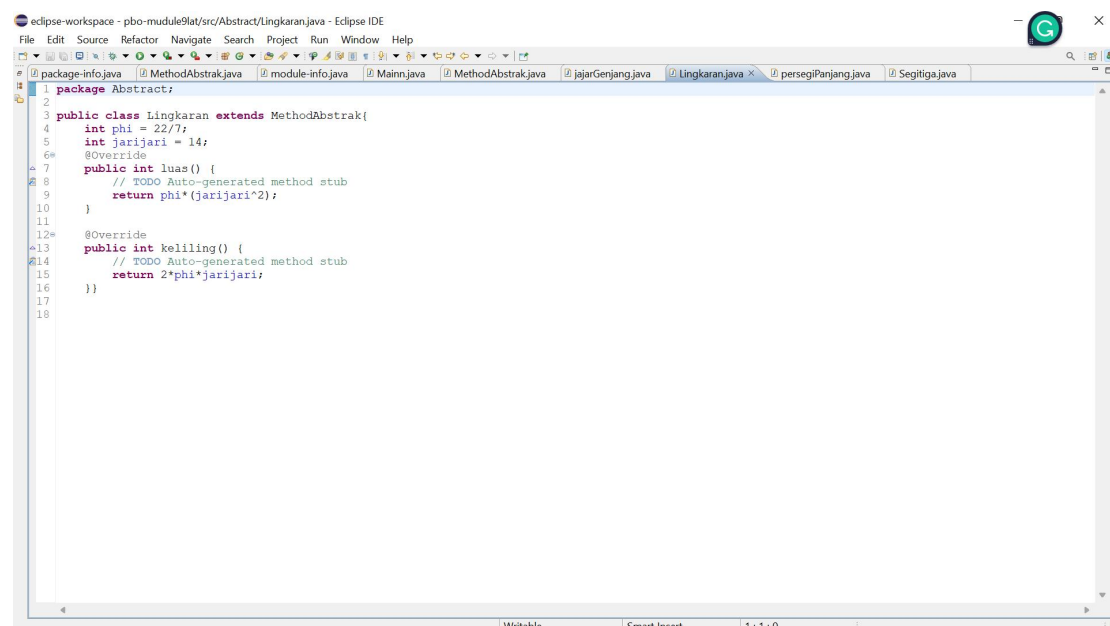
Create an Abstract Method class, then create a new class named Rectangle, Parallelogram, Circle, and Triangle. Next, implement the area() and circumference() methods according to the calculations of each class.

### MethodAbstrak class



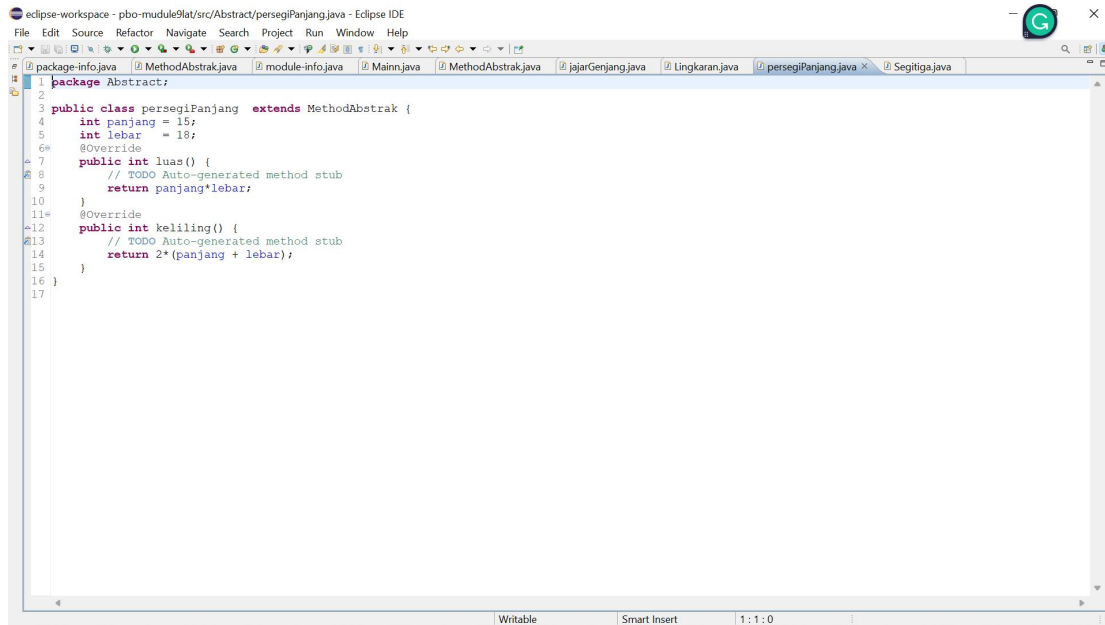
```
1 package Abstract;
2
3 public abstract class MethodAbstrak {
4     public abstract int luas();
5     public abstract int keliling();
6
7     public int getLuas() {
8         return luas();
9     }
10    public int getKell() {
11        return keliling();
12    }
13
14 }
15
16 }
```

