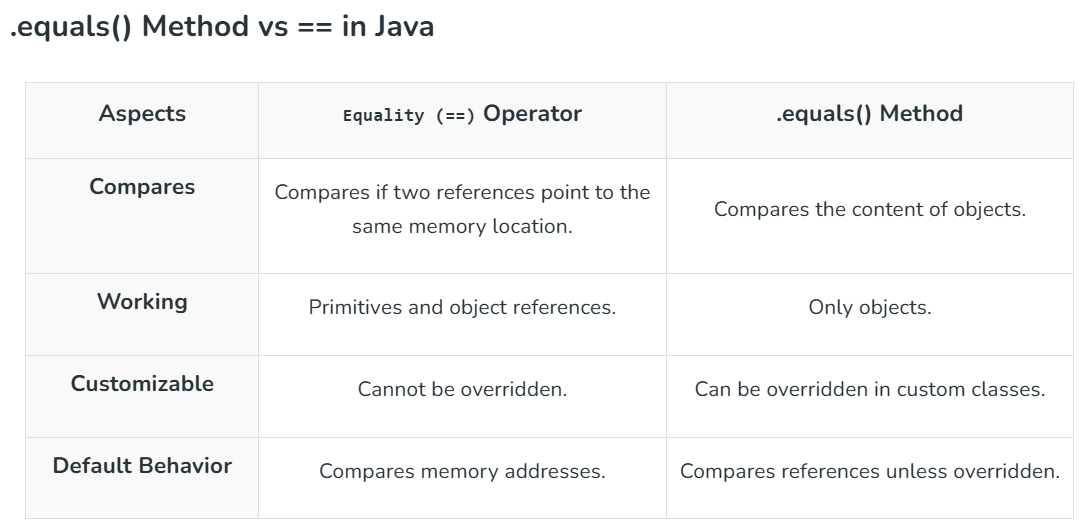
**JAVA QUESTIONS**

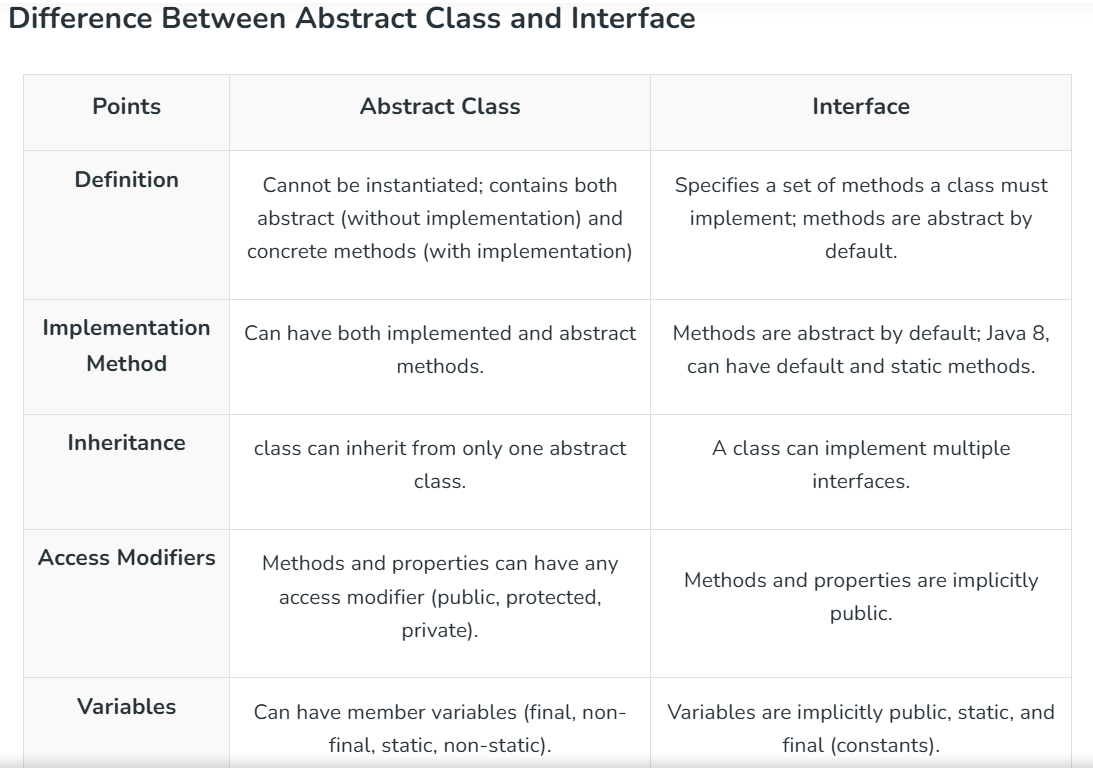
1. **Java String Pool and Memory**

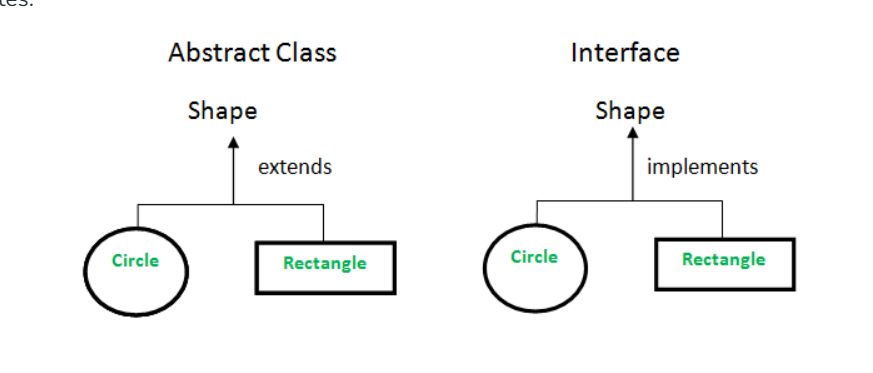
* **String Pool**: When two strings have the same content and are created without the new keyword, they point to the same memory location in the pool.
* [Heap](https://www.geeksforgeeks.org/what-is-a-memory-heap/): Strings created using the new keyword always allocate new memory.

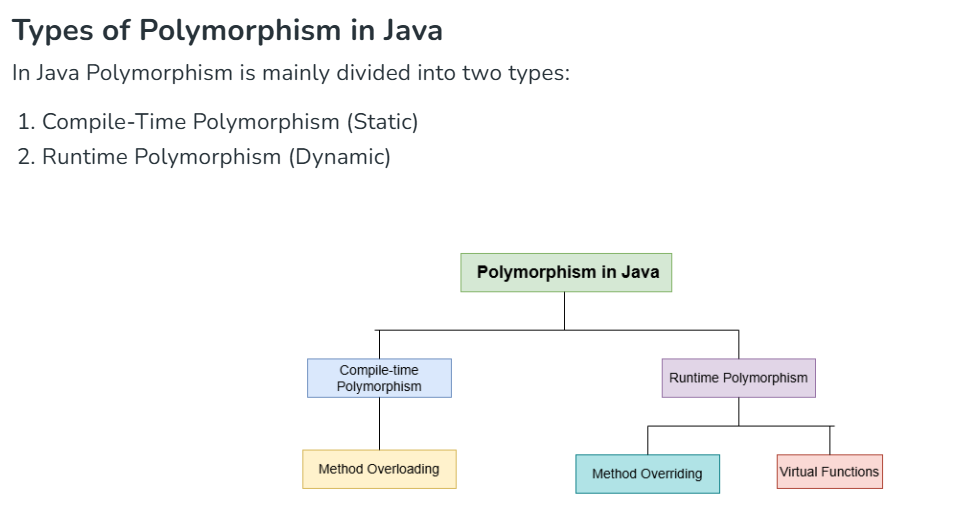
*String s1 = "HELLO"; // String pool*

*String s2 = new String("HELLO"); // Heap*



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### Compile-Time Polymorphism

[Compile-Time Polymorphism](https://www.geeksforgeeks.org/compile-time-polymorphism-in-java/) in Java is also known as static polymorphism and also known as method overloading. This happens when multiple methods in the same class have the same name but different parameters.

**. Runtime Polymorphism**

[Runtime Polymorphism](https://www.geeksforgeeks.org/dynamic-method-dispatch-runtime-polymorphism-java/) in Java known as Dynamic Method Dispatch. It is a process in which a function call to the overridden method is resolved at Runtime. This type of polymorphism is achieved by Method Overriding. [Method overriding](https://www.geeksforgeeks.org/overriding-in-java/), on the other hand, occurs when a derived class has a definition for one of the member functions of the base class. That base function is said to be overridden.

**Method Overriding**

[Method overriding](https://www.geeksforgeeks.org/overriding-in-java/)in Java means when a subclass provides a specific implementation of a method that is already defined in its superclass. The method in the subclass must have the same name, return type, and parameters as the method in the superclass. Method overriding allows a subclass to modify or extend the behavior of an existing method in the parent class. This enables dynamic method dispatch, where the method that gets executed is determined at runtime based on the object's actual type.

