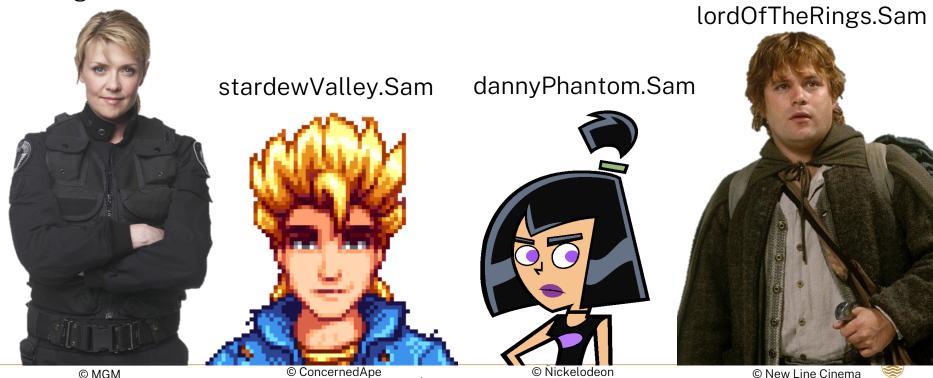


Java Packages

stargate.Sam "Sam" – but which one?



Java Packages



Java Modules

- Group packages and related resources
- Strong encapsulation
- Explicit dependencies

```
module java.sql {
requires transitive java.logging;
requires transitive java.transaction.xa;
requires transitive java.xml;
exports java.sql;
exports javax.sql;
uses java.sql.Driver;
```



Java Variables

Instance Variable – "field"

Each object (instance) has its own version (instance) of the field

```
public class MyClass {
   int myField;
   static String myStaticField;
   public static void main(String[] args) {
       String x = "hello!";
   }
   Parameter
   Temporary state, limited to execution scope of code, value passed from one method to another
```

Local Variable

Temporary state, limited to execution scope of code



Java Naming

Legal identifiers

- Start with: Unicode letter, _, or \$
- Plus arbitrarily many more Unicode letters, _, \$, and digits
- Except keywords and reserved words
- Capitalization matters!

Conventions

- Avoid _ and \$, especially at the start of an identifier
- CamelCase combine words by starting each word with a capital letter
- Class names start with capital letters (e.g. BikeShed)
- Variable names start with a lower-case letter (e.g. currentGear)
- Constant names us all-caps and underscores (e.g. MAX_GEAR_RATIO)



Java's Primitive Data Types

Туре	Description	Range	Default
byte	8-bit signed 2's complement integer	-128 to 127	0
short	16-bit signed 2's complement integer	-32768 to 32767	0
int	32-bit signed 2's complement integer	-2^{31} to $2^{31} - 1$	0
long	64-bit signed 2's complement integer	-2^{63} to $2^{63} - 1$	OL
float	single precision 64-bit IEEE 754 floating point number		0.0f
double	double precision 64-bit IEEE 754 floating point number		0.0d
boolean	Logically just a single bit: true or false	true, false	false
char	16-bit Unicode character	0 to 65535	0

NEVER use float/double where precision is needed, especially for money!



Java Literals

Numbers

- 48 (byte, short, int) or 48L (long)
- 0x30 or 0x30L (48 expressed in hex)
- 0b110000 or 0b110000L (48 expressed in binary)
- 48.0/48.0d (double) or 48f (float)
- Underscores can separate digits: long creditCard = 1234_5678_9012_3456L;

Others

- Booleans: true, false
- Strings: "Hello World!"
- Chars: 'a', '!' —— "Billion Dollar Mistake"
- Null: **nu11**

