

2. Abstract class example:

An abstract class can have both abstract (unimplemented) and concrete (implemented) method, constructor, and fields.

Code:-

```
abstract class Animal {
```

```
    protected String name;
```

```
    public Animal(String name) {
```

```
        this.name = name;
```

```
    public void eat() {
```

```
        System.out.println(name + " is eating");
```

```
    }

    public abstract void makeSound();
```



```
class Dog extends Animal {
```

```
    public Dog(string name) {
```

```
        super(name);
```

```
    @Override  
    public void makeSound() {  
        System.out.println(name + " says: Woof!");  
    }  
}
```

```
public class main() {
```

```
    public static void main(String[] args) {  
        Animal dog = new Dog("Diddy");
```

```
        dog.eat();
```

```
        dog.makeSound();  
    }  
}
```


Interface An interface defines a contract with
-out implementation (before Java 8). Modern
interface default and static method.

```
interface Vehicle {
```

```
    String TYPE = "Transport";
```

```
    void start();
```

```
    default void stop() {
```

```
        System.out.println("Vehicle stopped");
```

```
    }  
    static void honk() {
```

```
        System.out.println("Beep beep!");
```

```
    }  
}  
  
class Car implements Vehicle {
```

```
    @ override
```

```
    public void start() {
```



```
System.out.println("Car started");
```

```
}  
public class main {
```

```
    public static void main(String[] args) {
```

```
        Car car = new Car();
```

```
        car.start();
```

```
        Vehicle.honk();
```

```
        System.out.println("Type: " + Vehicle.Type);
```

```
    }  
}
```

```
    "good good" (String[] args) {
```


Key difference

Semantics	Abstract class (Animal)	Interface
Constructor	→ have one	Not allow
fields	→ can be instance-specific	only constant
method types	→ Abstract + concrete (extends)	Abstract + default / static (JDK 8)
inheritance	→ Single inheritance (extends)	Multiple (implements)