### Lingkaran



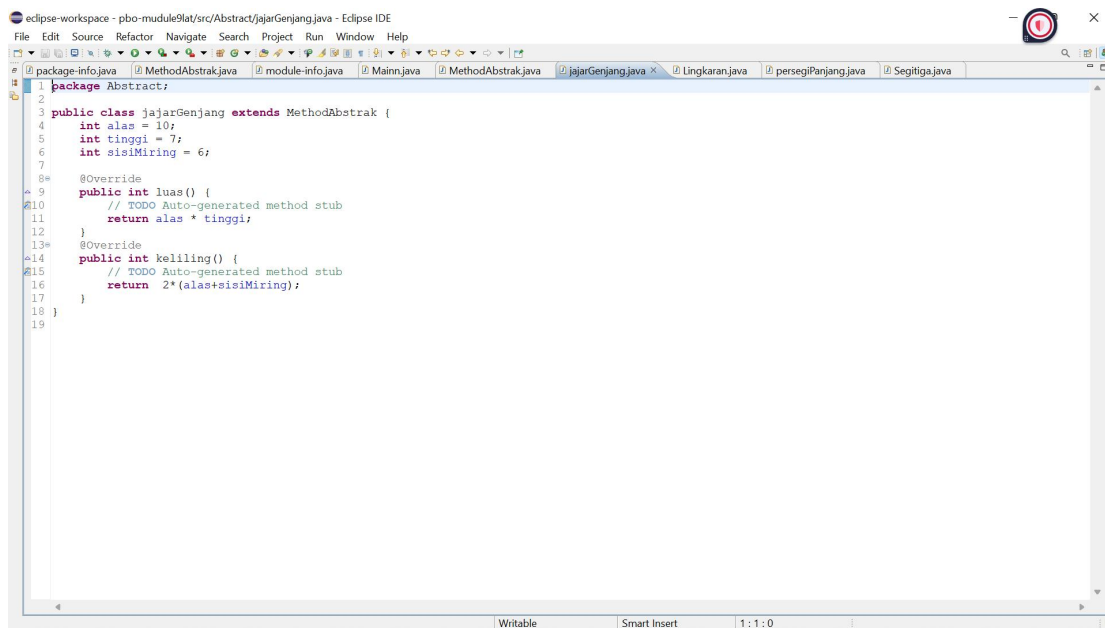
```
1 package Abstract;
2
3 public class Lingkaran extends MethodAbstrak {
4     int phi = 22/7;
5     int jarijari = 14;
6
7     @Override
8     public int luas() {
9         // TODO Auto-generated method stub
10        return phi*(jarijari*2);
11    }
12
13    @Override
14    public int keliling() {
15        // TODO Auto-generated method stub
16        return 2*phi*jarijari;
17    }
18 }
```

