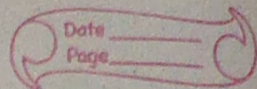


Java

Interview Questions



① What does the static keyword mean in java? Explain the difference between static and non-static methods

→ Static keyword in java: The static keyword in java is used to define class-level members that are shared among all instances of the class.

- A static variable or method belongs to the class itself rather than to any specific instance.

Static Method

- ① Can be called without creating an instance of the class.
- ② Can only directly access the other static members (variable and methods) of class
- ③ Cannot use instance variable or instance methods directly.

Non-Static method

- ① Required an instance of the class to be called
- ② Can access both static ~~also~~ and non-static members of the class
- ③ Typically operate on instance variables

② What is the role of the static keyword in the context of memory management?

→ Memory management and static keyword: Static variables are allocated memory only once when the class is loaded, and they persist for the lifetime of the application.

- Non-static variables are allocated memory when an instance of the class is created and are deallocated when the instance is destroyed.

- This means that static variables are shared across all instances, while non-static variables are unique to each instance.

③ Can static methods be overloaded and overridden in java? How are static variables shared across multiple instances of a class?

→ Static methods

- Overloading: Yes. Static methods can be overloaded. Overloading refers to defining multiple methods with the same name but different parameter lists within the same class.

- Overriding: No, static methods cannot be overridden. Static methods are bound to the class, not to the instance. However, you can hide a static method by defining a static method with the same name in a subclass.

Static Variables:

- Static variables are shared across all instances of a class. All instances of the class have access to the same static variable, meaning that if one instance changes the value of a static variable, the change is reflected across all instances.

④ What is the significance of the final keyword in java?

→ Final keyword in java:

Final Variable:

- A variable declared as final can only be initialized once.
- Once assigned, its value cannot be changed.

Final Method:

- A final method declared as final cannot be overridden by subclasses.
- This helps prevent altering the behavior of the method in subclasses.

Final Class:

- A class declared as final cannot be subclassed. This ensures that the class's implementation cannot be extended or modified by inheritance.

⑤ What are narrowing and widening conversion in java?

→ ① Narrowing Conversion:

Converting a larger data type to a smaller data type. This can potentially result in data loss.

Example: Converting ~~int to double~~ to int

② Widening Conversion:

Converting a smaller data type to a larger data type. This is usually safe and does not result in data loss.

Example: Converting int to double

⑥ Provide examples of narrowing and widening conversion between primitive data types.

→ Widening Conversion:

int to long

float to double

Narrowing Conversion
double to int
long to short

⑦ How does java handle potential loss of precision during narrowing Conversion?

→ Java handles potential loss of precision during narrowing Conversion by explicitly requiring the programmer to perform the Conversion using a Cast. This cast indicates that the programmer is aware of the potential loss of precision and accepts it.

Example:

```
double d = 9.78;  
int i = (int) d;
```

⑧ Explain the concept of automatic widening Conversion in java.

→ Automatic Widening Conversion:

Occurs when converting a smaller data type to a larger data types. Java performs this Conversion automatically, without the need for an explicit Cast.

Example:

Assigning an int value to a double variable is handled automatically by java

```
int num = 10;  
double d = num;
```

⑨ What are the implications of narrowing and widening Conversion on type compatibility and data loss?



Widening Conversion:

Generally safe and does not result in data loss.

Type compatibility is maintained since a larger type can represent all possible values of a smaller type.

Narrowing Conversion:

Can result in data loss or precision loss. Type compatibility may be lost since a smaller type may not be able to represent all values of a larger type.

Requires explicit casting to indicate that the programmer acknowledges and accepts the risk of data loss.