

# Lecture 2

Topics: Hello World Program, Variables and Data Types in C, Type Casting,  
Printing to Console, Taking Input from Users, Errors in C, Object and Executable Code

# Basic C code Structure

# Remember

```
#include <stdio.h>
```

```
Void main( ) {
```

# yad

```
    -- -- --  
    -- -- --  
    -- -- --
```

```
}
```

# What is a console? ( Command Line Interface)

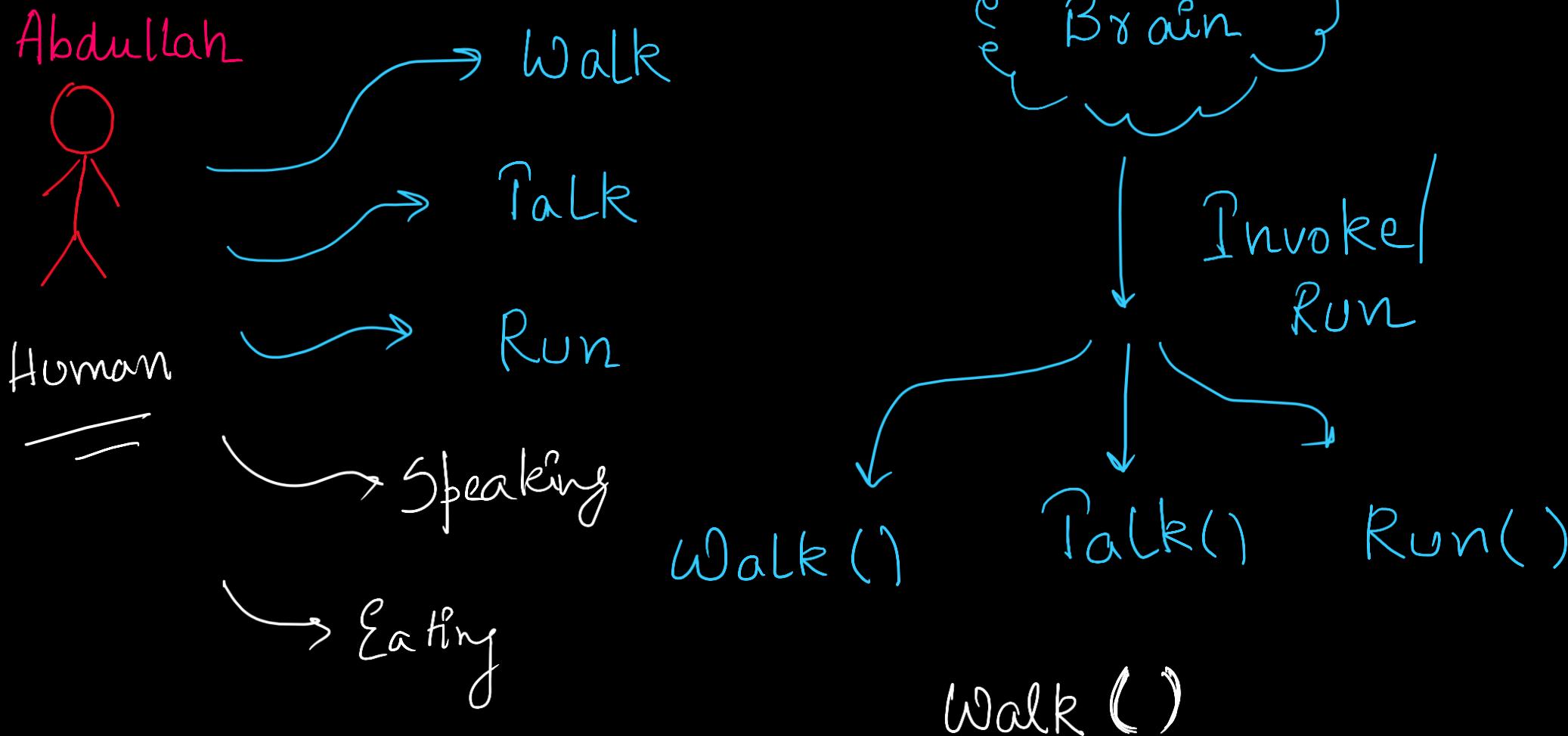
Example

Windows → cmd & Powershell

Mac & Linux → (bash, zsh)

- (i) Interact with the OS
- (ii) Direct control to system level operations

# What is function? (method)



# The most popular function?

Printing (Display) something on the console/  
terminal

↓ Parameters

printf ("~~~~~") ;      Super Imp.  
~~~~~      Why ??

# Note: No ; at end of code block

# The classic Hello World Program?