### Persegi Panjang



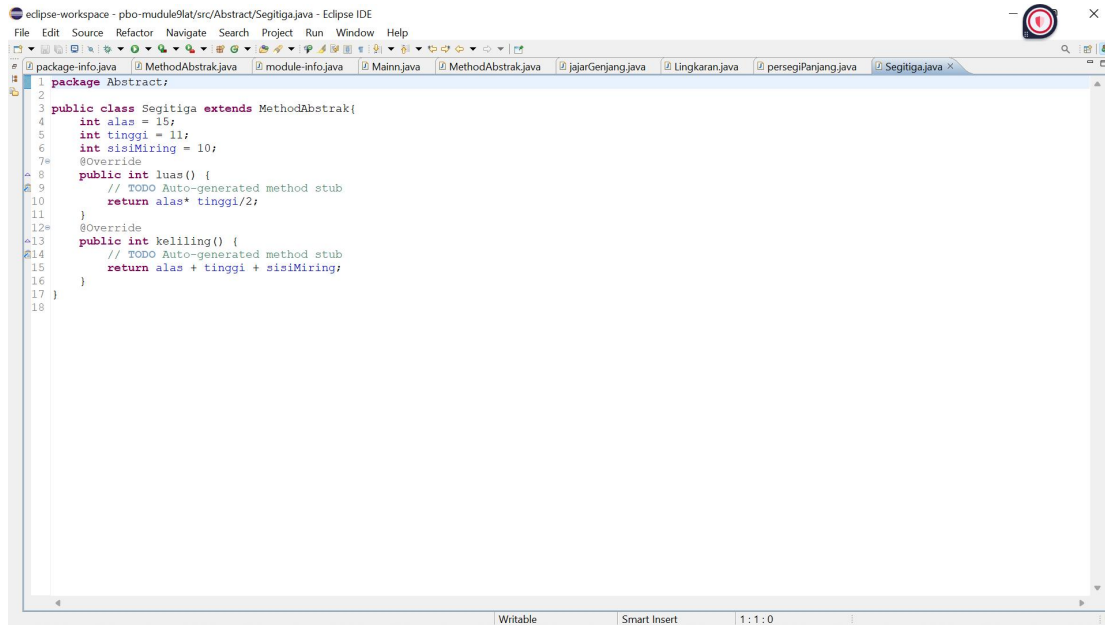
```
1 package Abstract;
2
3 public class persegiPanjang extends MethodAbstrak {
4     int panjang = 15;
5     int lebar = 18;
6
7     @Override
8     public int luas() {
9         // TODO Auto-generated method stub
10        return panjang*lebar;
11    }
12
13    @Override
14    public int keliling() {
15        // TODO Auto-generated method stub
16        return 2*(panjang + lebar);
17    }
18 }
```

## Jajar Genjang



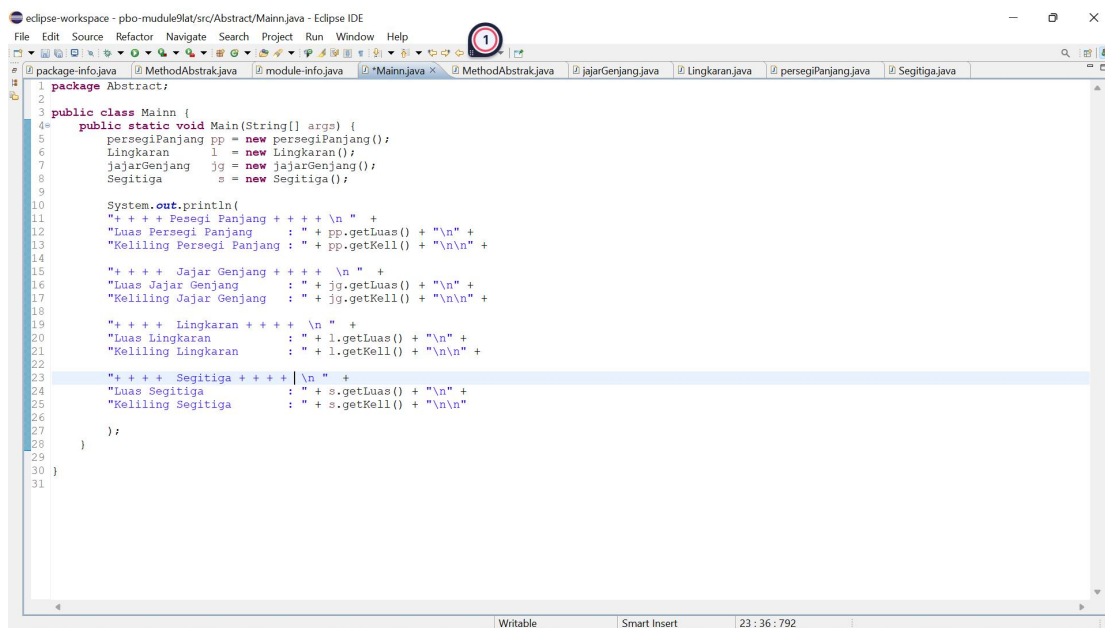
```
1 package Abstract;
2
3 public class jajarGenjang extends MethodAbstrak {
4     int alas = 10;
5     int tinggi = 7;
6     int sisiMiring = 6;
7
8     @Override
9     public int luas() {
10        // TODO Auto-generated method stub
11        return alas * tinggi;
12    }
13
14    @Override
15    public int keliling() {
16        // TODO Auto-generated method stub
17        return 2*(alas+sisiMiring);
18    }
19 }
```

