IEEE
University of Porto - Student Branch

IEEE computer society

NO BS GUIDE TO **JAVA**

IEEE UP Student Branch

PREREQUISITES

- Pretty basic programming knowledge.

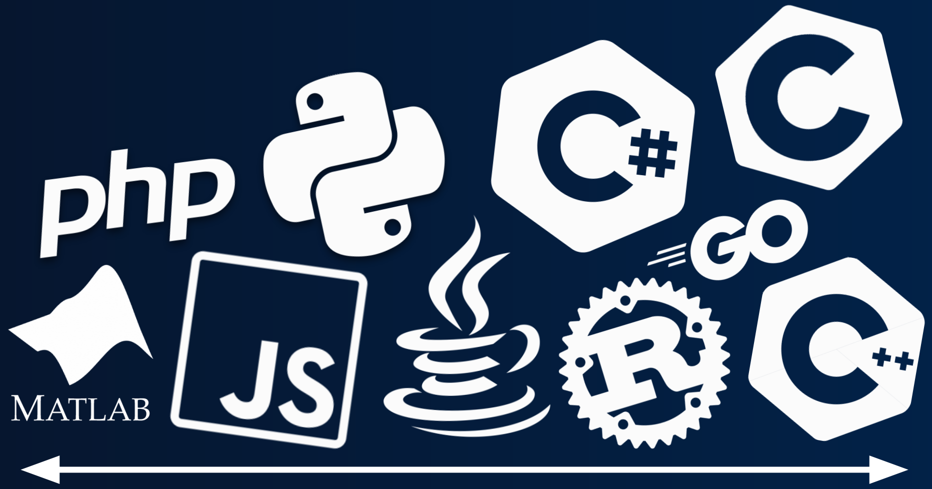
```
for (int i = 0; i < 5; i++) {
    print('If you don't understand this block of
    code you're likely f*cked.');
}
```

- A code editor or IDE of your choosing.
  I'll be using Visual Studio Code with Code Runner.

- *Any Java JDK version.*

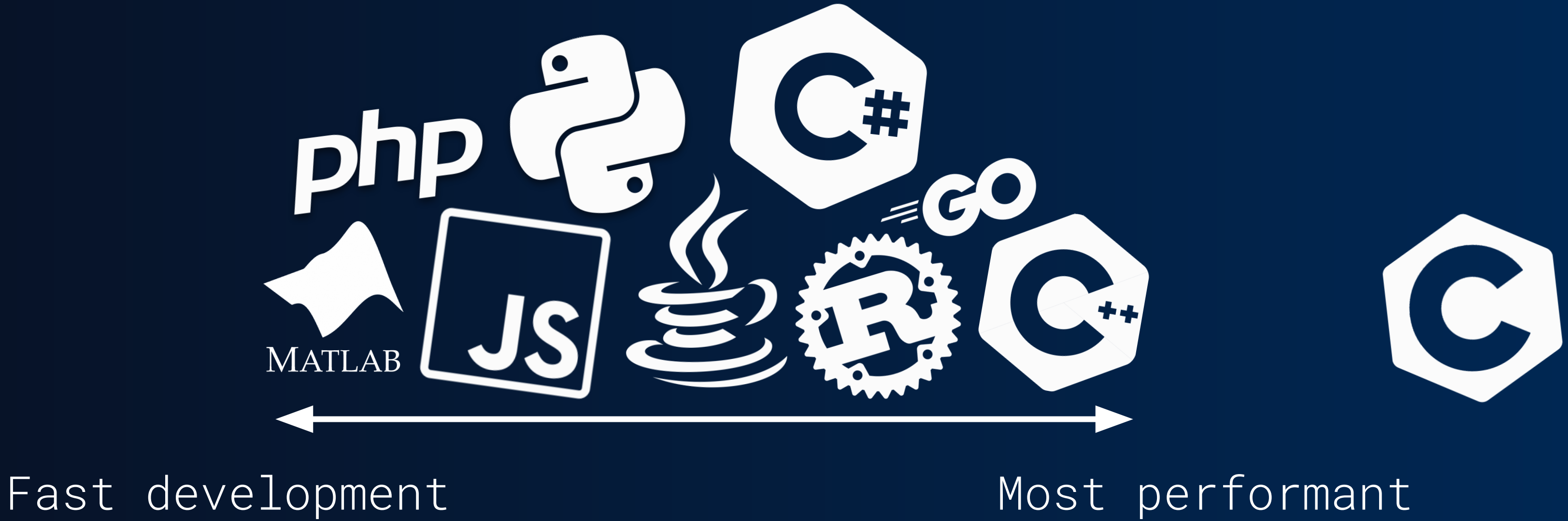
```java
public class Main {
    public static String reverser(String str) {
        StringBuilder reverse = new StringBuilder();
        for (int idx = str.length() - 1; idx >= 0; idx--) {
            reverse.append(str.charAt(idx));
        }
        return reverse.toString();
    }

    public static void main(String[] args) {
        String hello = “Hello world!”;
        System.out.println(reverser(hello));
    }
}
```

