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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-503: Object Oriented Techniques

Lecture-25

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OBJECTIVES

In this PPT, you will learn to:

- ❖Interface
- ❖Rules of Interfaces
- ❖Declaration of interface
- ❖Relationship between classes and interfaces

INTERFACE

- Java's interfaces are an improvement over multiple inheritance mechanism of C++.
- While designing a software system in java, Interfaces help us defining the interfaces between the components.
- Interfaces help us achieve a special kind of multiple inheritance : multiple inheritance of interfaces without multiple inheritance of implementation.

RULES OF USING INTERFACES

- Variables declared in the interfaces are implicitly public, static & final.
- Methods declared in the interfaces are implicitly public & abstract.
- Following modifiers can't be applied to the methods declared in an interface :- **private, protected, static, final, synchronized**
- Variables declared in an interface can't be private or protected.
- An interface can extend one or more interfaces.
- One or more interfaces can be implemented in a class.

DECLARATION OF INTERFACE

How to declare an interface?

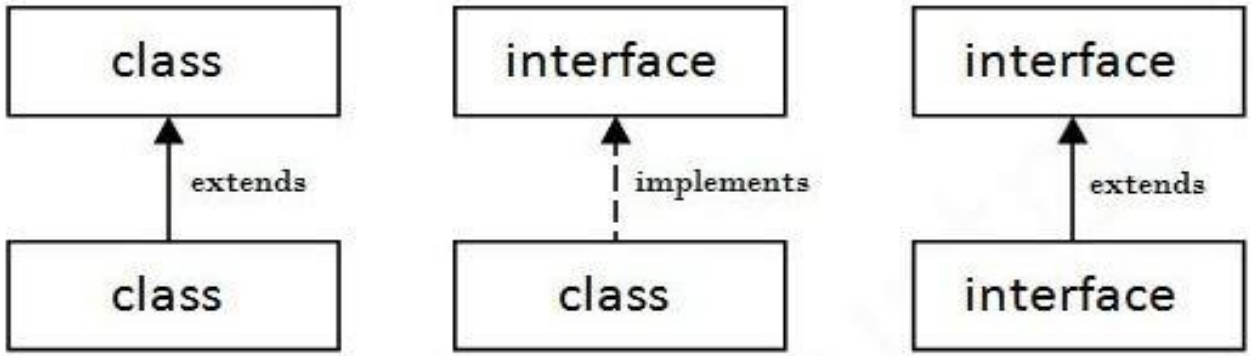
- An interface is declared by using the interface keyword.
- It provides total abstraction; means all the methods in an interface are declared with the empty body, and all the fields are public, static and final by default.
- A class that implements an interface must implement all the methods declared in the interface.

Syntax:

```
interface <interface_name>{
   // declare constant fields
    // declare methods that abstract
    // by default.
}
```

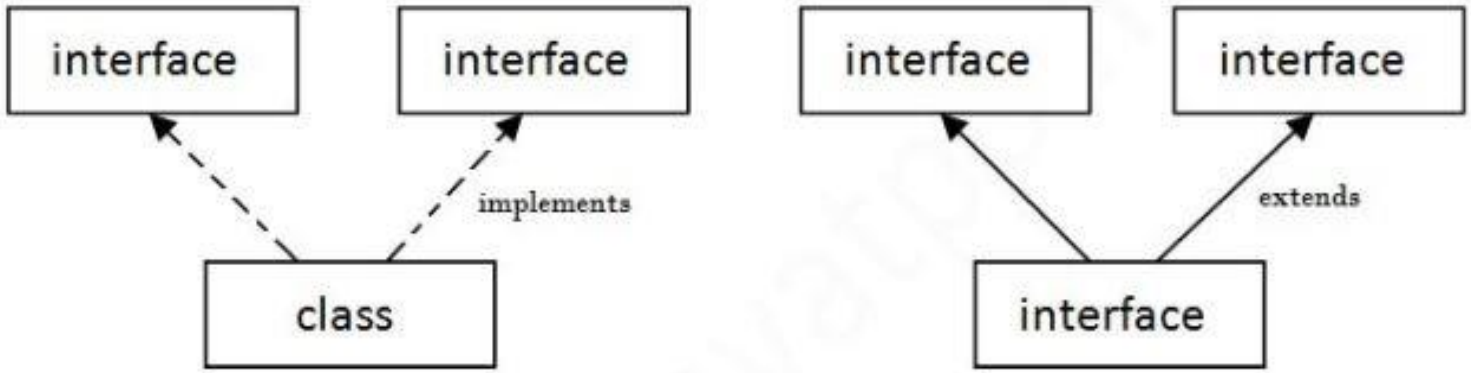
RELATIONSHIP BETWEEN CLASSES AND INTERFACES

As shown in the figure given below, a class extends another class, an interface extends another interface, but a class implements an interface.



MULTIPLE INHERITANCE IN JAVA BY INTERFACE

If a class implements multiple interfaces, or an interface extends multiple interfaces, it is known as multiple inheritance.



Multiple Inheritance in Java

REFERENCES

1. James Rumbaughet. al, "Object Oriented Modeling and Design", PHI

2. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", Pearson Education

3. Naughton, Schildt, "The Complete Reference JAVA2", TMH

4. Mark Priestley "Practical Object-Oriented Design with UML", TMH

5. Booch, Maksimchuk, Engle, Young, Conallen and Houstan, "Object Oriented Analysis and Design with Applications", Pearson Education

6. Pandey, Tiwari, " Object Oriented Programming with JAVA" , Acme Learning

7. https://www.javatpoint.com/java-tutorial

8. https://www.tutorialspoint.com/java/index.htm

9. https://www.tutorialspoint.com/object_oriented_analysis_design/index.htm

10. https://www.slideshare.net/niitstudentcare/

Multiple Choice Question:

Q1. Which of these keywords is used to define interfaces in Java?

a) interface

b) Interface

c) intf

d) Intf

Multiple Choice Question:

Q2. Which of these can be used to fully abstract a class from its implementation?

a) Objects

b) Packages

c) Interfaces

d) None of the Mentioned

Multiple Choice Question:

Q3. Which of these access specifiers can be used for an interface?

a) Public

b) Protected

c) private

d) All of the mentioned

Multiple Choice Question:

Q4. Which of these keywords is used by a class to use an interface defined previously?

a) import

b) Import

c) implements

d) Implements

Multiple Choice Question:

Q5. Which of the following is the correct way of implementing an interface salary by class manager?

a) class manager extends salary {}

b) class manager implements salary {}

c) class manager imports salary {}

d) none of the mentioned

Summary

In this PPT, you learned that:

- An interface in Java is a blueprint of a class.
- It has static constants and abstract methods.
- It is used to achieve abstraction and multiple inheritance in Java.