**1. Retrieve All Unique Values**

* **Question:** "Write a query to get unique department names from an employees table."
* **Answer:**

sql

CopyEdit

SELECT DISTINCT department\_name FROM employees;

**2. Find Employees with Salaries Above a Certain Threshold**

* **Question:** "Get employee names and salaries where the salary is above $50,000."
* **Answer:**

sql

CopyEdit

SELECT name, salary FROM employees WHERE salary > 50000;

**3. Count Records in a Table**

* **Question:** "Count the number of employees in each department."
* **Answer:**

sql

CopyEdit

SELECT department\_id, COUNT(\*) AS employee\_count FROM employees GROUP BY department\_id;

**4. Join Two Tables**

* **Question:** "Write a query to retrieve employee names along with their department names."
* **Answer:**

sql

CopyEdit

SELECT e.name, d.department\_name

FROM employees e

JOIN departments d ON e.department\_id = d.id;

**5. Get the Second Highest Salary**

* **Question:** "Write a query to find the second-highest salary in the employees table."
* **Answer:**

sql

CopyEdit

SELECT MAX(salary) AS second\_highest\_salary

FROM employees

WHERE salary < (SELECT MAX(salary) FROM employees);

**6. Update a Record**

* **Question:** "Update the salary of an employee with employee\_id = 101 to $60,000."
* **Answer:**

sql

CopyEdit

UPDATE employees SET salary = 60000 WHERE employee\_id = 101;

**7. Retrieve Employees Hired in the Last Year**

* **Question:** "Get details of employees hired in the last year."
* **Answer:**

sql

CopyEdit

SELECT \* FROM employees WHERE hire\_date > DATE\_SUB(CURDATE(), INTERVAL 1 YEAR);

These queries test skills with JOIN, GROUP BY, DISTINCT, and subqueries, covering essential SQL topics likely relevant in an interview. Let me know if you’d like more examples on specific SQL concepts!

4o

**You said:**

How to select first 3 records

**ChatGPT said:**

To select the first 3 records in SQL, you can use different approaches depending on the SQL database you’re using:

1. **MySQL, PostgreSQL** (Using LIMIT):

sql

CopyEdit

SELECT \* FROM table\_name LIMIT 3;

1. **SQL Server** (Using TOP):

sql

CopyEdit

SELECT TOP 3 \* FROM table\_name;

1. **Oracle** (Using ROWNUM):

sql

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SELECT \* FROM table\_name WHERE ROWNUM <= 3;

Each method retrieves only the first 3 rows from the result set.

4o

**You said:**

Sort records

**ChatGPT said:**

To sort records in SQL, you can use the ORDER BY clause. Here’s how to do it in ascending or descending order:

1. **Ascending Order** (Default):

sql

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SELECT \* FROM table\_name ORDER BY column\_name ASC;

1. **Descending Order**:

sql

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SELECT \* FROM table\_name ORDER BY column\_name DESC;

You can also sort by multiple columns. For example:

sql

CopyEdit

SELECT \* FROM table\_name ORDER BY column1 ASC, column2 DESC;

This sorts by column1 in ascending order, and then by column2 in descending order if column1 values are the same.

4o

**You said:**

Some more questions

**ChatGPT said:**

Here are some more SQL questions that could be asked in an interview:

**1. Find Duplicate Records**

* **Question:** "Write a query to find duplicate email addresses in a users table."
* **Answer:**

sql

CopyEdit

SELECT email, COUNT(\*)

FROM users

GROUP BY email

HAVING COUNT(\*) > 1;

**2. Select Records Between Two Dates**

* **Question:** "Write a query to retrieve records from orders table where the order date is between '2023-01-01' and '2023-12-31'."
* **Answer:**

sql

CopyEdit

SELECT \*

FROM orders

WHERE order\_date BETWEEN '2023-01-01' AND '2023-12-31';

**3. Aggregate Data**

* **Question:** "Write a query to find the average salary of employees in each department."
* **Answer:**

sql

CopyEdit

SELECT department\_id, AVG(salary)

FROM employees

GROUP BY department\_id;

**4. Delete Duplicate Records**

* **Question:** "How would you delete duplicate rows from a table while keeping the original record?"
* **Answer:** (Assuming SQL Server)

sql

CopyEdit

WITH CTE AS (

SELECT \*, ROW\_NUMBER() OVER (PARTITION BY column\_name ORDER BY column\_name) AS rn

FROM table\_name

)

DELETE FROM CTE WHERE rn > 1;

**5. Subquery Example**

* **Question:** "Write a query to find employees who earn more than the average salary."
* **Answer:**

sql

CopyEdit

SELECT name, salary

FROM employees

WHERE salary > (SELECT AVG(salary) FROM employees);