

# Java for beginners

## Data types and type conversion



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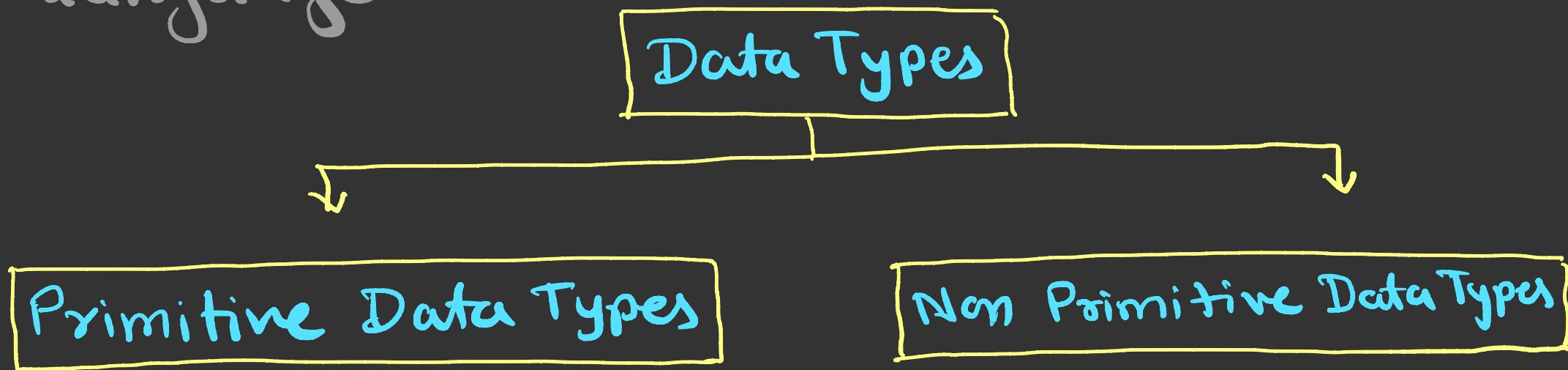
## Agenda

- ① Data Types
- ② Value Type and Nullable type
- ③ Type Conversion

## Data Types

Data type is a category of data.

Java is strongly and statically typed language



# Primitive Data Types

boolean

char - character

byte

short

int

long

float

double

Integers

Real

implementation dependent

2 bytes = 16 bits

1 byte = 8 bits

2 bytes = 16 bits

4 bytes = 32 bits

8 bytes = 64 bits

4 bytes = 32 bits

8 bytes = 64 bits

unicode

## Non Primitive Data Type

Primitive data types are predefined in the compiler as they are keywords.

Non Primitive data types are classes.

Every class is a data type.

String is a class, therefore String is a non primitive data type.

You can also define a class and create your own data type.

No concept of structure in Java

## Variable declarations

int

double

String

int []

char []

char

Student

counter ;

temp ;

name ;

ages ;

letters ;

m ;  
si ;

why  
variables

are different  
from  
variables ?

# Two types of variables

int counter;  
double temp;  
String name;  
int [] ages;  
char [] letters;  
char m;  
Student sl;

String [] args;

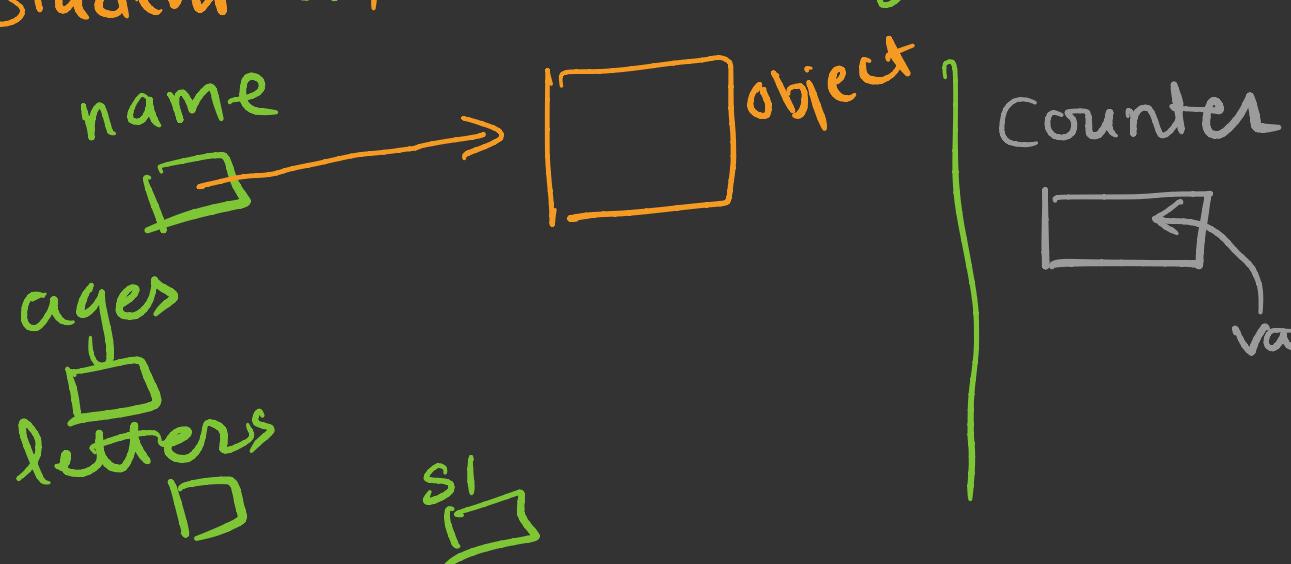
Value type Variable

(value type)

why  
variables  
are different  
from  
variables?

Reference variable

(Nullable Type)



In C++

Student s1;

object

In Java

Student s1;

object

reference variable

null can only be stored in reference variable.

int x=null; → error

Student s1=null; → correct

## Type Conversion

Every expression written in Java has a type that can be deduced from the structure of the expression and the types of the literals, variables and methods mentioned in the expression.

type of the expression  $3 + 4$  is int

type of the expression  $3 + 4.5$  is double By default

$$\downarrow \\ 3.0 + 4.5$$

Character literal  $\rightarrow$  int

Integer literal  $\rightarrow$  int

Real literal  $\rightarrow$  double

किसी variable का ही type नहीं होता, बल्कि  
constants का जो type होता है।

## Widening Conversion

```
int x=3;
```

```
float y=x; // widening conversion,  
no error
```

## Narrowing Conversion

float k = 3.5; Error

float k = 3.5f; Correct

float y = 3.4f;  
int x = y; Error

int x = (int)y; Correct

Type Casting

## Permitted Conversions

byte to short, int, long, float, double

short to int, long, float, double

char to int, long, float, double

int to long, float, double

long to float, double

float to double