Hello CPPBudddies

Day 02

Welcome

To

C++ COMPLETE BOOTCAMP

Your Guide To A Solid Foundataion in C++

Let us begin

C++ PROGRAMMING LANGUAGE

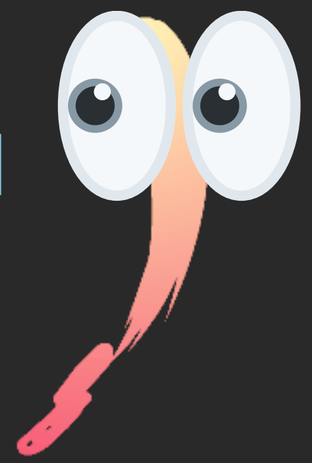
The best language for learning programming and DSA

ACTION TIME

C++ COMPLETE BOOTCAMP

LECTURE 02

DAY 02 WEEK 01



C++ PROGRAMMING GETTING STARTED WITH BASICS OF C++

WELCOME EVERYONE

C++ Complete Bootcamp

YOUR GUIDE TO PROGRAMMING

In association with

Inspire Club, MANIT BHOPAL

Recap:

hello world program

cout iostream

header files

preprocessor directives

main return 0;

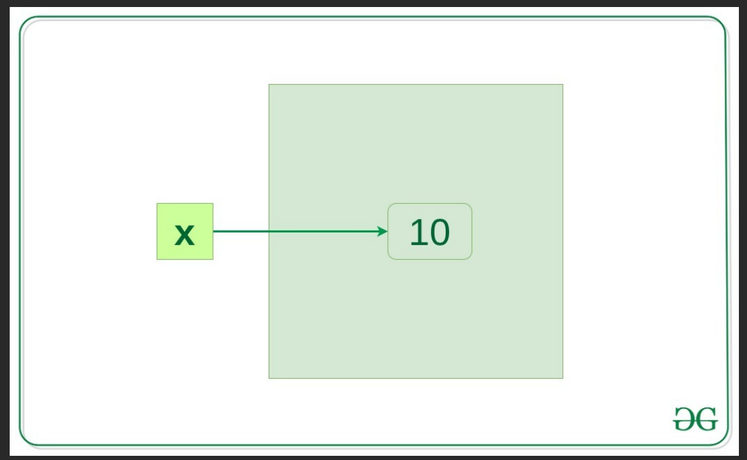
steps of running a program

main.cpp

```cpp
#include <iostream>
// library => functions + variables

// object => cout
using namespace std;
// basic input output => cin     cout

// main is the starting point
// int => integer    0, 1, 2, ..........(integer)
int main() {


  // standard namespace
  //    \n     => new line
  //    endl    => end line
  cout << "Hello CPP Buddies" << endl;
  return 0;
  // OS
}
```

