LAPORAN PRAKTIKUM

LATIHAN UTS

Disusun sebagai salah satu tugas

mata kuliah PBO I

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PROGRAM STUDI S-1 TEKNIK INFORMATIKA

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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```
public class A {
    int add(int i, int j){
        return i+j;
    }
}
```

```
public class B extends A {
    public static void main(String argv[]){
        short s = 9;
        System.out.println(add(s,6));
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac B.java
B.java:4: error: non-static method add(int,int) cannot be referenced from a static context
            System.out.println(add(s,6));
                               ^
1 error
```

Error karena fungsi pada class A non static, sehingga kita cukup mengubahnya menjadi static. Bisa juga dinisiasikan `A a = new A();` Setelah diedit:

```
public class A {
    static int add(int i, int j){
        return i+j;
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac B.java

E:\DOCS\task.bbr\Programming\Java>java B
15
```

Question – 2

```
public class A {
    int k;
    boolean istrue;
    static int p;
    public void printValue(){
        System.out.print(k);
        System.out.print(istrue);
        System.out.print(p);
    }
}
```

```java
public class Test {
    public static void main(String argv[]){
        A a = new A();
        a.printValue();
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
0false0
```

Hasil output merupakan default value dari int, boolean, dan static int.

Data Type	Default Value (for fields)
int	0
boolean	false

Question – 3

```java
public class Test {
    int _$;
    int $7;
    int do;
    public static void main(String argv[]){
        Test test = new Test();
        test.$7 = 7;
        test.do = 9;
        System.out.print(test.$7);
        System.out.print(test.do);
        System.out.print(test._$);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java
Test.java:4: error: <identifier> expected
        int do;
              ^
Test.java:8: error: <identifier> expected
            test.do = 9;
                   ^
Test.java:8: error: not a statement
            test.do = 9;
                 ^
Test.java:8: error: illegal start of expression
            test.do = 9;
                    ^
Test.java:8: error: ';' expected
            test.do = 9;
                  ^
Test.java:10: error: <identifier> expected
            System.out.print(test.do);
                                  ^
Test.java:10: error: ';' expected
            System.out.print(test.do);
                                     ^
7 errors
```

Error karena di sini "do" dipakai sebagai variabel, kita tidak boleh menggunakan identifier sebagai variabel, jadi cukup kita ganti dengan nama lain misalnya "dot". Setelah diedit:

```java
public class Test {
    int _$;
    int $7;
    int dot;
    public static void main(String argv[]){
        Test test = new Test();
        test.$7 = 7;
        test.dot = 9;
        System.out.print(test.$7);
        System.out.print(test.dot);
        System.out.print(test._$);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
790
```

Question – 4

Class Animal dalam folder com, dimana folder com berada di dalam folder exam. Folder exam sendiri memiliki class Animal dan Test di dalamnya.

```java
package com;
class Animal {
    public void printName(){
        System.out.println("Animal");
    }
}
```

```java
package exam;
import com.Animal;
public class Cat extends Animal {
    public void printName(){
        System.out.println("Cat");
    }
}
```

```java
package exam;
import com.Animal;
public class Test {
    public static void main(String[] args){
        Animal a = new Cat();
        a.printName();
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java\exam>javac Test.java
Test.java:2: error: Animal is not public in com; cannot be accessed from outside package
import com.Animal;
          ^
Test.java:5: error: cannot find symbol
                Animal a = new Cat();
                ^
  symbol:   class Animal
  location: class Test
Test.java:5: error: cannot find symbol
                Animal a = new Cat();
                               ^
  symbol:   class Cat
  location: class Test
3 errors
```

Error karena class Animal tidak dipublik sehingga tidak bisa dipanggil keluar package dan di sini class Cat tidak terdeteksi sehingga tidak bisa dipanggil. Setelah diedit:

```
package com;
public class Animal {
    public void printName(){
        System.out.println("Animal");
    }
}
```

```
//package exam;
import com.Animal;
public class Cat extends Animal {
    public void printName(){
        System.out.println("Cat");
    }
}
```

```
//package exam;
import com.Animal;
public class Test {
    public static void main(String[] args){
        Animal a = new Cat();
        a.printName();
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java\exam>javac Test.java

E:\DOCS\task.bbr\Programming\Java\exam>java Test
Cat
```

```java
public class A {
    int i = 10;
    public void printValue(){
        System.out.println("Value-A");
    }
}
```

```java
public class B extends A {
    int i = 12;
    public void printValue(){
        System.out.print("Value-B");
    }
}
```

```java
public class Test {
    public static void main(String argv[]){
        A a = new B();
        a.printValue();
        System.out.println(a.i);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
Value-B10
```

Karena saat menginstasiasi subclass "A" dengan class superclass "B" yaitu pada class Test baris ke-3: A a = new B();, maka method yang dieksekusi yaitu subclass methodnya sedangkan variabel yang dieksekusi yaitu superclass variabelnya.

