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Assignment 11

Title: Interfaces and packages.

Problem: Write a Java program which will demonstrate a concept of interfaces and packages In this assignment design and use of customized interfaces and packages for a specific application are expected.

Objective: 1) To understand the use of interfaces.
2) To understand the use of packages.

Outcome: 1) To be able to implement interfaces in java.
2) To be able to use packages for specific application

Theory:

Interfaces:

An interface in java is a blueprint of a class. It has static constants and abstract methods. The interface in java is a mechanism to achieve abstraction. There can be only abstract methods in the java interface not method body. An interface declares (describes) methods but does not supply bodies for them. It is used to achieve abstraction and multiple inheritance in JAVA. Interface also represents is-a relationship. It cannot be instantiated just like abstract class.

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Example:-

```
Interface KeyListener {
public void keyPressed (KeyEvent e);
public void keyReleased (KeyEvent e);
public void keyTyped (KeyEvent e);
}
```

There are mainly three reasons to use interface. They are given below.

1) It is used to achieve abstraction.
2) By interface, we can support the functionality of multiple inheritance.
3) It can be used to achieve loose coupling.

An interface is a reference type in Java. It is similar to class. It is a collection of abstraction methods. A class implements an interface, thereby inheriting the abstract methods of the interface. Along with abstract methods an interface may also contain constants, default methods, static methods & nested types And an interface contains behaviors that a class implements. Unless the class that implements the interface is abstract, all the methods of the interface need to be defined in the class.

Interfaces have the following properties.

1) An interface is implicitly abstract. You do not need to use the abstract keyword while declaring an interface.

2) Each method in an interface is also implicitly abstract, so the abstract keyword is not needed.
3) You cannot instantiate an interface.
4) An interface may also contain constants (final variables)

Packages:

A java package is a group of similar types of classes, interfaces and sub-packages Package in java can be categorized in Two form, built-in package and user-defined package. There are many built-in packages such as java, lang, awt, javax, swing, net, io, util, sql, etc.

Packages have following properties:
1) They ~~have~~ are containers for classes/interfaces to avoid name collision.
2) It is stored in heirarchial manner and explicitly imported into new class using import statement.
3) It provide both naming and visibility control mechanism
4) Using it classes/interfaces can easily be maintained

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Algorithm :

Simple interface example:

```
package pr:
 interface printable {
void print();}

import pr.*;
 class A implements printable {
public void print() { System.out.println("Hello");}
public static void main(String args[])
 {
    A obj = new A();
    obj.print();
 }
}
```

Conclusion: We successfully completed the assignment and understood the concept of interface and packages in java.