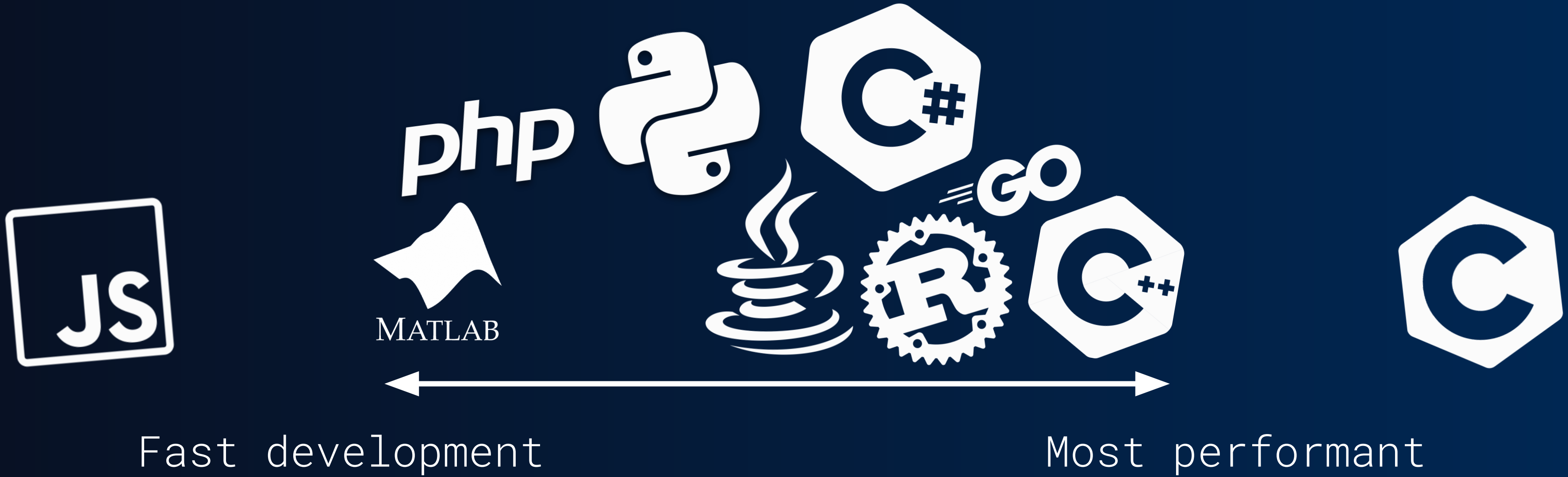
```
hello = ‘Hello world!’
print(hello[::-1])
```



