Java Data Types

modified from w3schools.com/java/java_data_types.asp

There are two broad categories of Java data types: **Primitive** and **Reference**.

Primitive Data Types

A primitive data type specifies the size and type of variable values, and it has no additional methods. There are eight primitive data types in Java. They are split into floating point and integer interpretations.

Integer Types

Data Type	Size	Description
boolean	1 bit	Stores True or False (as 1 or 0)
byte	8 bits	Stores integer numbers from -2^7 to 2^7 or -128 to 127)
char	2 bytes	Stores a UTF-16 character code as an unsigned short value
short	2 bytes	Stores integer numbers from -2^{15} to $2^{15}-1$ or -32,768 to 32,767
int	4 bytes	Stores integer numbers from -2^{31} to $2^{31}-1$ or -2,147,483,648 to 2,147,483,647
long	8 bytes	Stores integer numbers from -2^{63} to $2^{63}-1$ or -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807

Floating Point Types

Data Type	Size	Description
float	4 bytes	Stores rational values as separate significant digits and order of magnitude similar to scientific notation. Can hold 6 - 7 significant digits. Magnitudes 10^{-38} to 10^{37}
double	8 bytes	Stores rational values as separate significant digits and order of magnitude similar to scientific notation. Can hold 15-16 significant digits. Magnitudes 10^{-308} to 10^{307}

Reference (Non-Primitive) Types

All reference data is built from compositions of primitive data at some level.

Type	Description
Array	A set of primitive reference variables. Stored as a pointer (memory address of data location start). An array can be formed from any type of primitive data or object. Carries the data type of the array components. Begins as a null pointer until initialized with **new**.
Object	An instance of a **class**. Technically the data type of the variable is the **class** from which it is formed. Stored as a pointer in (memory address). Begins as a null pointer until initialized with **new**.