Course Name - Object Oriented Programming using Java

Importing packages, Member Access for Packages

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Topic of Interest

- Package Import
- Illustration of Package Import
- Access Specifier
- Illustration of Access Specifier

Package Import

- The import keyword is used to make the classes and interface of another package accessible to the current package.
- There are 3 different ways to refer to any class that is present in a different package:
  - without import the package
  - import package with specified class
  - import package with all classes

Illustration of Package Import

ClassA.java(Inside java\package1)

```
package package1;
public class ClassA{
public void displayA()
{System.out.println("Class A");}}
```

ClassC.java(Inside java\package1\package2)

```
package package1.package2;
public class ClassC{
public void displayC(){
System.out.println("Class C");}}
```

Pack.java(Inside java)

```
import package1.*;
import package1.package2.ClassC;
class Pack{
public static void main(String args[])
{ ClassA obj= new ClassA();
obj.displayA();
ClassC ob = new ClassC();
ob.displayC();}}
```

Output:

Class A
Class C

Access Specifier

- Access specifier is a keyword through which the accessibility of data or method can be specified.
- The access modifiers in Java specifies the accessibility or scope of a field, method or class. We can change the access level of fields, methods, and class by applying the access modifier on it.
- There are four types of Java access specifiers:
  - **Private**: The access level of a private specifier is only within the class. It cannot be accessed from outside the class.
  - **Default**: The access level of a default specifier is only within the package. It cannot be accessed from outside the package. If you do not specify any access level, it will be the default.

Access Specifier Continued…

- **Protected**: The access level of a protected specifier is within the package and outside the package through child class. If you do not make the child class, it cannot be accessed from outside the package.
- **Public**: The access level of a public specifier is everywhere. It can be accessed from within the class, outside the class, within the package and outside the package.

Illustration of Access Specifier

- **Private:**

```
class A{
    private int d=4;
    private void show() {
        System.out.println("Hello JISCE");
    }
}

public class Test{
    public static void main(String args[]){
        A obj=new A();
        System.out.println(obj.d);//Compile Time Error
        obj.show();//Compile Time Error
    }
}
```

Illustration of Access Specifier Continued…

ClassA.java(Inside java\package1)

```
package package1;
public class ClassA{
// public void displayA()
void displayA()
{System.out.println("Class A");}}
```

ClassC.java(Inside java\package1\package2)

```
package package1.package2;
public class ClassC{
public void displayC(){
System.out.println("Class C");}}
```

Pack.java(Inside java)

```
import package1.*;
import package1.package2.*;
class Pack{
public static void main(String args[])
{ ClassA obj= new ClassA();
obj.displayA();
ClassC ob = new ClassC();
ob.displayC();}}
```

Output -

```
Pack.java:7: error: displayA() is not public in
ClassA; cannot be accessed from outside
package
obj.displayA();
   ^
1 error
```

Illustration of Access Specifier Continued…

Access Modifier	Within class	Within package but not within class.	Outside package by subclass only	Outside package by non-subclass only
Private	Y	N	N	N
Default	Y	Y	N	N
Protected	Y	Y (Only sub class)	Y	N
Public	Y	Y	Y	Y

Thank You