Introduction to Exceptions

Implementation Decisions

- Some unexpected behaviors
  - Adding item to a full Bag
  - Removing item not in the Bag
  - Removing from an empty Bag
  - A file that an application was attempting to access becomes unavailable
  - ….

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- Possible responses
  - Assume it will not happen (hope for the best)
  - Ignore them (hope for the best)
  - Have a strategy in place to deal with exceptional events, for example creating code to detect and respond to exceptional events

Exception

Definition: An exception is an event, which occurs during the execution of a program, that disrupts the normal flow of the program's instructions.

Note: The developers of Java, Sun Microsystems (which has since been acquired by Oracle) Have provided the definition above.

Types of Exceptions

As defined by the developers of Java, Sun Microsystems (which has since been acquired by Oracle)

- Checked exception: “These are exceptional conditions that a well-written application should anticipate and recover from”
- Runtime exception: “These are exceptional conditions that are internal to the application, and that the application usually cannot anticipate or recover from.”
- Errors: “These are exceptional conditions that are external to the application, and that the application usually cannot anticipate or recover from.”

Popular Checked Exceptions

- FileNotFoundException
- IOException
- NoSuchMethodException

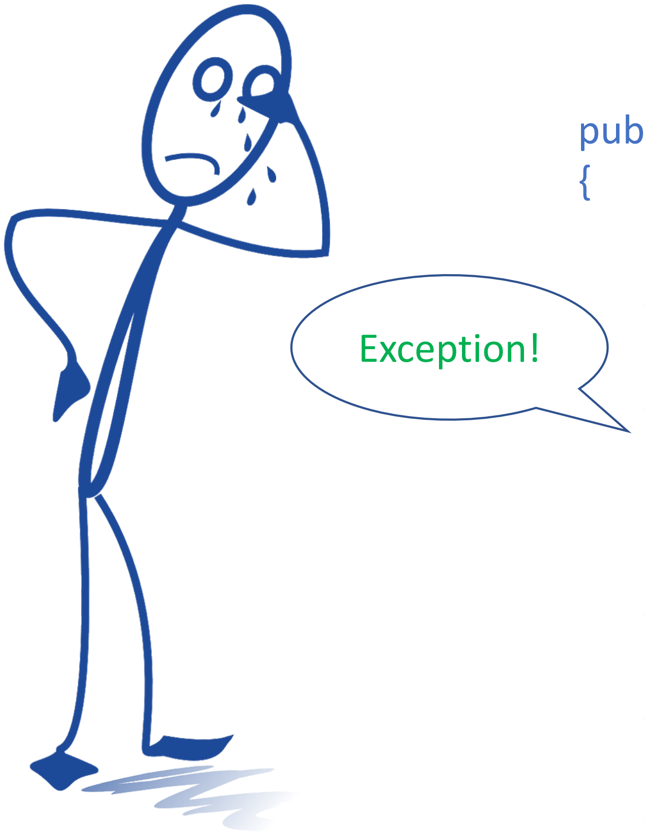
Popular RuntimeExceptions

- ArithmeticException
- ArrayIndexOutOfBoundsException
- ClassCastException
- IllegalArgumentException
- IllegalStateException
- IndexOutOfBoundsException
- NullPointerException

Exception Handler and the Exception Handling process

the executing method

```
public void myMethod
{

    programming statement;

    programming statement;

    risky code;

    programming statement;

    programming statement;

    programming statement;


}
```



