

Error

Error in Java means a problem that occurs during program execution and causes abnormal termination of the program.

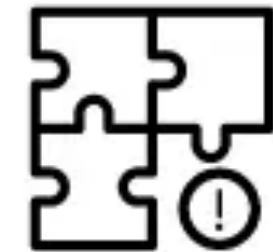
Type of errors in JAVA



Syntax Errors



Runtime Errors



Logical Errors

Syntax Error

```
int a = 10  
System.out.println(a);
```

- Happens when you break Java grammar rules.
- Program will not run

Runtime Error

```
int a = 10 / 0;
```

- Occurs **while the program is running**, after successful compilation.
- Program will run but fail at runtime

Logical Error

```
int a = 10, b = 20;  
System.out.println(a - b);
```

- The program **runs successfully**, but gives the **wrong output** due to wrong logic.
- The program will run

Exception

An **exception** is a problem caused by a runtime error.

It *can* be handled to prevent program failure.

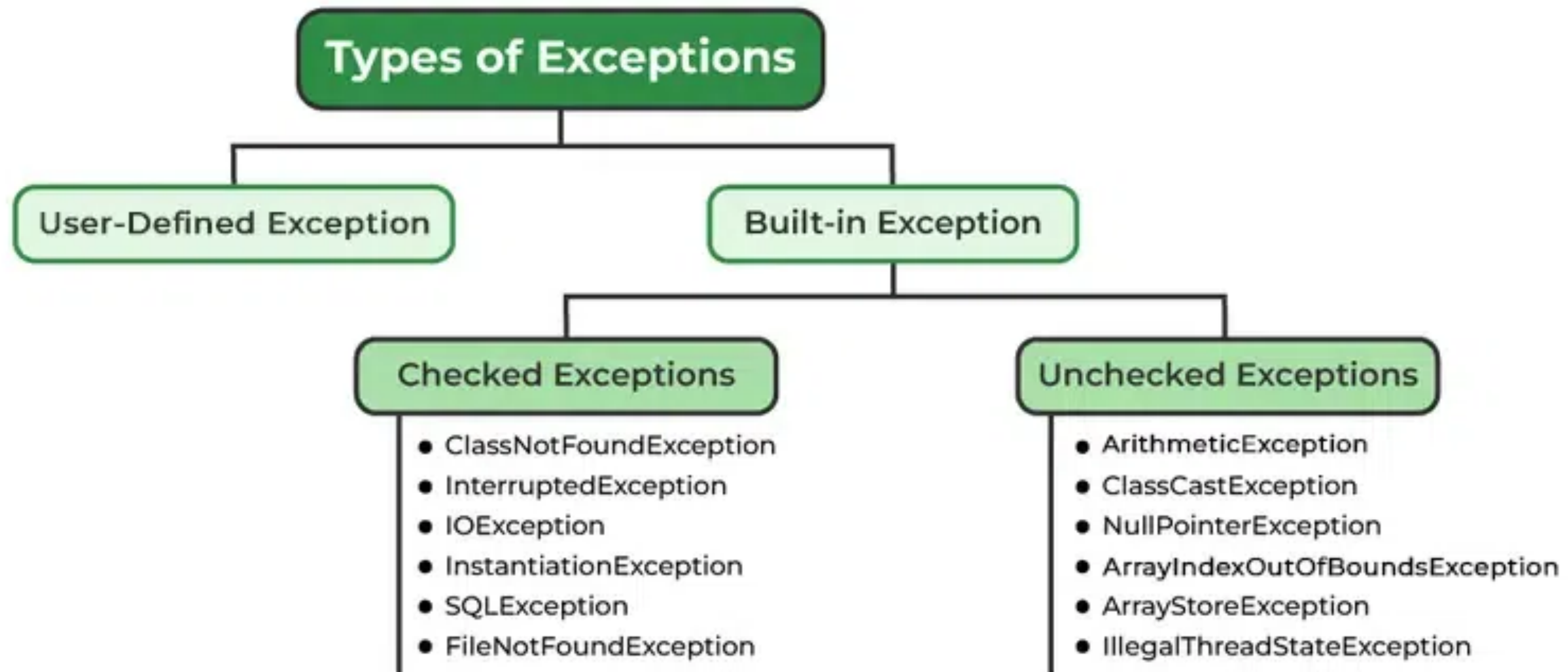
Exception Handling

Exception handling in Java is a way to manage **exceptions** and keep the program running normally.

Exception Handling Keywords

- **try:** contains the code that may cause an exception.
- **catch:** handles the exception
- **finally:** always executes, whether an exception occurs or not.
- **throw:** used to explicitly throw an exception.
- **throws:** used in method signatures to declare exceptions

Type of Exception



Checked Exception

- These are checked at compile time.
- The compiler forces you to handle them using try-catch or throws.
- Example: IOException, SQLException, ClassNotFoundException.

Unchecked Exception

- These occur at runtime and are not checked by the compiler.
- They usually happen due to programming mistakes.
- Example: NullPointerException, ArrayIndexOutOfBoundsException, ArithmeticException.

Throw & Throws

- **Throw** used to explicitly create and send an exception from a method or block.
- **Throws** used in method declaration to tell that the method may pass an exception to the caller.

User Defined Exception

java

```
class InvalidAgeException extends Exception {  
    InvalidAgeException(String msg) {  
        super(msg);  
    }  
}
```

- Throwable -> Exception -> RuntimeException ->
- class RuntimeException extends Exception { }
- class Exception extends Throwable { }

Handle User Input Exception

Question