Fast development

Most performant


php
MATLAB
JS
GO
Fast development
Most performant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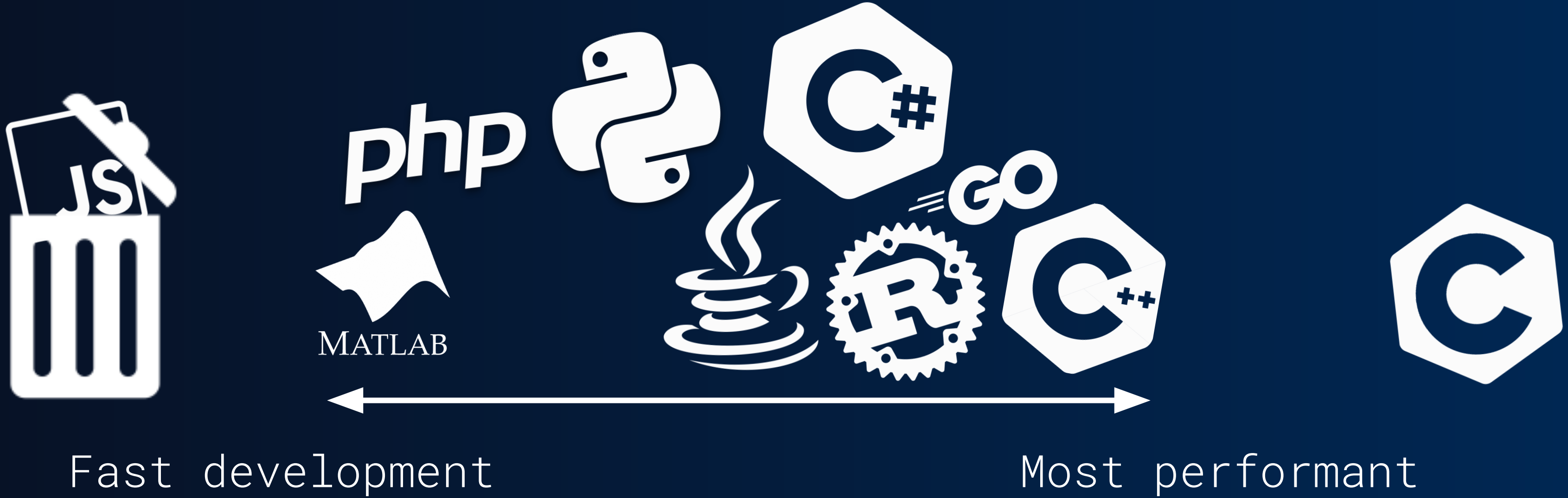

JS
php
MATLAB
GO
Fast development
Most performant

firstly, you write your source code

```
HelloWorld.java
```

```
javac HelloWorld.java
```

```
HelloWorld.class
```

```
java HelloWorld
```

```
Hello, World
```

```
HelloWorld.java
```

```
javac HelloWorld.java
```

compile the source, translating it to a lower-level language (e.g. Assembly)

```
HelloWorld.class
```

```
java HelloWorld
```

```
Hello, World
```

HelloWorld.java

```
javac HelloWorld.java
```

freshly generated bytecode (intermediate platform-independent binary code)

HelloWorld.class

```
java HelloWorld
```

```
Hello, World
```

```
HelloWorld.java
```

```
javac HelloWorld.java
```

```
HelloWorld.class
```

```
java HelloWorld
```

the Java interpreter launches a JVM (Java Virtual Machine) and executes main

```
Hello, World
```

```
HelloWorld.java
```

```
javac HelloWorld.java
```

```
HelloWorld.class
```

```
java HelloWorld
```

nice

```
Hello, World
```

```
public class HelloWorld {
    public static void main(String args[]) {
        System.out.println(“Hello world”);
    }
}
```

other access
modifiers are
possible

only one class
per file

therefore the file name
must be HelloWorld.java

```
public class HelloWorld {
    public static void main(String args[]) {
        System.out.println(“Hello world”);
    }
}
```

main returns nothing

the entry point is always the main function

```
public class HelloWorld {
    public static void main(String args[]) {
        System.out.println(“Hello world”);
    }
}
```

it’s static because of a lot of reasons I’ll explain to you later on

```
public class HelloWorld {
    public static void main(String args[]) {
        System.out.println("Hello world");
    }
}
```

the standard output stream (fancy words for console)

print in a new line

the string that should be printed

int	int[]
float	String
double	Integer
char	Boolean
boolean	

Garbage collection

Generate a Fibonacci series

0 1 1 2 3 5 8 13

I understand this is barely a challenge, just making sure we're all in sync.

#1

Easy peasy lemon squeezy

Powerball: 1st Iteration

Generate and print 6 random numbers from 1 to 49

java.util.Random

#2

Write something funny here

Powerball: 2nd Iteration

Same thing, just avoid duplicates now

java.util.ArrayList

Write something funny here

Powerball: 3rd Iteration

Sort before printing

`Collections.sort(ArrayList)`

Write something funny here

Powerball: Final Iteration

Generate N (inserted by the user) random bets

System.in & Scanner

#2

Write something funny here

The year is 2300 and you're programming an application which stores info about every planet humans have colonized.

```
boolean earthHasWater = true
String[] earthSatellites = {“Moon”}
float earthAvgTemp = 14.9
```

