



CODE SAFARI



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Welcome

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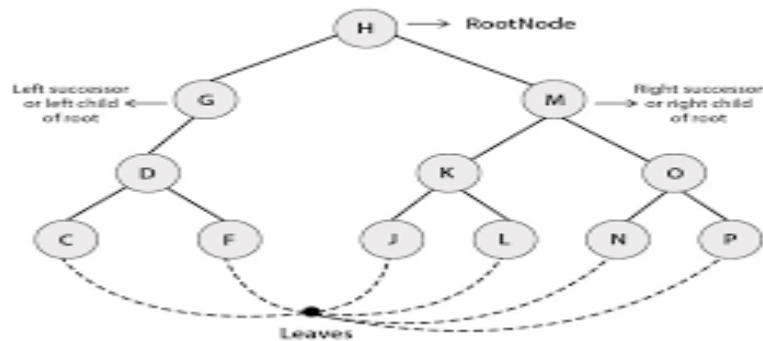
Greetings, brave adventurer and welcome to the Java Jungle! This guide will be your roadmap as we traverse the lush and thrilling world of Java programming. Java is a fully-featured and highly portable programming language that is used for anything from mobile applications to enterprise systems with thousands of users. Like a jungle, the world of Java may seem thick and unpredictable at first, but soon, you'll be zipping through the code like an experienced adventurer!

1. The Class Tree

Everything in Java starts with a class. A class is like a tree. A class is a template for objects that specifies their characteristics and behaviors. A class has fields (variables) and methods (functions), just as a tree has branches. The class keyword is used in Java to implement a class.

```
public class Tree {  
    // Fields (branches)  
    String type;  
    int height;  
  
    // Method (behavior)  
    void grow() {  
        System.out.println("The tree is growing!");  
    }  
}
```

Binary Tree in Java



2. Object Safari

We can now construct actual objects of our Tree class, which serves as our blueprint. Seeing animals on safari is comparable to this; each animal is an object, one instance of a class. In Java, the new keyword is used to create an object.

```
Tree oakTree = new Tree();  
Tree pineTree = new Tree();
```

In this instance, oakTree and pineTree are two separate objects that belong to the Tree class. They look like two different animals you saw on safari.

3. Method Magic

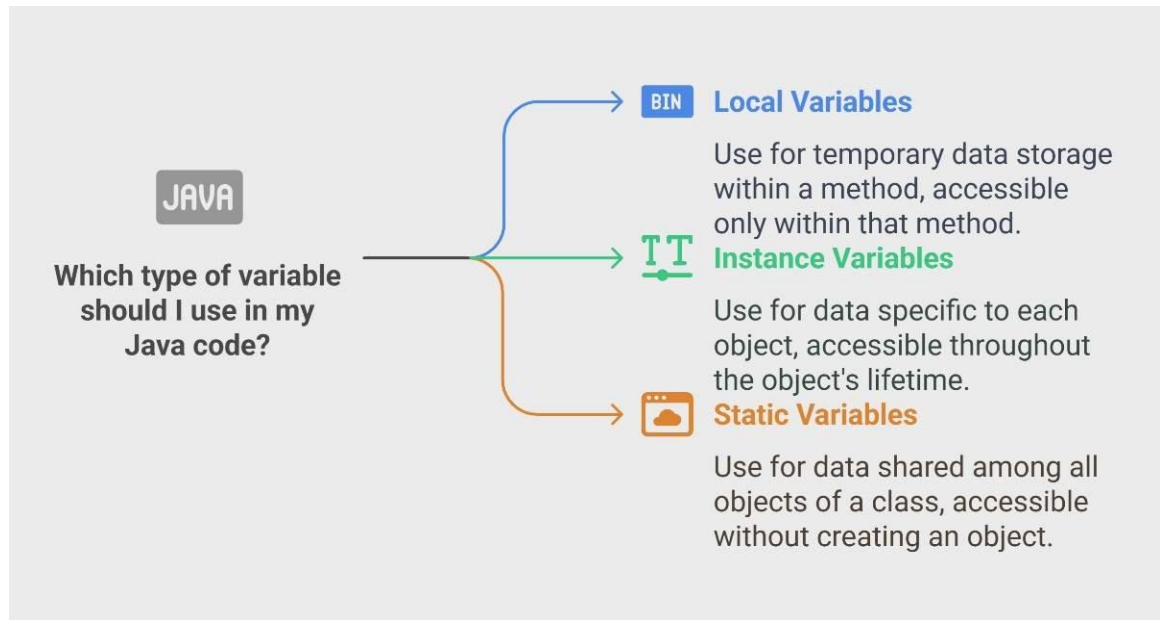
Methods are magical tools that our jungle animals (objects) use to perform actions. They define an object's behavior. Our Tree class's grow() method is a magical tool that makes the tree grow. Invoking a method involves using the method name, the object name, and a dot.

```
oakTree.grow(); // Output: The tree is growing!
```