VARIABLES & DATATYPES

Variable



A named memory location in RAM

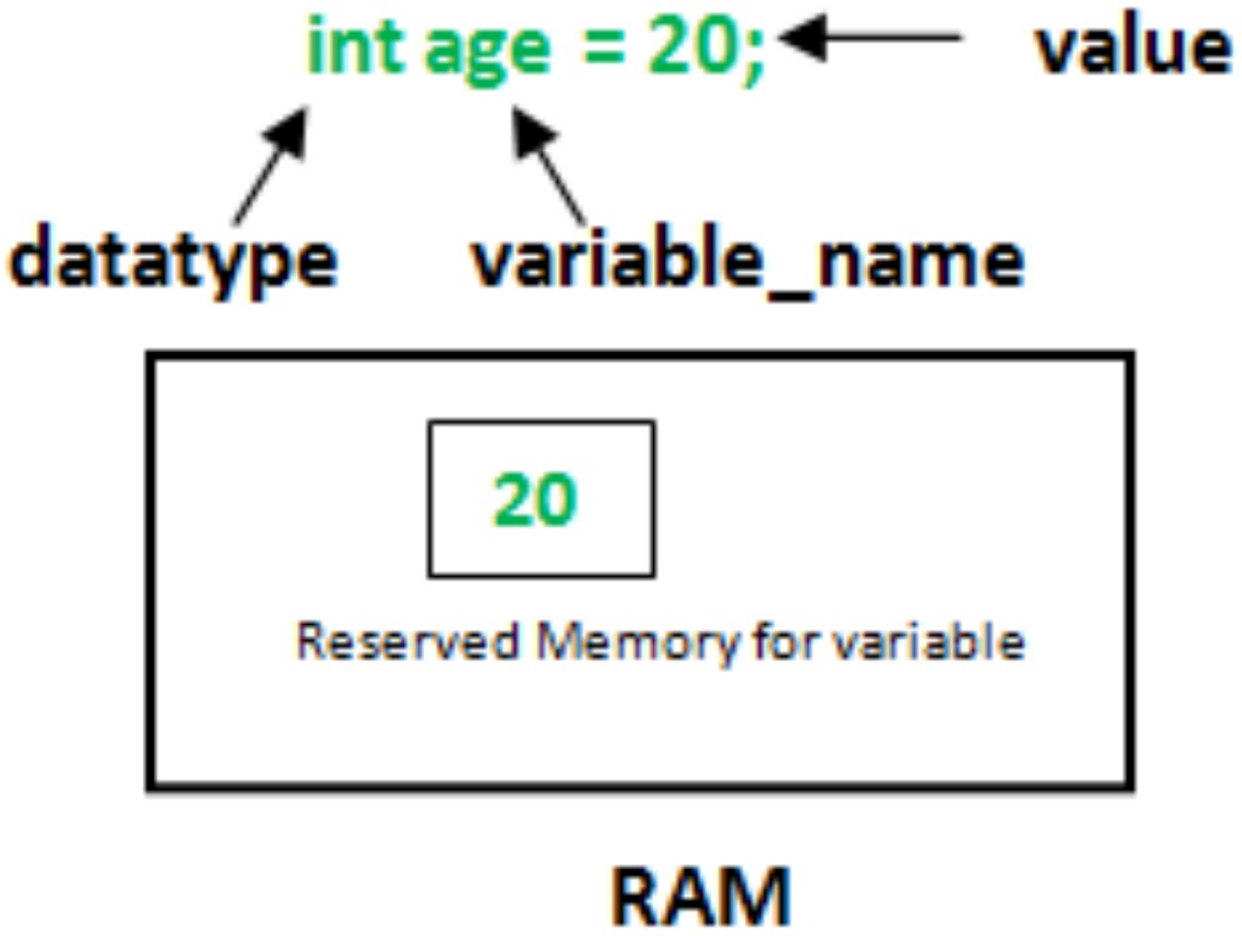
A container or bucket to store data

A variable has value, type and address

Value may change,
but type and address
are fixed

So C++ is a statically typed language

