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PACKAGE

JAVA API Packages - Classes & Interfaces

- java.applet for web browser
- java.awt Abstract Window Toolkit (GUI) replaced by Swing GUI now
- java.awt.event Event for both awt & Swing
- java.awt.geom 2D graphical
- java.io Input/Output data
- java.lang Language imported by compiler to all java program
- java.net Networking
- java.sql JDBC databse
- java.util date, time, random, processing large size data, etc.
- java.util.concurrent parallel processing

Importing Packages

- Implicit Import
 - System
 - String
 - Array
 - Default

- Explicit Import
 - Scanner
 - Random
 - "import" Explicit Statement

Package

default package

- fully qualified class name full package name
 - + class name

java.util.Scanner input = new java.util.Scanner(System.in);

```
import java.util.Random;
                                                        Output:
public class Ran
                                                        51624122414112351535
   public static void main(String [] argv)
                                                        Output:
     Random MyRan = new Random();
                                                        31216
      int face;
                                                        46266
                                                        66163
      for(int c=1; c<=20; c++)
                                                        65326
         face = MyRan.nextInt(6) + 1;
         System.out.print(face);
         if(c\%5 == 0)
            System.out.println();
```

```
import java.util.Scanner;
public class Pack
   int n;
   double d;
   String s;
   Boolean c;
   public String toString()
         return String.format("Integer:%d\n Double:%f\n String:%s\n
         Boolean:%b \n", n, d, s, c);
   public static void main(String[] argv)
        Pack obj = new Pack();
        Scanner A = new Scanner(System.in);
        System.out.println(obj);
        obj.n = A.nextInt();
        obj.d = A.nextDouble();
        obj.s = A.next();
        obj.c = A.nextBoolean()
        System.out.println(obj);
```

Output

Integer:0

Double:0.000000

String:null

Boolean:false

21

34.574132864234

OOPS

true

Integer:21

Double:34.574133

String:OOPS

Boolean:true

```
import java.util.Scanner;
public class Pack
   int n;
   double d;
   String s;
   Boolean c;
   public String toString()
         return String.format("Integer:%d\n Double:%f\n String:%s\n
         Boolean:%b \n", n, d, s, c);
   public static void main(String[] argv)
        Pack obj = new Pack();
        java.util.Scanner A = new java.util.Scanner(System.in);
        System.out.println(obj);
        obj.n = A.nextInt();
        obj.d = A.nextDouble();
        obj.s = A.next();
        obj.c = A.nextBoolean()
        System.out.println(obj);
```

Default Package - Test3.java

```
class test3
    int val;
    public String toString()
       return String.format("Test Value:%d \n ",val);
    public void testCall()
        System.out.println("TestCal.....\n");
```

Default Package - Pack.java

```
public class Pack
  public static void main(String[] argv)
  {
      test3 newObj = new test3();
      System.out.println("Value: " +newObj.val);
      newObj.testCall();
      System.out.println(newObj);
```

Package Creation - Time1.java

```
package E.MyPackage.sample;
public class Time1
   private int h;
    public void set(int h1)
      h = h_1;
   public String toString()
        return String.format("Hour: %d\n",h);
```

Source File – PackTest.java

```
import E.MyPackage.sample;
                                           Hour: 22
public class PackTest
                                           22.360679774997898
   public static void main(String[] args)
      Time1 A = new Time1();
       A .set(22);
       System.out.println(A.toString());
```

Static Import - Time1.java

package E.MyPackage.sample;

```
public class Time1
    private int h;
    public void set(int h1)
       h = h_1;
   static public void disp()
        System.out.println("Static test.....\n");
    public String toString()
        return String.format("Hour: %d\n",h);
```

Static Import - PackTest.java

```
import static E.MyPackage.sample.Time1.*;
import static E.MyPackage.sample.Time1.disp;
public class PackTest
                                                      Static test.....
   public static void main(String[] args)
                                                      22.360679774997898
          Time1 A = new Time1();
          A.set(22);
     //
          disp();
        System.out.println(A.toString());
         System.out.println(Math.abs(500));
```

