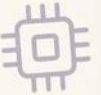


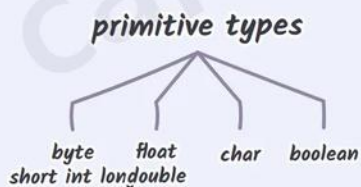
Primitive Values, Wrapper Classes and Types

the eight raw types Java stores directly, and the classes built around each one



The eight primitive types

- Java has exactly eight primitive types, and every one of them stores its value directly, not a reference to an object holding it
- four are whole numbers of growing size: byte, short, int and long
- two are numbers with a fractional part: float and double
- char stores one single character, and boolean stores only true or false



the eight primitives grouped by what kind of value each family holds

Size and range, the numbers an exam actually asks for

Type	Size	Range or note
byte	1 byte	-128 to 127
short	2 bytes	-32768 to 32767
int	4 bytes	about -2.1 billion to 2.1 billion
long	8 bytes	far larger than int, written with an L suffix
float	4 bytes	fewer significant digits, written with an F suffix
double	8 bytes	the default for decimals, more significant digits than float
char	2 bytes	one character, unicode
boolean	not fixed by the language	true or false only

Bit width, drawn as one row

- a byte's eight bits are all the storage it gets, so its range is fixed by exactly how many patterns eight bits can hold
- a wider type is simply more of the same row, more bits and so more distinct patterns to represent a bigger range

byte, 8 bits: 1 1 0 0 1 1

one byte is this many bits, no more and no fewer, whatever value it holds