Variables in C++



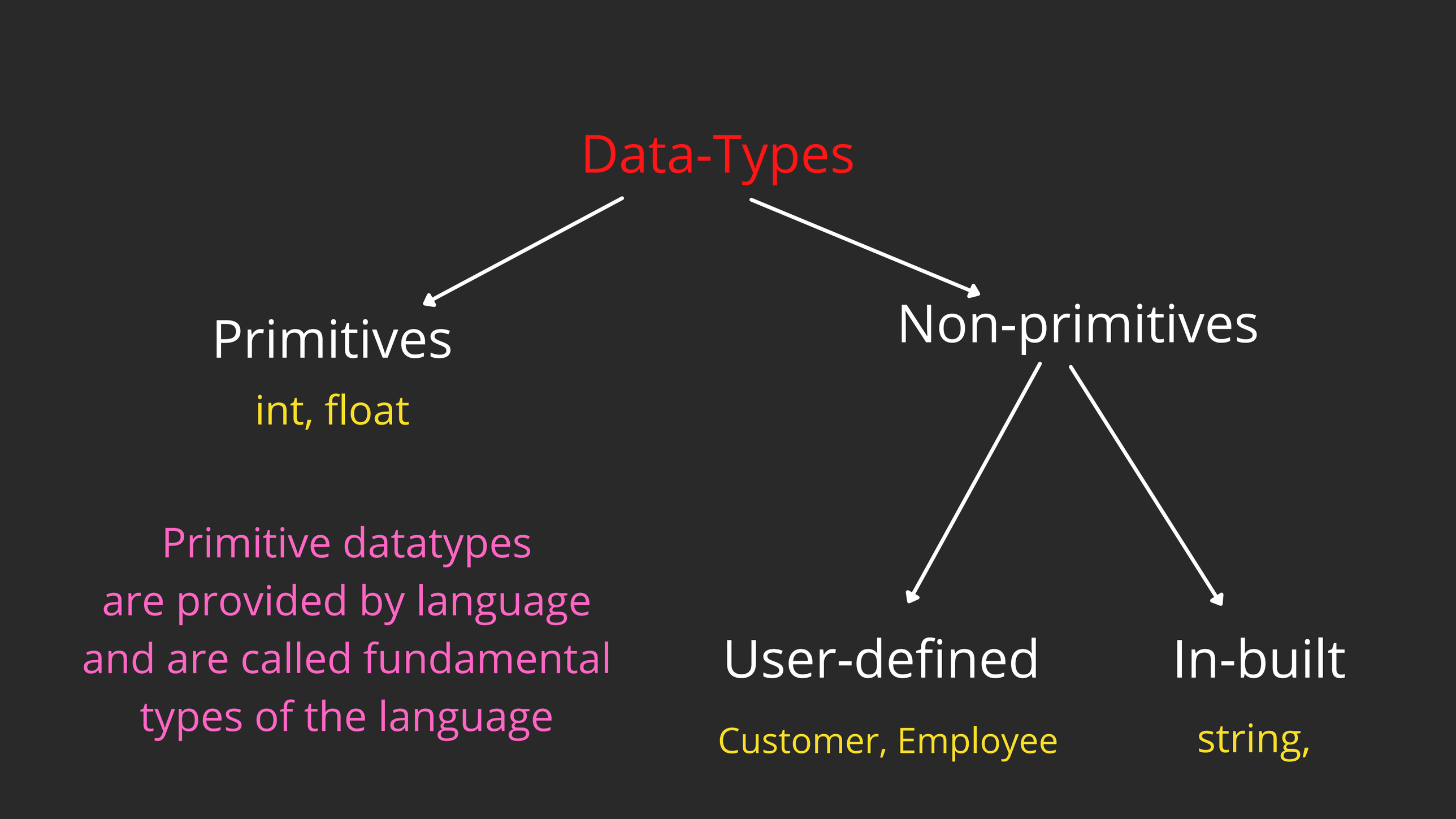
Datatypes

Unlike humans, a computer does not know the difference between 1234 and "abcd"

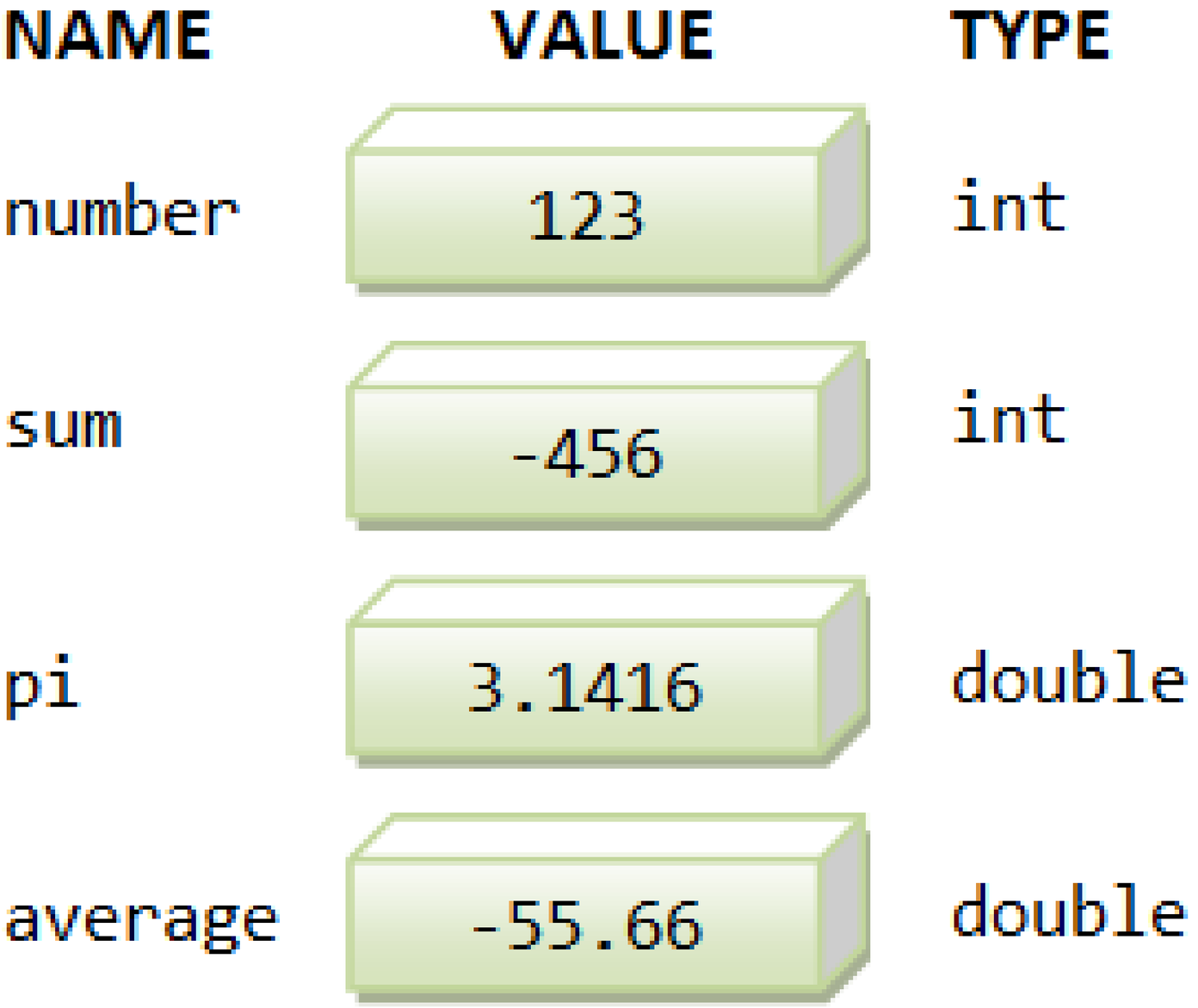
Datatype denotes what value a variable is holding in computer memory