Compilation & Execution

E:\>javac -d . Time1.java

E:\>javac PackTest.java

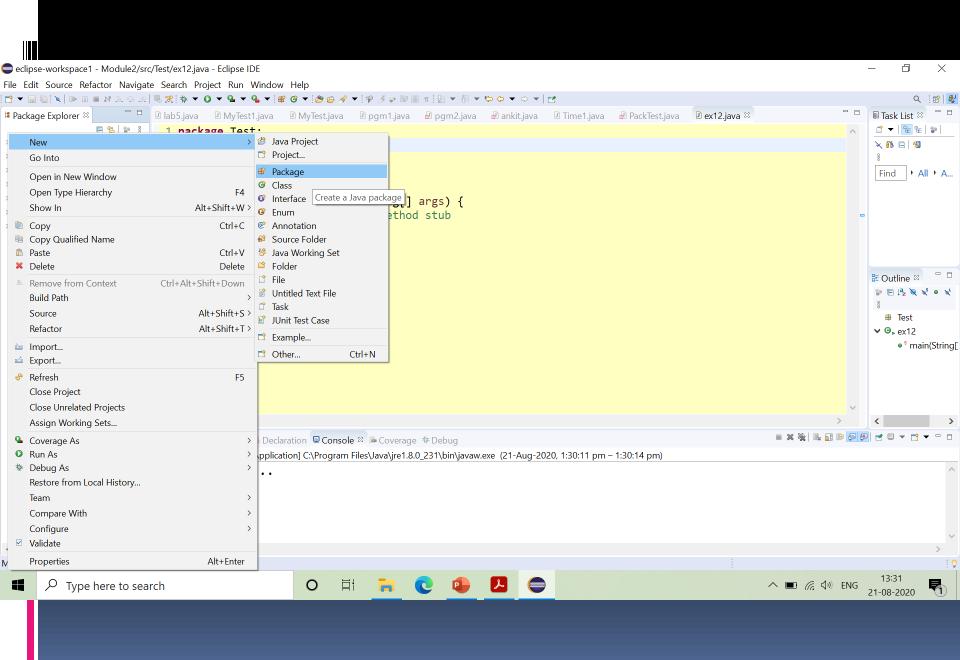
E:\>java PackTest

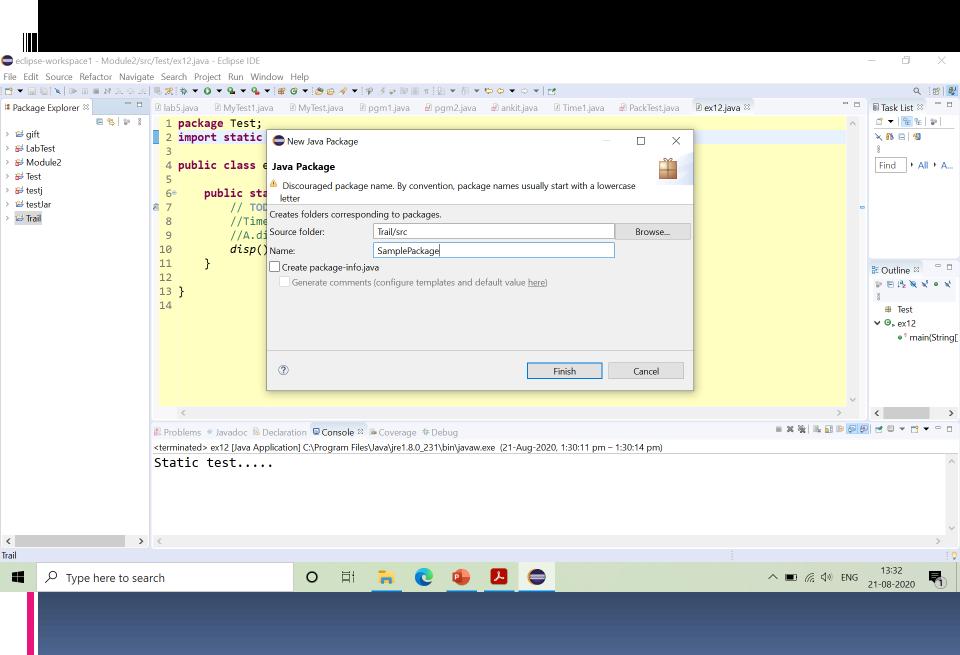
Static test.....