```
#include<stdio.h>
```

```
Void main () {
```

```
    printf ("Hello World");
```

```
}
```

Extension

of c file (.c)

Console:

Hello World

Abdullah

~~Brain~~ Brain



# Comments in C

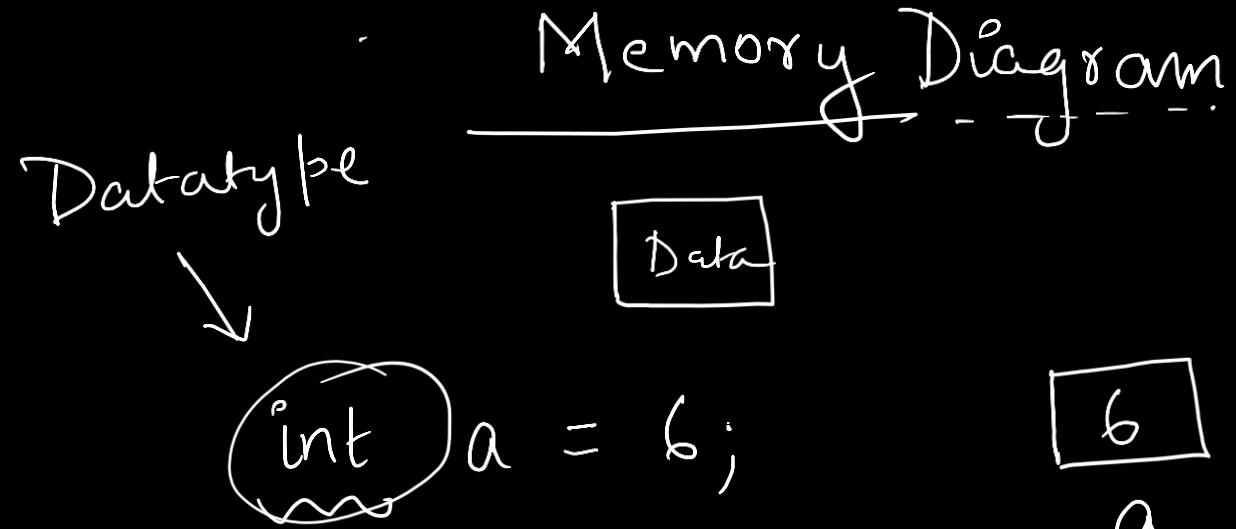
(khud samjhe ke lia → Code me koi effect  
nai → lekin readable  
banega code ko)

Single Line: // This is my code

Multi Line      / \*  
                  -----  
                  -----  
                  ----- \*/

# Variables in C

(To store data)



## Data - Types

|         |     |              |                              |                 |
|---------|-----|--------------|------------------------------|-----------------|
| =int    | → { | 2 or 4 bytes | → 2<br>4 (4 bytes)           | 4 × 8 = 32      |
| =float  | → { | 4 bytes      | (6-7 decimal digits)         | 6.23            |
| =double | → { | 8 bytes      | (15 decimal digits)          | 6.23            |
| =char   | → { | 1 byte       | ((Character or ASCII value)) | 6A <sup>9</sup> |

# How to declare variables?

```
#include <stdio.h>  
void main() {  
    int a = 6;  
    printf(a);  X  
}
```

# Multiple Variables

(i)

(ii)  
= =

# Declaration v/s Initialization

**Format Specifier?** Instructs the compiler  
(Type of data that must given at input or  
printed on the screen)

%d or %l

int

# Note:

%f or %F

float

Incorrect FS

%lf

double

can cause errors

%c

char

or crash code

%s

strings

# Gyan ki bat!!

## Rules

- (i) Can contain letters, digits & underscore
- (ii) No white space or <sup>special</sup> character (!, #, %)
- (iii) No reserved words
- (iv) Case-sensitive
- (v) Start with letter or = int int a=6;

my var  
my var  
my var

Abc  
Abc

ABC  
abc

# Thora aur gayan

int thisIsMe = 6;

(i) Descriptive name =

(ii) Pascal Case → This Is Pascal Case

Camel Case → {This Is Camel Case}

Snake Case → this\_is\_snake - 'kebab

~~SCREAMING~~ Case  
kebab

↑  
SCREAMING

# So Final Code?

# # Tricky Question 1

```
char text = 'b HelloO';  
printf ("%c", text);
```

↳ A'

Output ??

O

## # Tricky Question 2