4. Variable Vines

In Java, variables resemble vines that swing between trees. Data is stored in them. Variables in Java can hold a variety of data types. The data types are as follows. Among the most popular data types are String for text, boolean for true/false values, double for floating-point numbers, and int for integers.

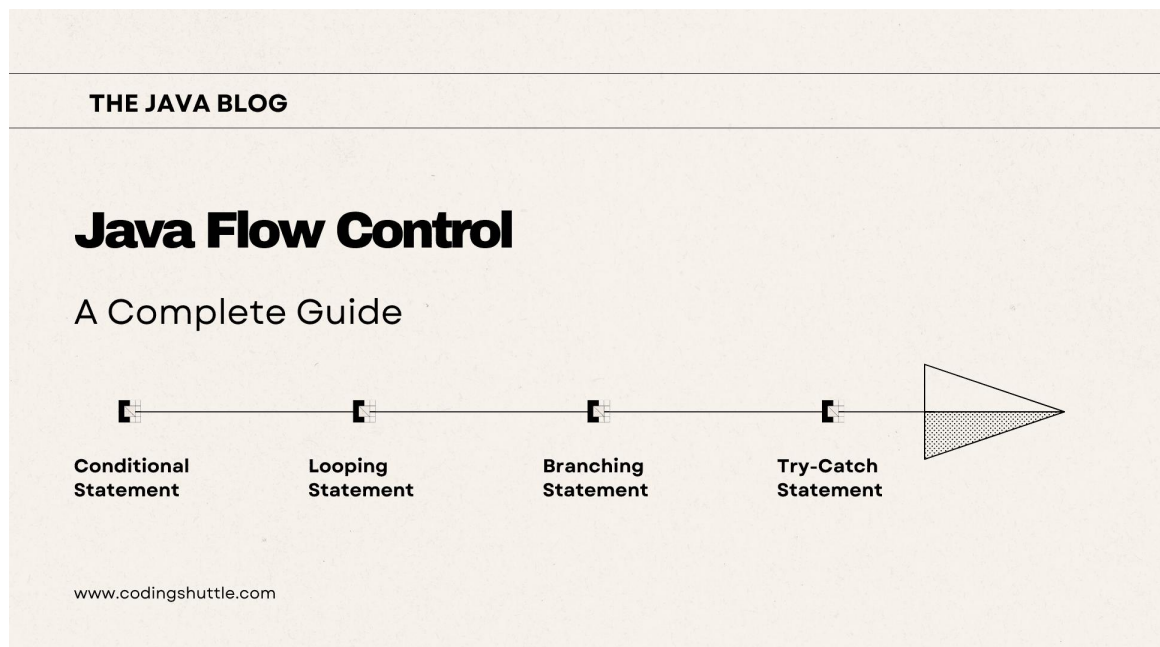
```
String name = "Java Jungle";  
int numberOfTrees = 100;  
boolean isFun = true;
```