22.360679774997898

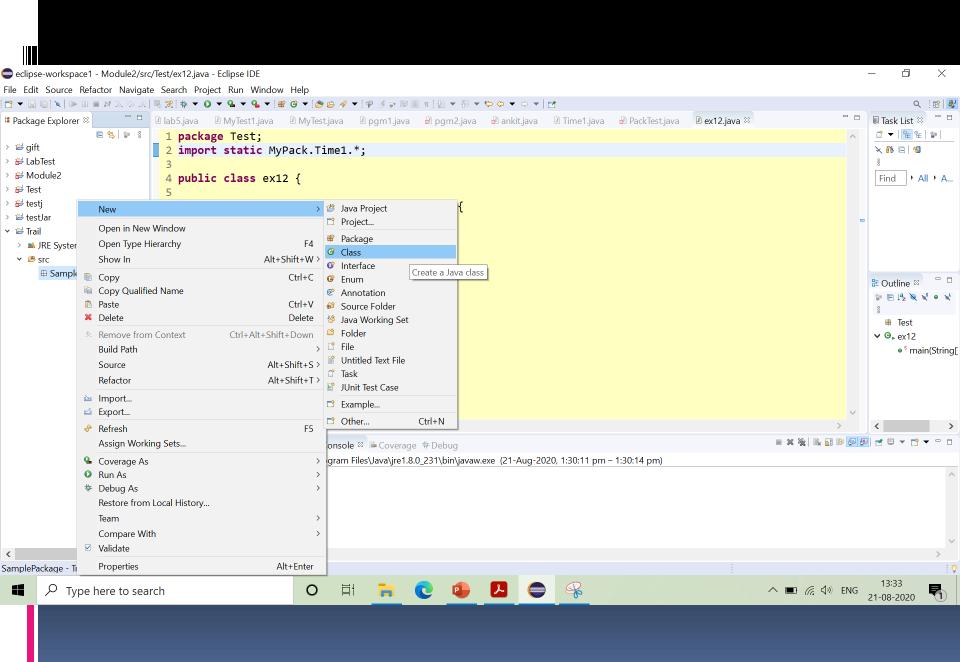
Access Control

| | Private | No Modifier | Protected | Public |
|--------------------------------|---------|-------------|-----------|--------|
| Same class | Yes | Yes | Yes | Yes |
| Same package subclass | No | Yes | Yes | Yes |
| Same package non-subclass | No | Yes | Yes | Yes |
| Different package subclass | No | No | Yes | Yes |
| Different package non-subclass | No | No | No | Yes |



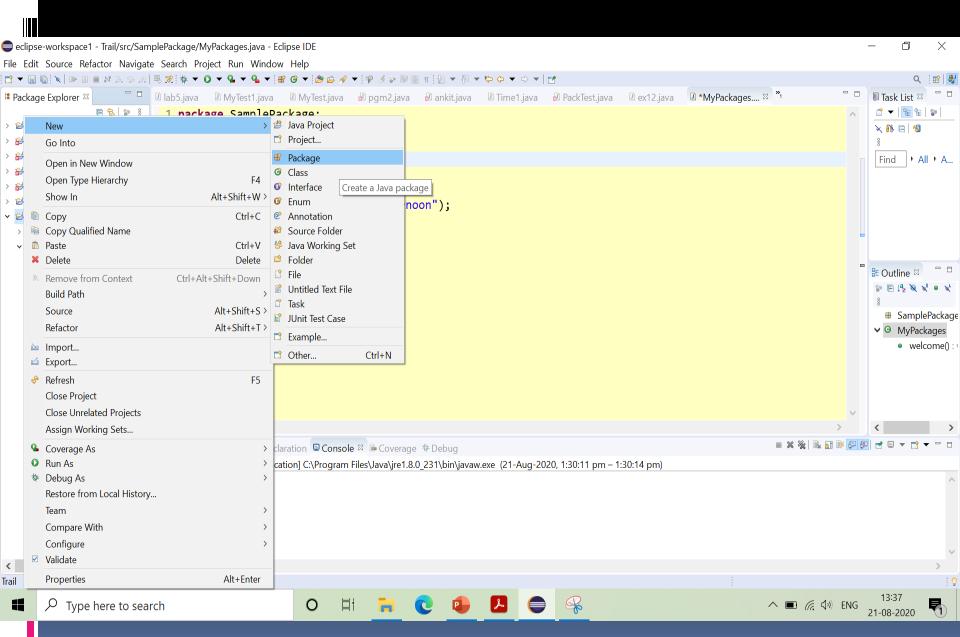


- 🗸 📂 Trail
 - JRE System Library [JavaSE-1
 - - ⊕ SamplePackage



| DE | New Java Class | | | | \times | |
|-----------|--------------------------------------|---|-------|--------|----------|-----|
| Win | Java Class | | | (| | 1 |
| 1.jav | This package nar lowercase letter | ne is discouraged. By convention, package names usually start w | ith a | | | J (|
| ic | Source folder: | Trail/src | | Browse | 2 | |
| s e | Package: | SamplePackage | | Browse | e | |
| sta | Enclosing type: | | | Browse | 2 | |
| me di | Name: Modifiers: | MyPackages ● public ○ package ○ private ○ protected abstract □ final □ static | | | | |
| | Superclass: | java.lang.Object | | Browse | e | |
| | Interfaces: | | | Add | | |
| | | | | Remov | /e | |
| | | os would you like to create? ✓ public static void main(String[] args) Constructors from superclass ✓ Inherited abstract methods d comments? (Configure templates and default value here) | | | | |
| <u></u> C | | Generate comments | | | | |
| Apr | | | | | | |
| • • | ? | Finish | | Cancel | | |

```
1 package SamplePackage;
 public class MyPackages {
   public void welcome()
       System.out.println("Good Afternoon");
       System.out.println(Math.PI);
```



- 🗸 📂 Trail
 - ➤ JRE System Library [JavaSE
 - 🗸 🕭 src
 - SamplePackage
 - MyPackages.java
 - User
 - > I testpck.java

Import Package

```
package User;
import SamplePackage.MyPackages;
public class testpck {
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        MyPackages A = new MyPackages();
        A.welcome();
```

Output

Good Afternoon 3.141592653589793

Static method in Packageclass

```
package SamplePackage;
public class MyPackages {
 static public void welcome()
     System.out.println("Good Afternoon");
     System.out.println(Math.PI);
```

Test Package program

```
package User;
import static SamplePackage.MyPackages.*;
public class testpck {
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        //MyPackages A = new MyPackages();
        //A.welcome();
        welcome();
```

Output

Good Afternoon 3.141592653589793