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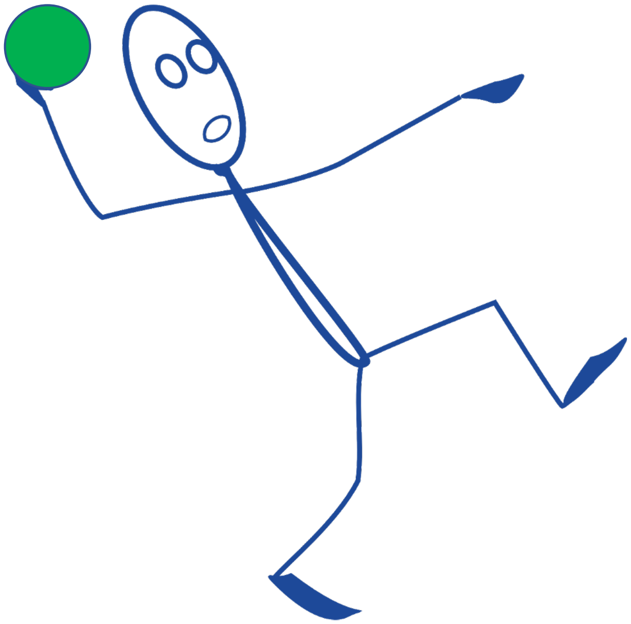
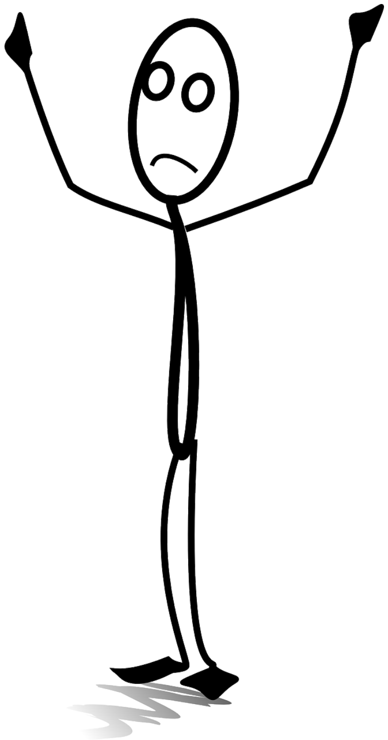