## Segitiga



```
1 package Abstract;
2
3 public class Segitiga extends MethodAbstrak{
4     int alas = 15;
5     int tinggi = 11;
6     int sisiMiring = 10;
7     @Override
8     public int luas() {
9         // TODO Auto-generated method stub
10        return alas* tinggi/2;
11    }
12    @Override
13    public int keliling() {
14        // TODO Auto-generated method stub
15        return alas + tinggi + sisiMiring;
16    }
17 }
18
```

## Mainn



```
1 package Abstract;
2
3 public class Mainn {
4     public static void Main(String[] args) {
5         persegiPanjang pp = new persegiPanjang();
6         lingkaran l = new lingkaran();
7         jajarGenjang jg = new jajarGenjang();
8         Segitiga s = new Segitiga();
9
10        System.out.println(
11            "+ + + Persegi Panjang + + + \n " +
12            "Luas Persegi Panjang : " + pp.getLuas() + "\n" +
13            "Keliling Persegi Panjang : " + pp.getKell() + "\n\n" +
14
15            "+ + + Jajar Genjang + + + \n " +
16            "Luas Jajar Genjang : " + jg.getLuas() + "\n" +
17            "Keliling Jajar Genjang : " + jg.getKell() + "\n\n" +
18
19            "+ + + Lingkaran + + + \n " +
20            "Luas Lingkaran : " + l.getLuas() + "\n" +
21            "Keliling Lingkaran : " + l.getKell() + "\n\n" +
22
23            "+ + + Segitiga + + + \n " +
24            "Luas Segitiga : " + s.getLuas() + "\n" +
25            "Keliling Segitiga : " + s.getKell() + "\n\n"
26        );
27    }
28 }
29
30 }
31
```

