Variables, Datatypes & operators
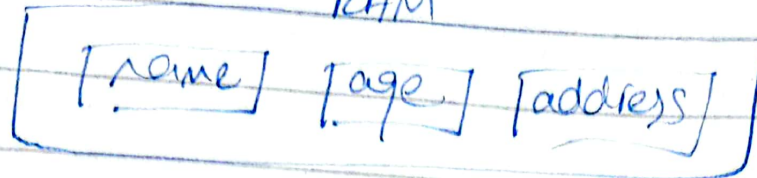
① — Variables (vary - able) → can vary at times

name = "Zeeshan";
age = 20;
addres = 'ICRIC';

RAM

[name]   [age]   [address]

Datatypes:-

It is the type of the data to be stored in the variables. which are as:

int   ——→   4 bytes or 32 bits ⎫
float   ——→   4 bytes or 32 bits ⎬ Primitive
char   ——→   1 byte or 8 bits   ⎬ Basic
bool   ——→   4 bytes or 8 bits   ⎬
double   ——→   8 bytes - 64 bits ⎭

Memory Allocation Process:-

In computer the language is binary 0/1

0/1 represents the 1 bit

1 bit

8 bits = 1 byte

4 bytes meory = 8 bits + 8 bits + 8 bits + 8 bits
              = 32 bits

Can be checked using:-
            size (variable)

→ In general numbers?

→ numbers → Binary

→ In case of strings/alphabets
   strings/alphabets → ASCII values → Binary

   A, B, C, D, E, ----
   65, 66, 67, 68, 69, ----

   a, b, c, d, e, ----
   96, 97, 98, 99, 100, ----

→ Type Casting
   Converting data from one type to another

   Type Casting

Conversion
(Implicit)   Casting
(Automatic, Compiler)   (Explicit)
                        (Manual)
Small → Big   Big → Small

float 3.14 → double   double 100.00 → int
4 bytes   8 bytes   8 bytes   4 bytes

Conversion would   we will force
be easy   the compiler

Operators

1. Arithmetic $+, -, *, /, \%.$
2. Relational $<, >, <=, >=, ==, !=$
3. Logical   OR, AND, NOT

1. Arithmetic

Fuller explaination of /

$$\frac{12}{7} = 1 \quad \rightarrow \text{int} = \text{int} \atop \text{int}$$

Likewise float = float or double = double
$$\frac{}{\text{int}} \qquad \frac{}{\text{int}}$$

vice versa

Now int number = 7 (double) Number 2
answer will be in int

because right side will give
double but double $\rightarrow$ int
as the double is now to be
stored into int.

Operators

Unary   binary
++ ↑↑ a / b
Increment ++ $a - b$
Decrement -- $a \% b$
(Required only) a / b
One operands)   (Required two operands)

Unary operators

Post	Pre
(Post++) Increment ++	(++ Pre) ++ Increment
(Post--) decrement --	(-- Pre) -- Decrement