5. Control Flow River

The Flow of Control Like the current in a river guiding a raft, the river directs how your code is executed. To make choices and repeat operations in your code, you can utilize control flow statements such as if, else, switch, and loops (for, while).

```
if (numberOfTrees > 50) {  
    System.out.println("This is a dense jungle!");  
} else {  
    System.out.println("This jungle is still growing.");  
}
```



6. Inheritance Trail

Characteristics, such as jungle legends, are transmitted from one generation to the next via the Inheritance Trail. A class in Java may inherit methods and fields from another class. We refer to this as inheritance. The superclass is the class from which the subclass inherits, and the subclass is the class from which it inherits.

```
class JungleCat extends Animal {  
    // JungleCat inherits from Animal  
}
```

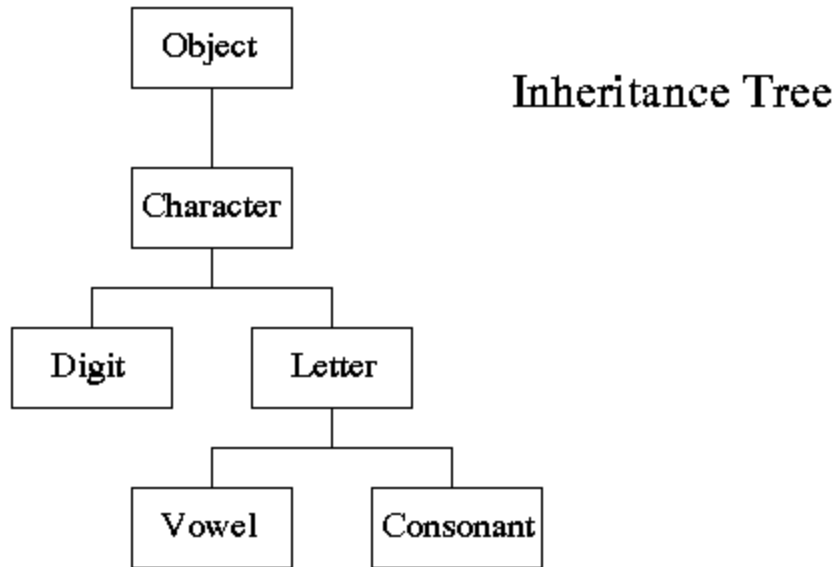


Figure 1: Inheritance Tree

7. Encapsulation Cave

Some secrets are best left unseen in the Java Jungle. We keep our secrets in the Encapsulation Cave. Encapsulation is the process of concealing an object's internal workings while making its methods for accessing and changing data publicly available. We refer to these techniques as getters and setters.

```
public class SecretCave {  
    private String secret = "Hidden Treasure";  
  
    public String getSecret() {  
        return secret;  
    }  
}
```

