

Primitive Data Types



COMIXPLAIN

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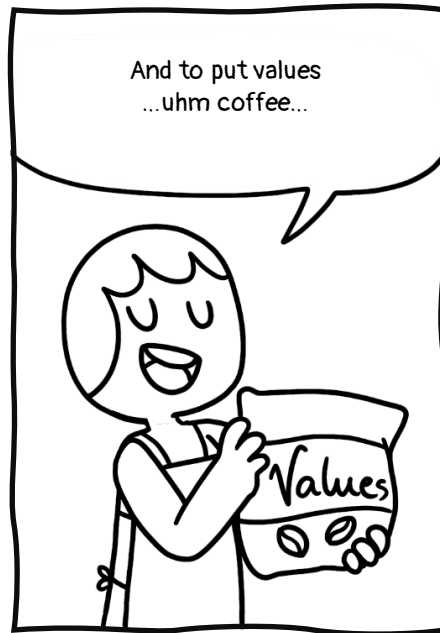
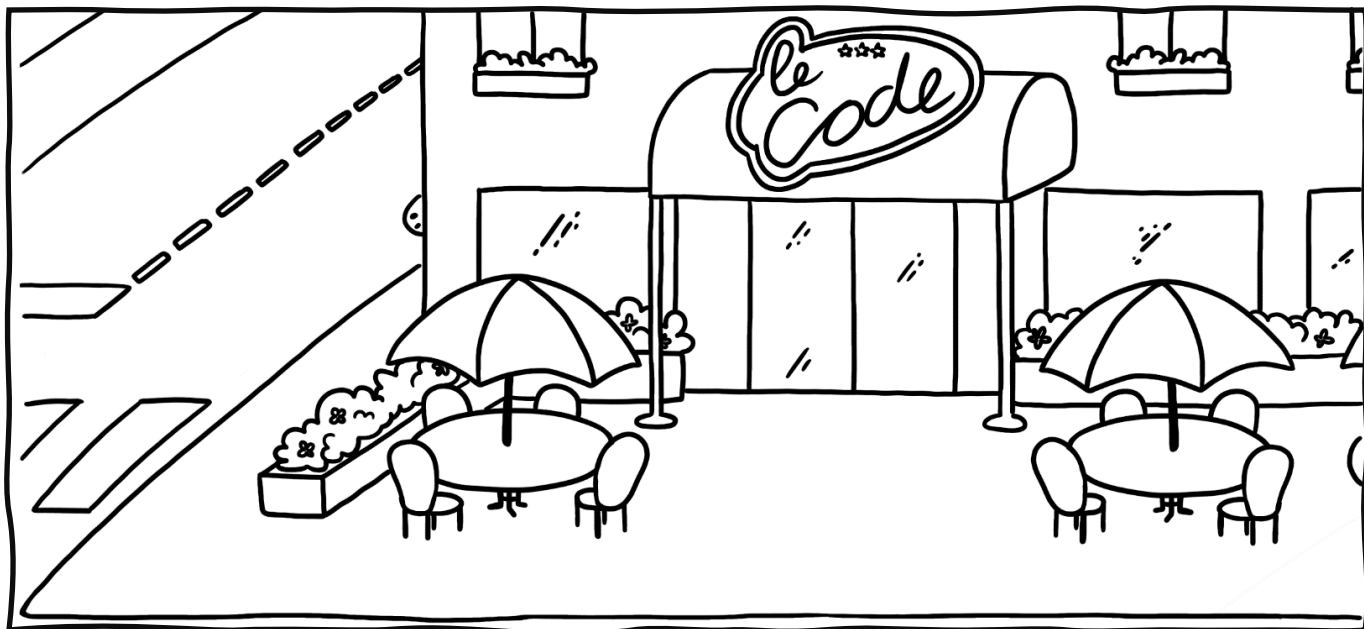
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<https://fhstp.github.io/comixplain>



Primitive Data Types

Here are our different containers that we use. Don't worry about the exact number ranges.

-128
+127

-32,768
+32,767

-2×10^9
 $+2 \times 10^9$

-9×10^{18}
 $+9 \times 10^{18}$

$\pm 1,4E - 45$
 $\pm 3,4E + 38$

$\pm 4,9E - 324$
 $\pm 1,7E + 308$

BYTE

SHORT

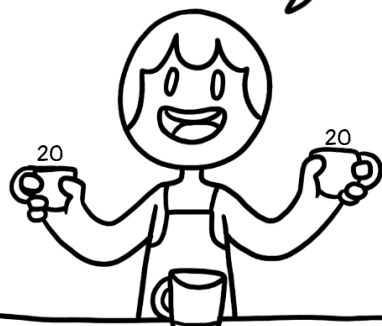
INT

LONG

FLOAT

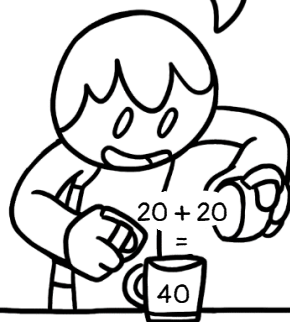
DOUBLE

Sometimes you'll have to pour the contents of glasses into others.



