Constructor Chaining in Java - Exam Ready PDF

1️⃣ Definition:

Constructor Chaining is when one constructor **calls another constructor** in the same class or parent class to **reuse code** and set default values.

- **Same class:** use `this()`
- **Parent class:** use `super()`

2️⃣ Rules:

1. `this()` or `super()` **must be first statement** in constructor.
2. Recursive constructor calls are **not allowed**.
3. Can chain multiple constructors.

3️⃣ Example:

```
class Student {
    String name;
    int age;

    Student() {
        this("Unknown"); // Calls 1-param constructor
    }

    Student(String name) {
        this(name, 18);    // Calls 2-param constructor
    }

    Student(String name, int age) {
        this.name = name;
        this.age = age;
    }

    void display() {
        System.out.println("Name: " + name + ", Age: " + age);
    }
}
```

```java
public class TestStudent {
    public static void main(String[] args) {
        Student s1 = new Student();
        s1.display();
    }
}
```

4️⃣ Execution Flow:

```
new Student()        --> calls No-arg constructor
No-arg constructor   --> this("Unknown") --> 1-param constructor
1-param constructor  --> this("Unknown", 18) --> 2-param constructor
2-param constructor  --> sets instance variables
s1.display()         --> prints Name: Unknown, Age: 18
```

5️⃣ Key Points:

- Constructor chaining **reuses constructor code**
- `this()` = same class, `super()` = parent class
- Must be **first statement**
- Avoid recursive chaining (compile-time error)