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Batch C1

OOCCJ Lab Assignment 3B

Problem Statement: Write a Java program to create two interfaces Motorbike and Cycle. Motorbike interface controls consists of the attribute speed and the method totalDistance(). Cycle interface consists of the attribute Time. These interfaces are implemented by the class Two Wheeler. Calculate total distance travelled.

Objective:

- 1) To study abstract class.
- 2) To study interfaces in Java.

Theory:

1. Java Abstraction:

- A process of hiding the implementation details and showing only functionality to the user. Shows only essential things to the user and hides the internal details.

Ex: sending SMS where you type the text and send the message. You don't know the internal processing about the message delivery. It focuses on what the object does instead of how it does it.

There are 2 ways to achieve abstraction in Java:

- 1) Abstract class (0 to 100%)

2. Interface (100%)

2. Java Interfaces:

An interface is a completely "abstract class" that is used to group related methods with empty bodies. By interface, we can support the functionality inheritance.

It can be used to achieve base coupling.

To access the interface methods, the interface is "implemented" by another class, with the `implements` keyword (instead of `extends`).

Conclusion:

Thus, we have successfully implemented interface.

FAQ's

Ans 1) Abstract class cannot be instantiated using `new` keyword while concrete class can be instantiated using `new` keyword.

Abstract class may or may not have abstract methods but concrete class can not have an abstract method.

Abstract class cannot be declared as final class while concrete class can be declared final.

Abstract class can have both abstract and concrete methods while a concrete class can have only concrete methods. Even a single abstract method makes a class abstract.

2) No, it is not possible to use modifiers for the members defined in an interface or in other words, in an interface.

Algorithm:

Step 1: Start

Step 2: Create interface

Step 3: Create class implementing two interfaces

Step 4: Calculate

Step 5: END.

2) No, it is not possible to define private and protected modifiers for the members in interfaces in Java. As the members defined in interfaces are implicitly public or in other words, we can say the member defined in an interface is by default public.

Algorithm :

Step 1: Start

Step 2: Create Interface motorbike and cycle.

Step 3: Create class two wheeler which implements the two interfaces.

Step 4: Calculate total distance

Step 5: END.