

ABSTRACTION:

“Abstraction is a fundamental concept in Java that allows developers to hide the implementation details of an object from the outside world and only expose the necessary information.”

Abstraction in Java:

In Java, abstraction is achieved through:

1. **Abstract Classes:** A class that cannot be instantiated and is designed to be inherited by other classes. Abstract classes can have both abstract and concrete methods.
2. **Interfaces:** A collection of abstract methods that define a contract for any class that implements it. Interfaces can only have abstract methods and constants.
3. **Abstract Methods:** Methods declared without an implementation, forcing any subclass to provide an implementation.

CODE:

```
abstract class car{
    abstract public void fueltype();
    public void colour()
    {
        System.out.println("black clr");
    }
}
class Gwagon extends car{
    @Override
    public void fueltype()
    {
        System.out.println("petrol");
    }
}
class Mercedes extends car{
    @Override
    public void fueltype()
    {
        System.out.println("diesel");
    }
}
public class Abstraction {
    public static void main(String[] args) {
```

```
Gwagon g1=new Gwagon();
g1.fueltype();
g1.colour();
Mercedes m1=new Mercedes();
m1.fueltype();
m1.colour();
}
}
```

Output:

When you run the Abstraction class, the output will be:

```
petrol
black clr
diesel
black clr
```

EXPLANATION OF CODE:

Abstract Class Car

- The Car class is declared as abstract, meaning it cannot be instantiated directly.
- It contains two methods:
 - fueltype(): an abstract method that must be implemented by any subclass. It does not have a body.
 - colour(): a non-abstract method (also known as a concrete method) that has a body and can be used directly.

Subclasses Gwagon and Mercedes

- Both Gwagon and Mercedes classes extend the Car class using inheritance.
- Each subclass provides its own implementation of the fueltype() method, which is marked with the @Override annotation to indicate that it is overriding a method from the superclass.

Abstraction Class (Main Class)

- In the main method, instances of Gwagon and Mercedes are created.
- The fueltype() and colour() methods are called on these instances.
- The output will display the fuel type and color for each car model.