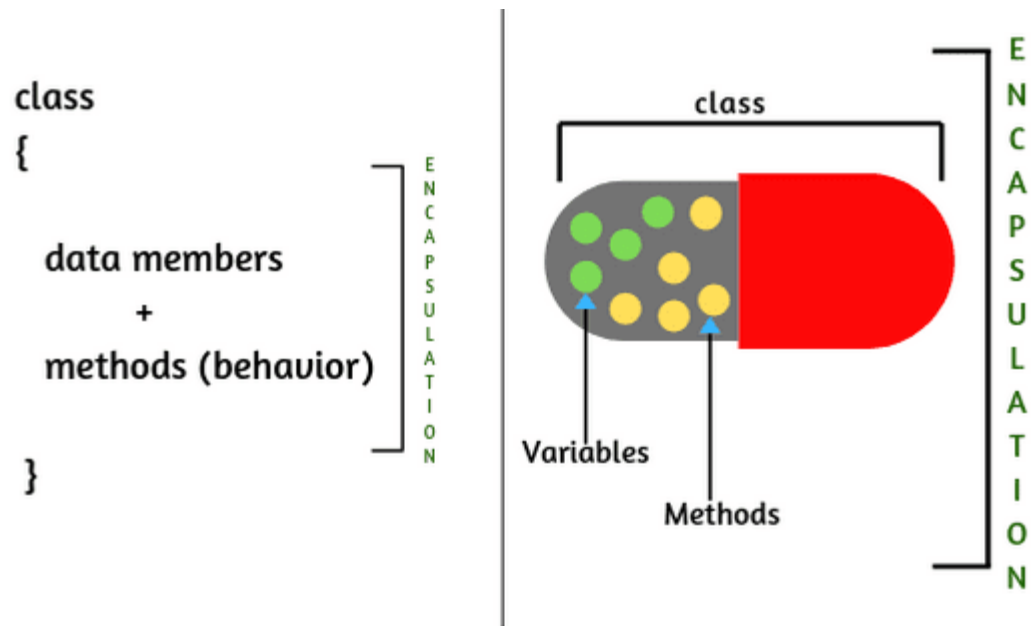


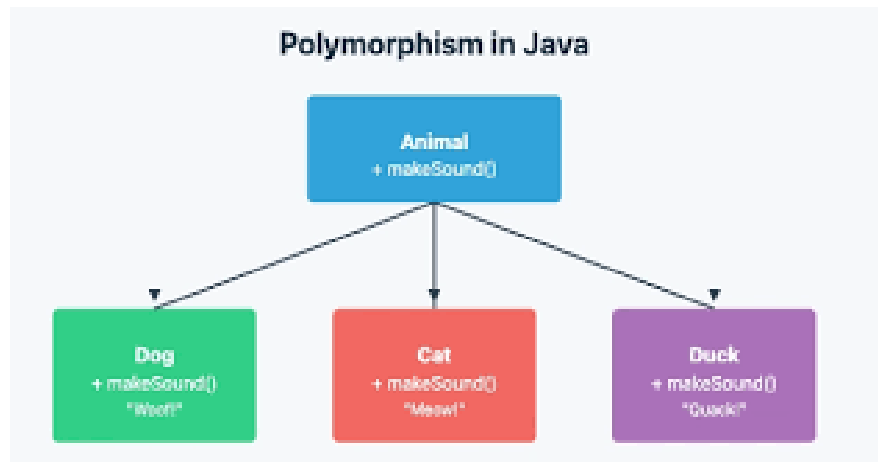
Fig: Encapsulation

8. Polymorphism Pond

In the enchanted Polymorphism Pond, creatures can transform into different forms based on the situation. In Java, polymorphism—which translates to "many forms"—allows an object to have multiple forms. Overriding and overloading methods are used to accomplish this.

Having several methods with the same name but distinct parameters is known as "method overloading."