Int

Easy isn't it?



Just be mindful of one thing.



You're actually not emptying the original glass but copying the content into a new cup.



Also, you can always copy the content of a smaller glass into a larger one.



But what happens when we pour a float into a short?



Only a part of it will fit.



And the rest will leave a huge mess on the counter.



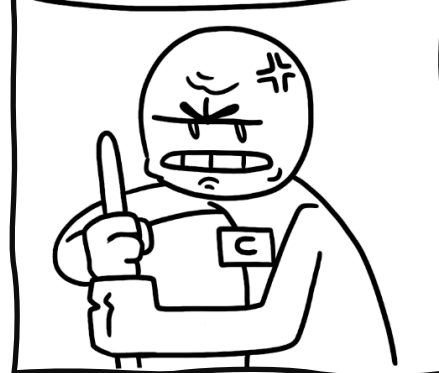
And whether that's bad depends on the manager you're working with,



See this person here? She won't be bothered much and will clean it up for you.



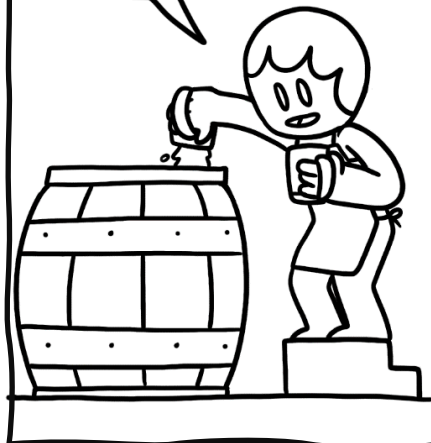
But NEVER do this under his watch. He will throw a fit!



So depending on what you are working on, try to avoid it.



You may ask yourself why don't we just put everything into doubles.



...but there wouldn't be much space left on the tables...



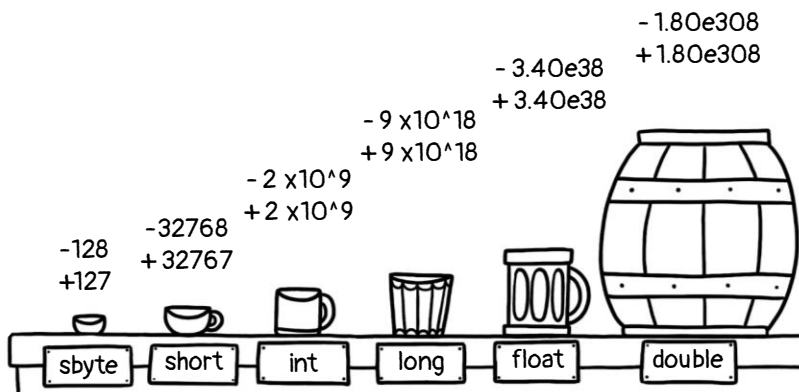
So please choose appropriate sizes.

Primitive Data Types



How would you explain the concept of primitive data types to the new employee? Use this space to make notes and drawings.

C# (C-Sharp)



C# also includes:
bool: a boolean value (true or false).
char: a Unicode character (U+0000 to U+FFFF).

Primitive types are predefined by the programming language itself. Here are the equivalent types and their ranges for other languages.



Javascript

2 1.3 Number: Represents all numeric values*



Boolean: Represents a boolean value (true or false)



String: Represents a sequence of characters



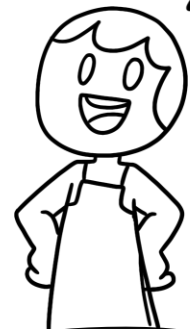
Undefined: Represents an uninitialized or undefined value



Null: Represents an intentional absence of any object value

*The type "number" includes integers and floating-point numbers. JavaScript doesn't have specific types like byte, short, or long.

Be aware that primitive types provide the programmer with essential data types for storing and manipulating data efficiently, often optimized for performance and memory usage.



Python

2 int: Represents arbitrary precision signed integers.

1.3 float: Represents floating-point numbers*



bool: Represents a boolean value (true or false).



str: Represents a sequence of Unicode characters.



NoneType: Represents the absence of a value, often used as a placeholder or default return value.

*The range of float is approximately $1.7e-308$ to $1.7e+308$

While many languages share similar primitive types such as integers, boolean values, and characters, the specific names, ranges, and behaviors of these types can vary between languages.



Sources:

Knudsen, J., & Niemeyer, P. (2005). Learning Java. O'Reilly.

Mughal, K. A., & Rasmussen, R. W. (2003). A programmer's guide to Java certification: a comprehensive primer. Addison-Wesley Professional.