## Output:

```

+ + + + Persegi Panjang + + + +
Luas Persegi Panjang      : 270
Keliling Persegi panjang  : 66

+ + + + Jajar Genjang + + + +
Luas Jajar Genjang       : 70
Keliling Jajar Genjang   : 32

+ + + + Lingkaran + + + +
Luas Lingkaran           : 36
Keliling Lingkaran       : 84

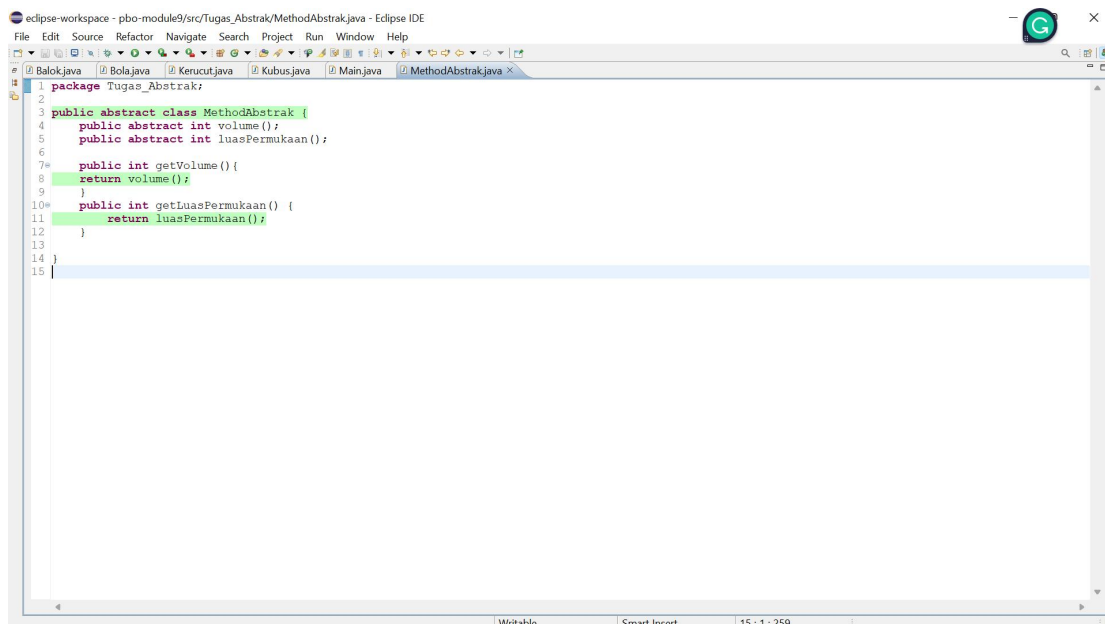
+ + + + Segitiga + + + +
Luas Segitiga            : 82
Keliling Segitiga        : 36

```

## Task

Create an abstract class for constructing space, provided that it has an abstract method for calculating volume, and Cover area/Surface area. Next, create a Beam, Cube, Sphere, Cone, and Triangle Prism class to implement the abstract method.

## Method Abstrak



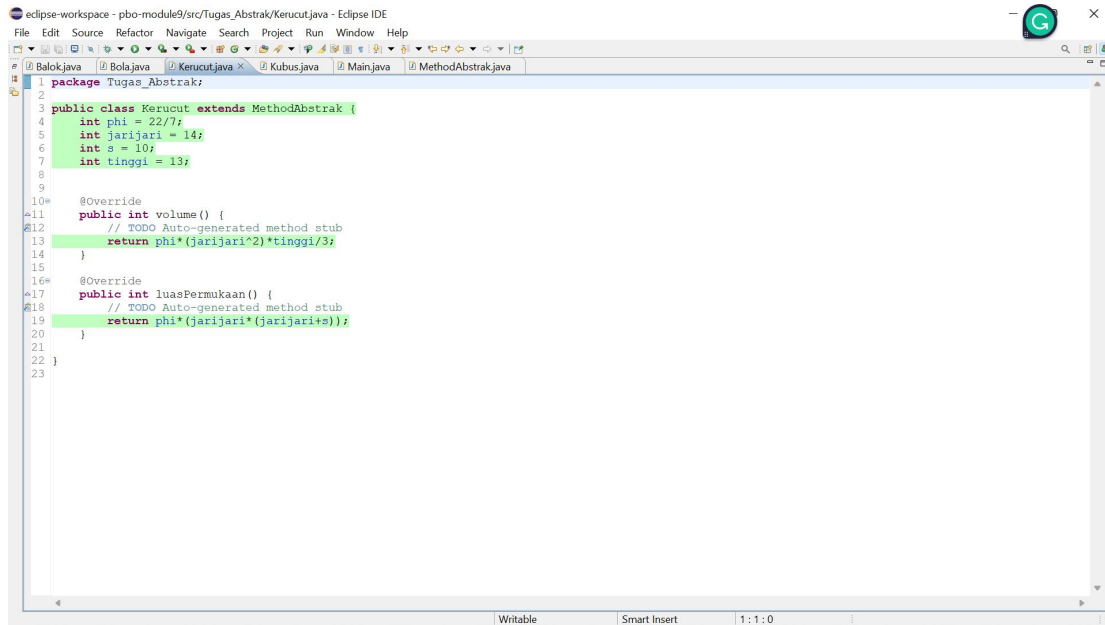
## Balok

```
1 package Tugas_Abstrak;
2
3 public class Balok extends MethodAbstrak {
4     int panjang = 10;
5     int lebar = 7;
6     int tinggi = 5;
7
8     @Override
9     public int volume() {
10        // TODO Auto-generated method stub
11        return panjang*lebar*tinggi;
12    }
13
14    @Override
15    public int luasPermukaan() {
16        // TODO Auto-generated method stub
17        return (2*panjang*lebar) + (2*panjang*tinggi) + (2*lebar*tinggi);
18    }
19
20 }
21
```