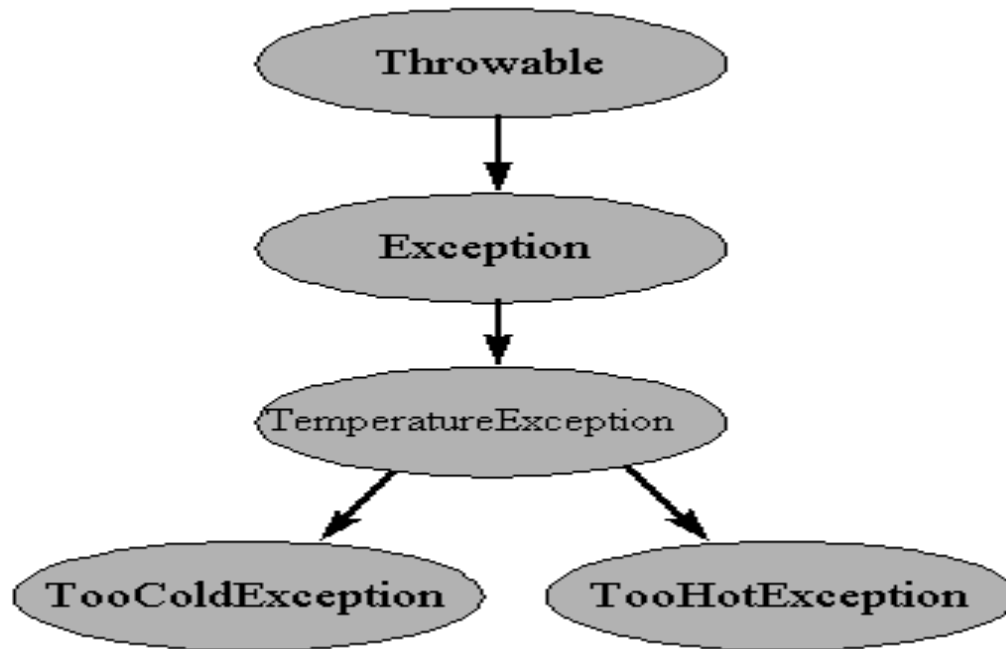
A subclass that implements a method it inherited from its superclass in its own way is said to be method overriding.



9. Exception Volcano

In the jungle, things can go wrong at times. When your code makes a mistake, the Exception Volcano erupts. An occurrence that interferes with the program's regular flow is called an exception. Try-catch blocks can be used to handle exceptions and keep your program from crashing.

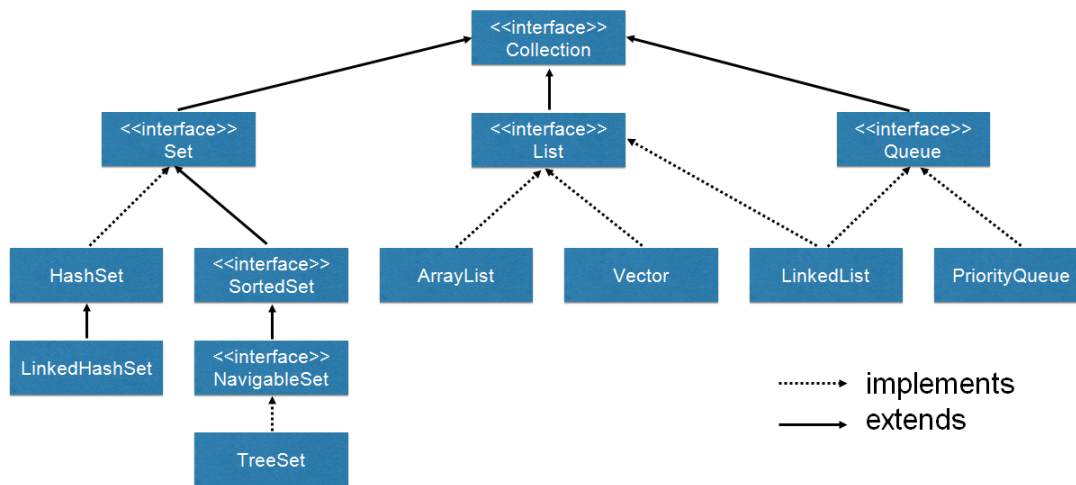
```
try {  
    // Code that might cause an exception  
} catch (Exception e) {  
    // Handle the exception  
}
```



10. Collections Camp

You can arrange and search your supplies in the Collections Camp. A collection of classes and interfaces for storing and working with groups of objects are offered by Java's Collections Framework. Arrays, ArrayLists, and HashMaps are a few examples of common collections.

Collection Interface



11. Final Quest

It's time for your last quest now! Your task is to construct a small project that makes use of every idea we have studied. In order to rescue a lost explorer, you must create a jungle rescue mission program in which you create various animals (objects), force them to perform actions (methods), and guide them through the jungle (control flow). I wish you luck, explorer!

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