```java
public enum Test {
    BREAKFAST(7,30), LUNCH(12,15), DINNER(19,45);
    private int hh;
    private int mm;
    Test (int hh, int mm){
        assert (hh>=0&&hh<=23): "Illegal hour.";
        assert (mm>=0&&mm<=59): "Illegal mins.";
        this.hh = hh;
        this.mm = mm;
    }
    public int getHour(){
        return hh;
    }
    public int getMins(){
        return mm;
    }
```

```java
    public static void main(String args[]){
        Test t = new BREAKFAST;
        System.out.println(t.getHour()+":"+t.getMins());
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java
Test.java:18: error: '(' or '[' expected
                Test t = new BREAKFAST;
                                      ^
1 error
```

Error karena class enum tidak dapat di instasiasi menggunakan "new" operator.

```java
public class A {
    static { System.out.println("static"); }
    { System.out.println("block"); }

    public A(){
        System.out.println("A");
    }
    public static void main(String[] args){
        A a = new A();
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac A.java

E:\DOCS\task.bbr\Programming\Java>java A
static
block
A
```

Static Initializer atau Static Block tersebut mengeksekusi sebelum main method.

```java
public class Test {
    public static void main(String[] args){
        int i = 010;
        int j = 07;
        System.out.println(i);
        System.out.println(j);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
8
7
```

Jika kita menambahkan angka"0" di depan, maka bilangan tersebut menjadi bilangan Oktal. Oktal dari 10 = 8 dan Oktal dari 7 = 7.

```java
public class Test {
    public static void main(String[] args){
        byte b = 6;
        b+=8;
        System.out.println(b);
        b = b+7;
        System.out.println(b);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java
Test.java:6: error: incompatible types: possible lossy conversion from int to byte
            b = b+7;
                ^
1 error
```

Error karena tidak bisa mengkonversi byte jadi int pada baris `b = b+7;` jadi harus diganti. Setelah diedit:

```java
public class Test {
    public static void main(String[] args){
        byte b = 6;
        b+=8;
        System.out.println(b);
        b+=7;
        System.out.println(b);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
14
21
```

Question – 10

```java
public class Test {
    public static void main(String[] args){
        String value = "abc";
        changeValue(value);
        System.out.println(value);
    }
    public static void changeValue(String a){
        a = "xyz";
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
abc
```

Karena parameter dasarnya adalah variabel local. Java menyampaikan referensi (pass reference) sebagai nilai, melewati referensi (passing reference) objek, dan bukan objek itu sendiri.

```
public class Test {
    public static void printValue(int i, int j, int k){
        System.out.println("int");
    }
    public static void printValue(byte...b){
        System.out.println("long");
    }
    public static void main(String... args){
        byte b = 9;
        printValue(b,b,b);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>java Test
int
```

Pelebaran primitif menggunakan argumen metode terkecil. Sebagai contoh jika melewatkan nilai pendek (pass short value) ke metode tapi metode dengan argumen pendek tidak tersedia maka kompiler memilih metode dengan argumen int.

Question – 14

```
public class Test {
    public static void main(String[] args){
        System.out.println("Hello Test");
    }
}
```

```
public class Test1 {
    public static void main(String[] args){
        System.out.println("Hello Test1");
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac Test.java

E:\DOCS\task.bbr\Programming\Java>javac Test1.java

E:\DOCS\task.bbr\Programming\Java>java Test Test1
Hello Test
```

Jika ingin mengeksekusi kelas, harus menentukan persis satu file kelas untuk dieksekusi. Kalau lebih dari satu yang dieksekusi maka yang pertama akan dieksekusi.

```java
public class SuperClass {
    public int doIt(String str, Integer... data) throws Exception {
        String signature = "(String, Integer[])";
        System.out.println(str+" "+signature);
        return 1;
    }
}
```

```java
public class SubClass extends SuperClass {
    public int doIt(String str, Integer... data){
        String signature = "(String, Integer[])";
        System.out.println("Overridden: "+str+" "+signature);
        return 0;
    }
    public static void main(String... args){
        SuperClass sb = new SubClass();
        sb.doIt("hello", 3);
    }
}
```

```
E:\DOCS\task.bbr\Programming\Java>javac SubClass.java
SubClass.java:9: error: unreported exception Exception; must be caught or declared to be thrown
            sb.doIt("hello", 3);
                   ^
1 error
```

Error karena exception type Exception yang tidak tertangani.

What happens when the following code is compiled and run?

```java
for(int i = 2; i < 4; i++)
    for(int j = 2; j < 4; j++)
        if(i < j)
            assert i!=j : i;
```

The class compiles and runs, but does not print anything. Karena jika kondisi kembali benar, pernyataan (assert statement) juga mengembalikan nilai true. Karena itu, Assertion Error tidak bisa dihasilkan.