## Bola

```
1 package Tugas_Abstrak;
2
3 public class Balok extends MethodAbstrak {
4     int panjang = 10;
5     int lebar = 7;
6     int tinggi = 5;
7
8     @Override
9     public int volume() {
10        // TODO Auto-generated method stub
11        return panjang*lebar*tinggi;
12    }
13
14    @Override
15    public int luasPermukaan() {
16        // TODO Auto-generated method stub
17        return (2*panjang*lebar) + (2*panjang*tinggi) + (2*lebar*tinggi);
18    }
19
20 }
21
```

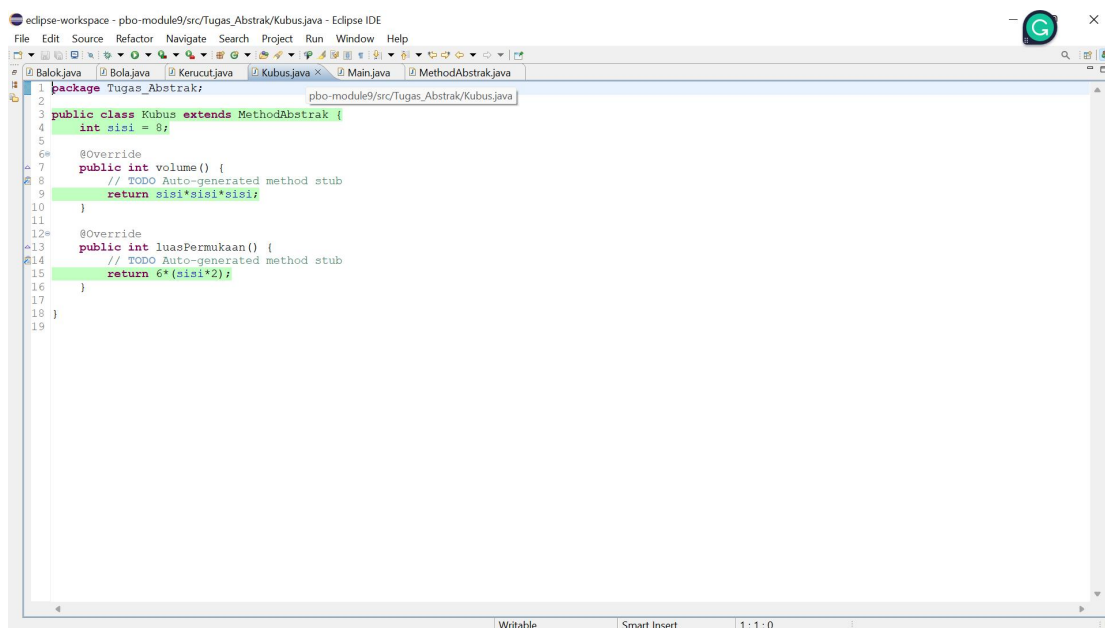
## Kerucut



The screenshot shows the Eclipse IDE interface with the file `Kerucut.java` open. The code defines a class `Kerucut` that extends `MethodAbstrak`. It includes attributes `phi`, `jarijari`, `s`, and `tinggi`, and implements methods `volume()` and `luasPermukaan()`.

```
1 package Tugas_Abstrak;
2
3 public class Kerucut extends MethodAbstrak {
4     int phi = 22/7;
5     int jarijari = 14;
6     int s = 10;
7     int tinggi = 13;
8
9
10    @Override
11    public int volume() {
12        // TODO Auto-generated method stub
13        return phi*(jarijari*2)*tinggi/3;
14    }
15
16    @Override
17    public int luasPermukaan() {
18        // TODO Auto-generated method stub
19        return phi*(jarijari*(jarijari+s));
20    }
21
22 }
23
```