the method where the problem occurred

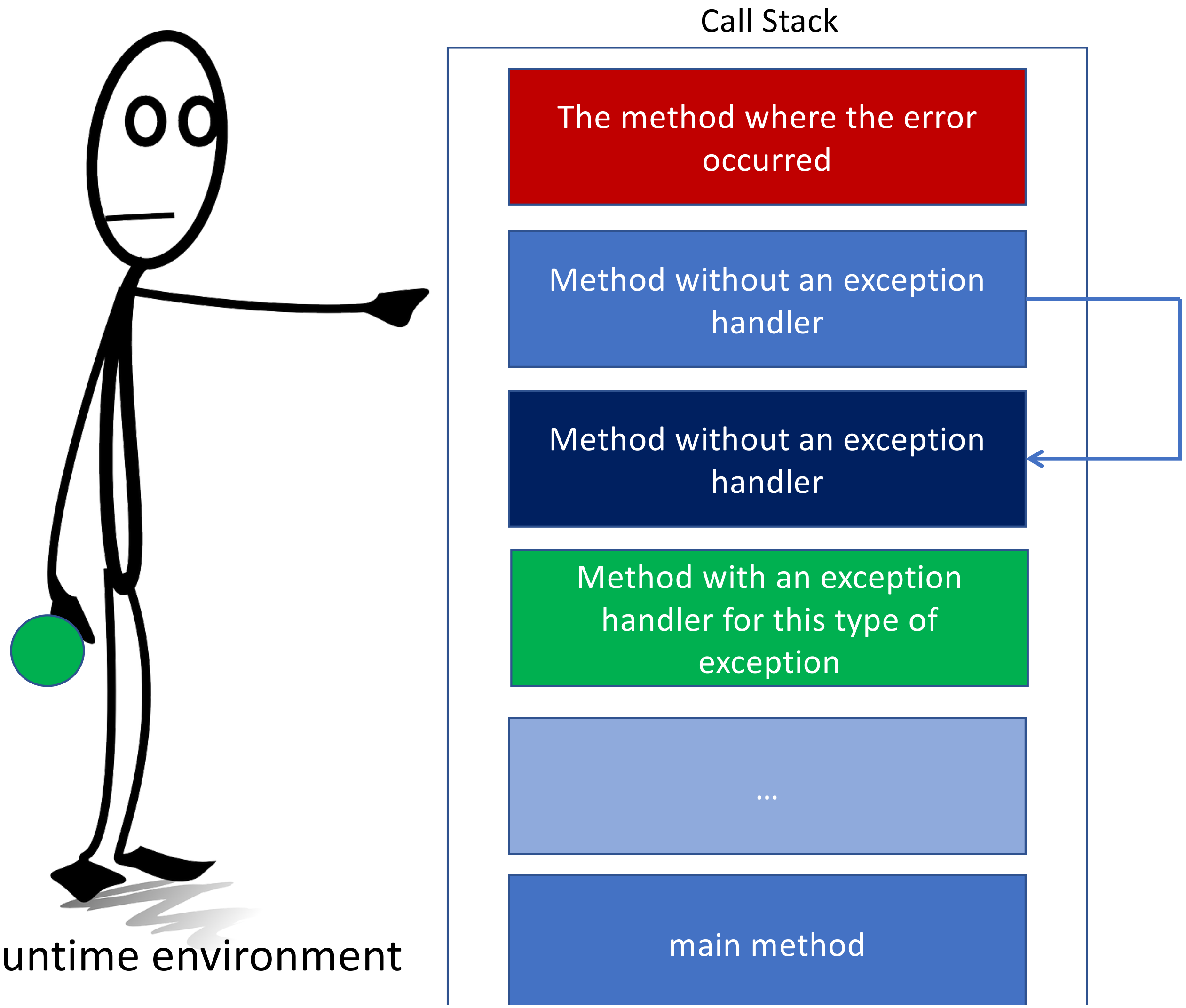


the runtime environment

Please help me find an exception handler to deal with this

the method where the problem occurred

the runtime environment



Call Stack

The method where the error occurred

Method without an exception handler

