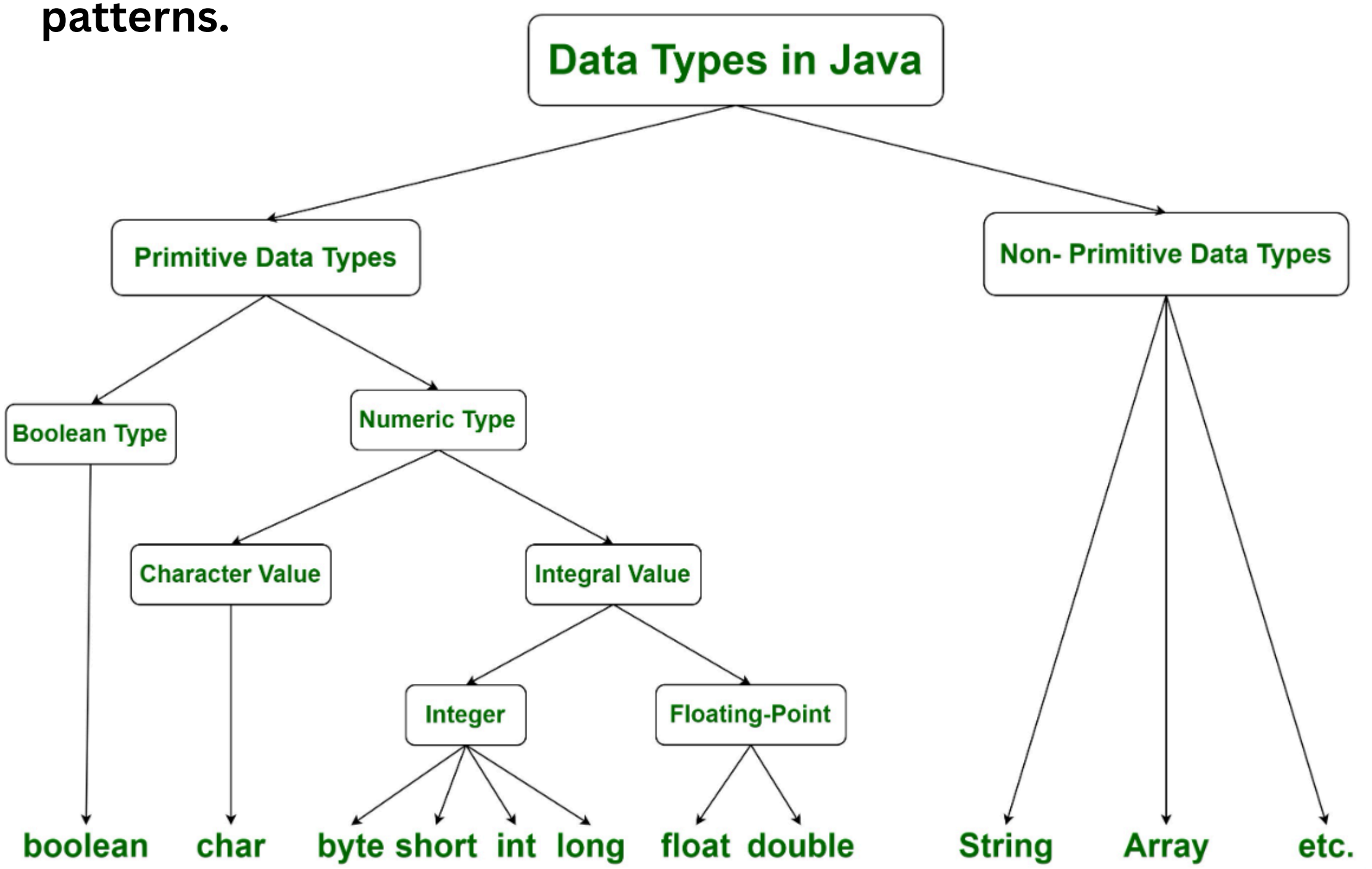
DATA TYPES

---the kind of data a variable can hold

- **In Java, a data type defines the type of data a variable can store, the range of values it can hold, and the operations that can be performed on it.**
- **It is a classification system that tells the JVM how much memory to allocate for a variable and how to interpret the stored bit patterns.**



- **Except Boolean and char all remaining data types are considered as signed data types because we can represent both "+ve" and"-ve" numbers.**

- **char in Java uses Unicode, not ASCII — So Java supports all world languages (English, Hindi, Arabic, Chinese...).**

- **Primitive (value stored directly in stack memory)**
- **Non-Primitive (reference stored in stack → object in heap)**

- **byte, short, char are promoted to int during arithmetic operations.**

Floating Point Data types:

Float	double
If we want to 5 to 6 decimal places of accuracy then we should go for float.	If we want to 14 to 15 decimal places of accuracy then we should go for double.
Size:4 bytes.	Size:8 bytes.
Range:-3.4e38 to 3.4e38.	-1.7e308 to1.7e308.
float follows single precision.	double follows double precision.

Summary of java primitive data type:

data type	Size	Range	Corresponding Wrapper class	Default value
byte	1 byte	-2^7 to 2^7-1(-128 to 127)	Byte	0
short	2 bytes	-2^{15} to $2^{15}-1$ (-32768 to 32767)	Short	0
int	4 bytes	-2^{31} to $2^{31}-1$ (-2147483648 to 2147483647)	Integer	0
long	8 bytes	-2^{63} to $2^{63}-1$	Long	0
float	4 bytes	-3.4e38 to 3.4e38	Float	0.0
double	8 bytes	-1.7e308 to 1.7e308	Double	0.0
boolean	Not applicable	Not applicable(but allowed values true|false)	Boolean	false
char	2 bytes	0 to 65535	Character	0(represents blank space)