Why datatypes ?

Whenever a variable is defined in C++,
the compiler allocates some memory for that variable
based on the data-type with which it is declared.
Every data type requires different amount of memory.


Data-Types
Primitives
int, float
Non-primitives
User-defined
Customer, Employee
In-built
string,
Primitive datatypes
are provided by language
and are called fundamental
types of the language

DATA TYPE	SIZE (IN BYTES)	RANGE
short int	2	-32,768 to 32,767
unsigned short int	2	0 to 65,535
unsigned int	4	0 to 4,294,967,295
int	4	-2,147,483,648 to 2,147,483,647
long int	4	-2,147,483,648 to 2,147,483,647
unsigned long int	4	0 to 4,294,967,295
long long int	8	-(2^63) to (2^63)-1
unsigned long long int	8	0 to 18,446,744,073,709,551,615
signed char	1	-128 to 127
unsigned char	1	0 to 255
float	4	
double	8	
long double	12	
wchar_t	2 or 4	1 wide character



A variable has a *name*, stores a *value* of the declared *type*

DEMO

variables & datatypes

How to know the size of any type ?

sizeof() operator

```
cout << "Size of int : " << sizeof(int) << " bytes" << endl;
```

Some Rules

In C++, variables must be declared before using it.
Declaring a variable tells the compiler that a variable of certain type is being used in the program.
Using a variable before declaring it will cause an error.
Variables can be declared in C++ as follows

Variable naming conventions

1. meaningful names
2. do not begin with numbers
3. can begin with underscore
4. can not use special symbols

2, 3, 4 => Valid variable name

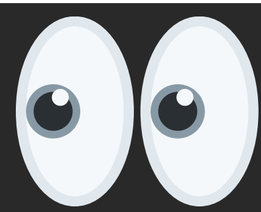
Select one option from the list

- aVariable
- float2string
- _something
- 2manyLetters

Initialization of a variable is of two types:

- **Static Initialization:** Here, the variable is assigned a value in advance. This variable then acts as a constant.
- **Dynamic Initialization:** Here, the variable is assigned a value at the run time. The value of this variable can be altered every time the program is being run.

Ways of Initialization



BEST

1. Copy initialization
2. Direct initialization
3. List initialization

```
int width = 5; // copy initialization of value 5 into variable width
int width( 5 );  // direct initialization of value 5 into variable width
int width{ 5 }; // direct list initialization of value 5 into variable width
```

🙏 THANK YOU 🙏

keep calm,
wear mask,
and
study hard

ISSUED IN PUBLIC INTEREST

whoami

AKASH MAJI

Your Mentor