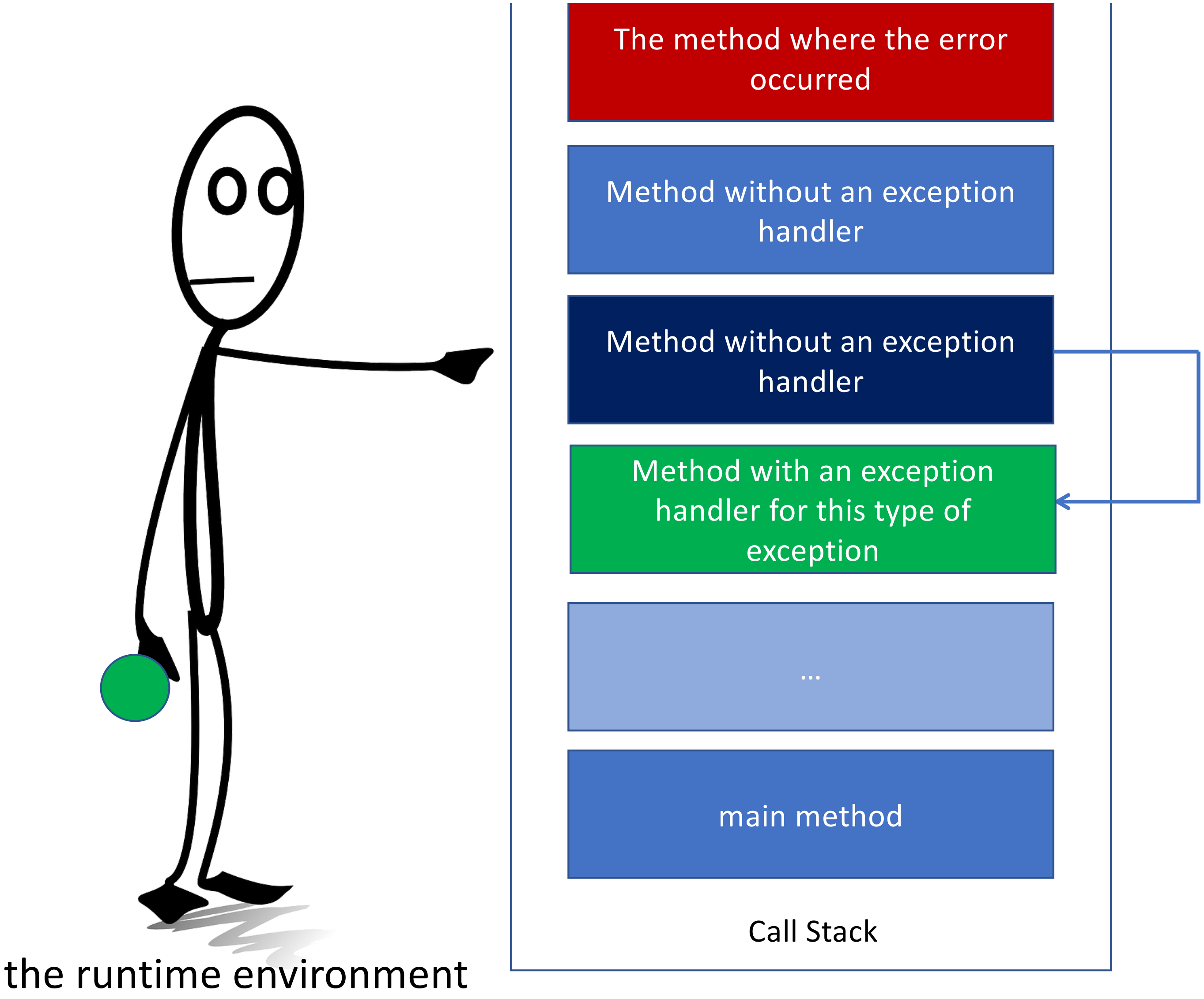
Method without an exception handler

Method with an exception handler for this type of exception

…

main method

the runtime environment



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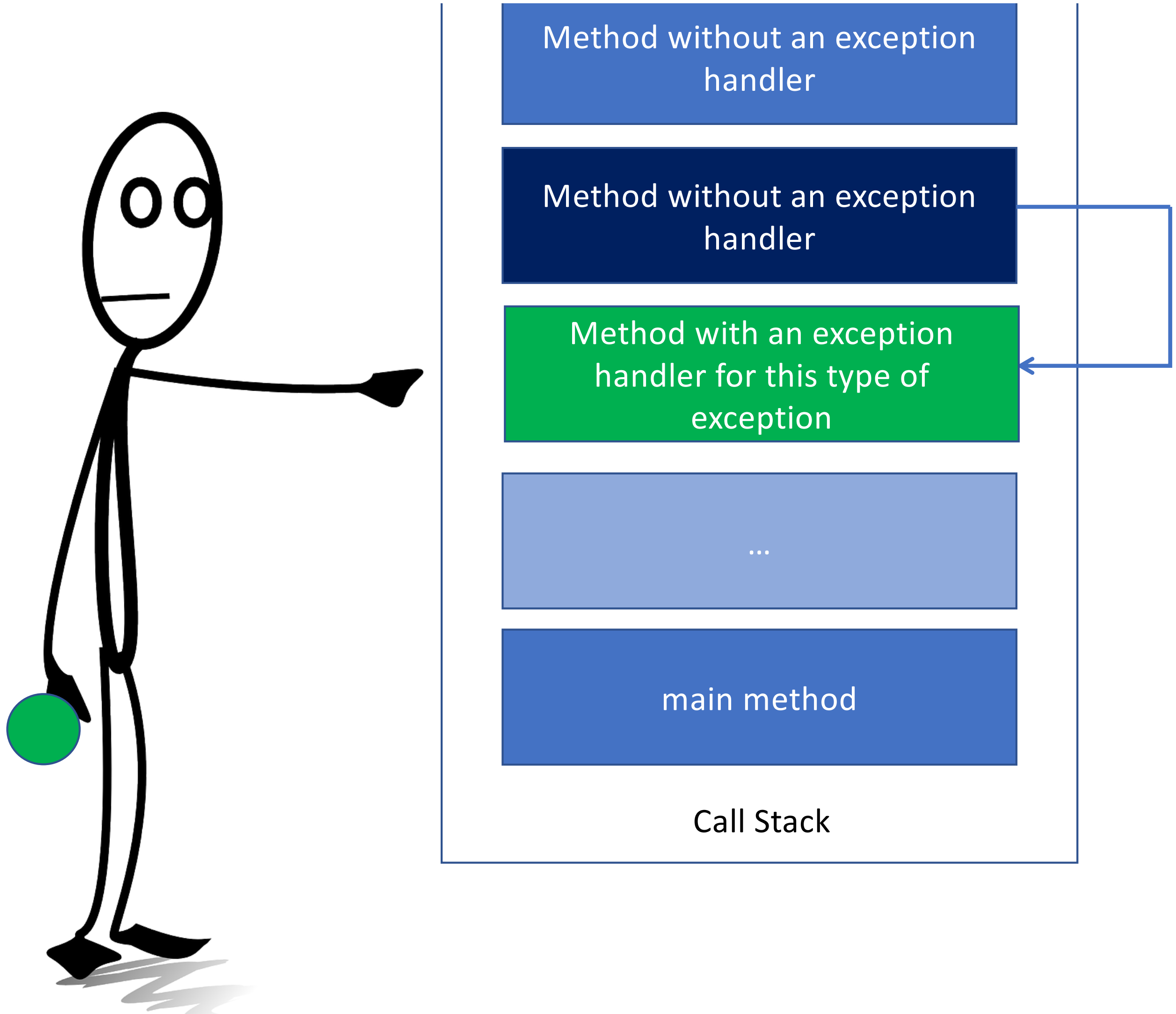

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