## Kubus



The screenshot shows the Eclipse IDE interface with the file `Kubus.java` open. The code defines a class `Kubus` that extends `MethodAbstrak`. It includes the attribute `sisi` and implements methods `volume()` and `luasPermukaan()`.

```
1 package Tugas_Abstrak;
2
3 public class Kubus extends MethodAbstrak {
4     int sisi = 8;
5
6
7     @Override
8     public int volume() {
9         // TODO Auto-generated method stub
10        return sisi*sisi*sisi;
11    }
12
13    @Override
14    public int luasPermukaan() {
15        // TODO Auto-generated method stub
16        return 6*(sisi*2);
17    }
18
19 }
```

## Prisma Segitiga

```
eclipse-workspace - pbo-module9/src/Tugas_Abstrak/PrismaSegitiga.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Balok.java Bolajava Kerucut.java Kubus.java Main.java MethodAbstrak.java PrismaSegitiga.java
1 package Tugas_Abstrak;
2
3 public class PrismaSegitiga extends MethodAbstrak {
4     int alas = 15;
5     int tinggiSegitiga = 5;
6     int sisiMiring = 12;
7     int tinggi = 8;
8
9     @Override
10    public int volume() {
11        // TODO Auto-generated method stub
12        return (alas*tinggiSegitiga/2)*tinggi;
13    }
14
15    @Override
16    public int luasPermukaan() {
17        // TODO Auto-generated method stub
18        return (2*(1/2*alas*tinggiSegitiga)+(alas*tinggiSegitiga+sisiMiring)*tinggi);
19    }
20 }
21
22
Writable Smart Insert 6:25:144
```

## Main

```
eclipse-workspace - pbo-module9/src/Tugas_Abstrak/Main.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Balok.java Bolajava Kerucut.java Kubus.java Main.java MethodAbstrak.java PrismaSegitiga.java
1 package Tugas_Abstrak;
2
3 public class Main{
4     public static void main(String [] args) {
5         Balok b = new Balok();
6         Kubus k = new Kubus();
7         Bola bl = new Bola ();
8         Kerucut kc = new Kerucut();
9         PrismaSegitiga ps = new PrismaSegitiga();
10
11         System.out.println(
12             "===== Balok ===== \n" +
13             "Luas Permukaan Balok : " + b.getLuasPermukaan() + "\n" +
14             "Valome Balok : " + b.getVolume() + "\n" +
15
16             "===== Kubus ===== \n" +
17             "Luas Permukaan Kubus : " + k.getLuasPermukaan() + "\n" +
18             "Valome Kubus : " + k.getVolume() + "\n" +
19
20             "===== Bola ===== \n" +
21             "Luas Permukaan Bola : " + bl.getLuasPermukaan() + "\n" +
22             "Valome Bola : " + bl.getVolume() + "\n" +
23
24             "===== Kerucut ===== \n" +
25             "Luas Permukaan Kerucut : " + kc.getLuasPermukaan() + "\n" +
26             "Valome Kerucut : " + kc.getVolume() + "\n" +
27
28             "===== PrismaSegitiga ===== \n" +
29             "Luas Permukaan PrismaSegitiga : " + ps.getLuasPermukaan() + "\n" +
30             "Valome PrismaSegitiga : " + ps.getVolume()
31         );
32     }
33 }
34
35
36
37
38
39
Writable Smart Insert 3:18:43
```

Output:



<terminated> Main (6) [Java Application] C:\Users\Asus\.p2\p

===== Balok =====

Luas Permukaan Balok : 310

Valome Balok : 350

===== Kubus =====

Luas Permukaan Kubus : 96

Valome Kubus : 512

===== Bola =====

Luas Permukaan Bola : 576

Valome Bola : 147

===== Kerucut =====

Luas Permukaan Kerucut : 1008

Valome Kerucut : 156

===== PrismaSegitiga =====

Luas Permukaan PrismaSegitiga : 696

Valome PrismaSegitiga : 296