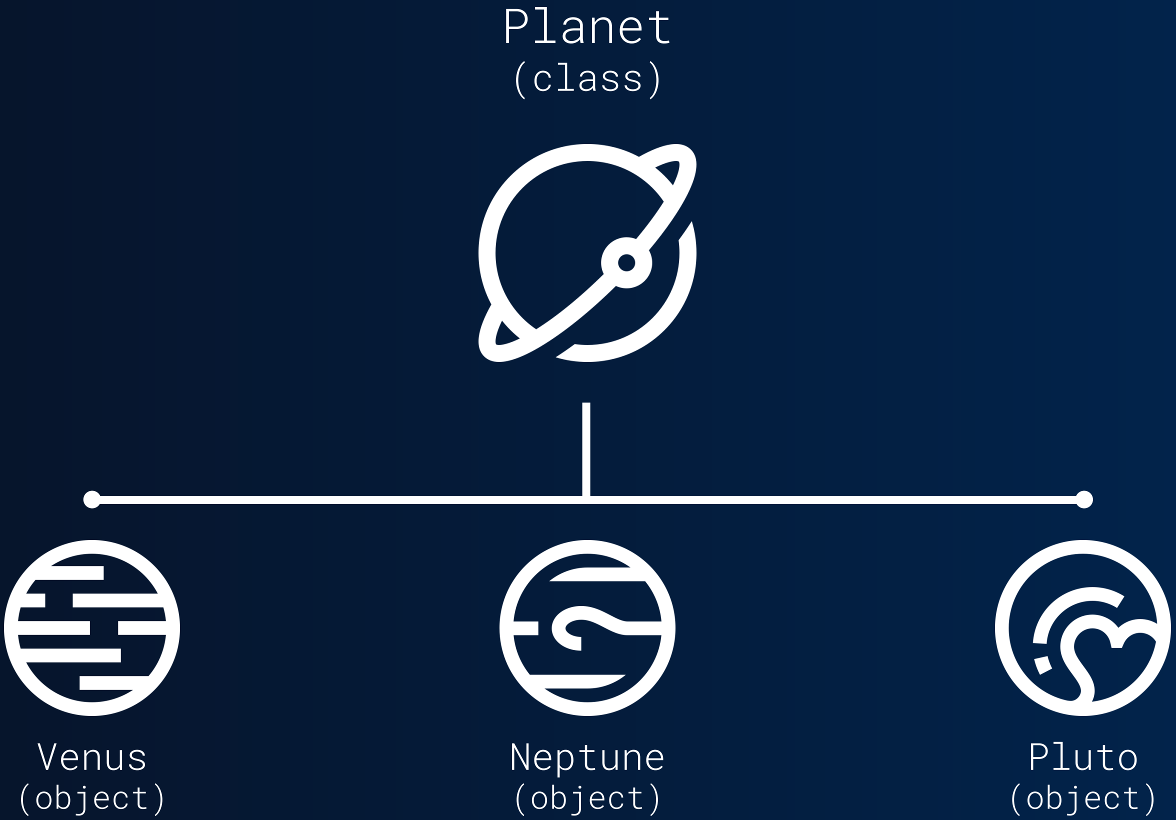
```
boolean earthHasWater = true
String[] earthSatellites = {“Moon”}
float earthAvgTemp = 14.9
```

```
boolean marsHasWater = false
String[] marsSatellites = {“Phobos”, “Deimos”}
float marsAvgTemp = -63
```

```
boolean earthHasWater = true
String[] earthSatellites = {“Moon”}
float earthAvgTemp = 14.9
```

```
boolean marsHasWater = false
String[] marsSatellites = {“Phobos”, “Deimos”}
float marsAvgTemp = -63
```

```
boolean jupiterHasWater = idk lol
String[] jupiterSatellites = way too many
float jupiterAvgTemp = a direct bite on ice cream
```


Planet
(class)
Venus
(object)
Neptune
(object)
Pluto
(object)

public protected default private

public protected default private

seen by every class
on any package

public

protected

hidden from
non-subclasses in
other packages

default

private

public protected default private

only seen by the
package's scope

public protected default private

hidden from everyone

github.com/ieeeupsb/**no-bs-guide-to-java**

1. Create a **Planet** class, containing a **name** and **average Kelvin temperature**.
2. Create a **Civilization** class with a **name** and a (mutable) **list of planets**. Add a method which allows **new planets to be pushed** into the list.
3. Add an attribute to the Planet class which **tracks whether is has been colonized or not**.
4. Create a method which returns the **coldest temperature for a planet** owned by a civilization.
5. Create a **Space** class with a **static method** which - given two civilizations - returns the one with the **highest number of planets colonized**.

- Implement **getter methods** for **all attributes**.
- Look at the **Test.java** code to better understand what we're looking for.

#3

Difficult difficult lemon difficult

Where to next?

Kotlin

Android Studio

Abstract classes
Interfaces
Inheritance
Java Swing/FX
JUnit