```
int < float  
int a = 9.9;  
printf ("%i", a);
```

Output ??

9

# Decimal Precision

$$\begin{array}{l} \cancel{\cdot} \cancel{1} f \\ \rightarrow \quad \cancel{\cancel{1}} \\ \cancel{\cdot} \cancel{2} f \\ \rightarrow \quad 2 \\ \cancel{\cdot} \cancel{4} f \\ \rightarrow \quad \cancel{\cancel{2}} \end{array}$$

# Constants

# Declaration will not work  
here

Const    int    a = b;  
      =



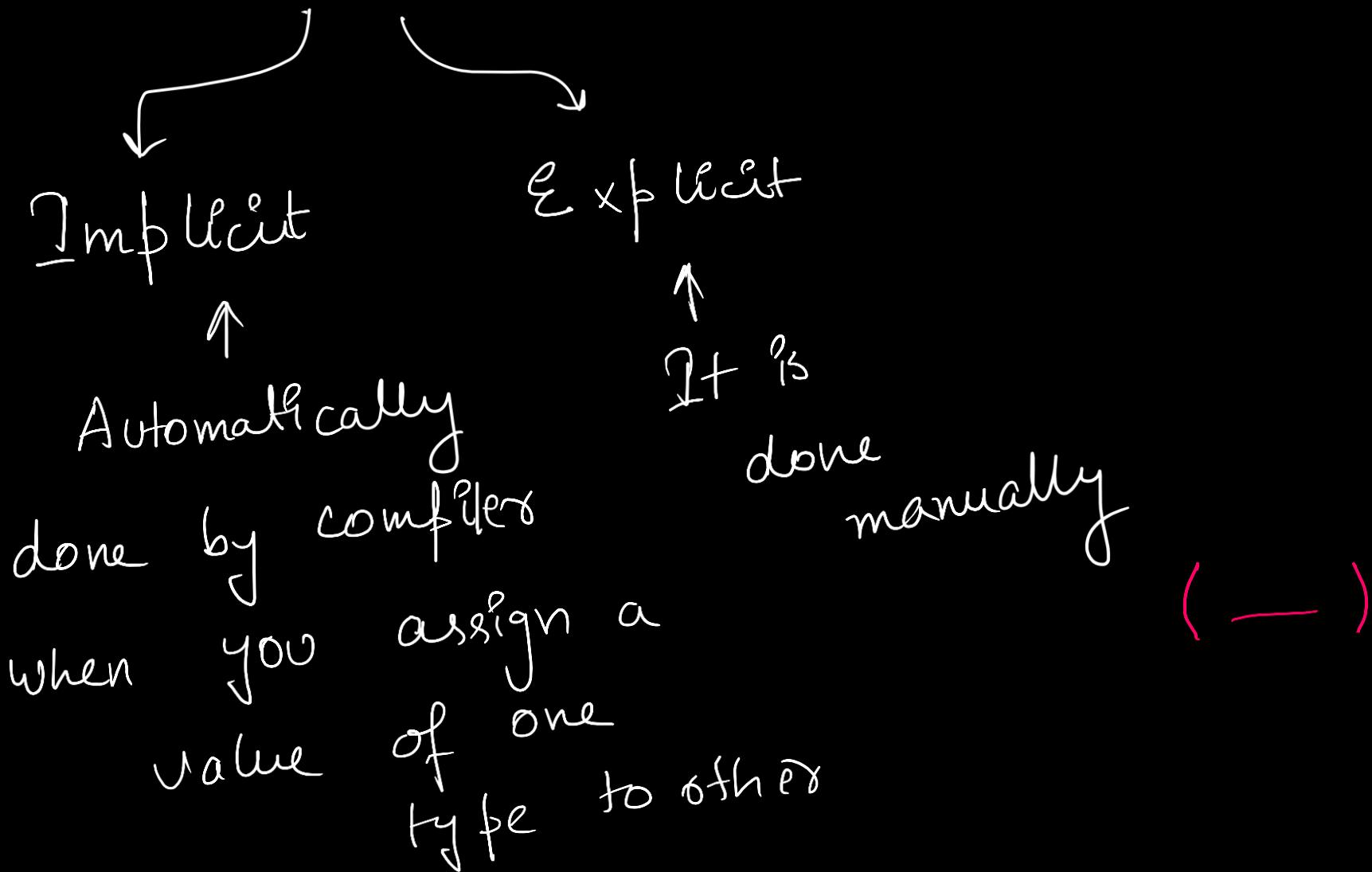
Const    int    a = b;  
      =

Const    float PI = 3.14; b = 7; q

# Gayan ki bat

"Constant ko Capital me  
likna "

# Type Casting



lower → higher

higher → lower

# Implicit konsa aur Explicit konsa?

$$\text{Point } a = b;$$

float b = 7.2;

float C = a + b;  
int float

lower

6

earned  
so

40

11

float r = (float)a/b;

int  
float  
double

} Barras

$$\text{Int } a = 5;$$

$$\text{int } b = 2; 5/2$$

$$\text{float}^{\text{int}} = \frac{(\text{float})}{b}$$

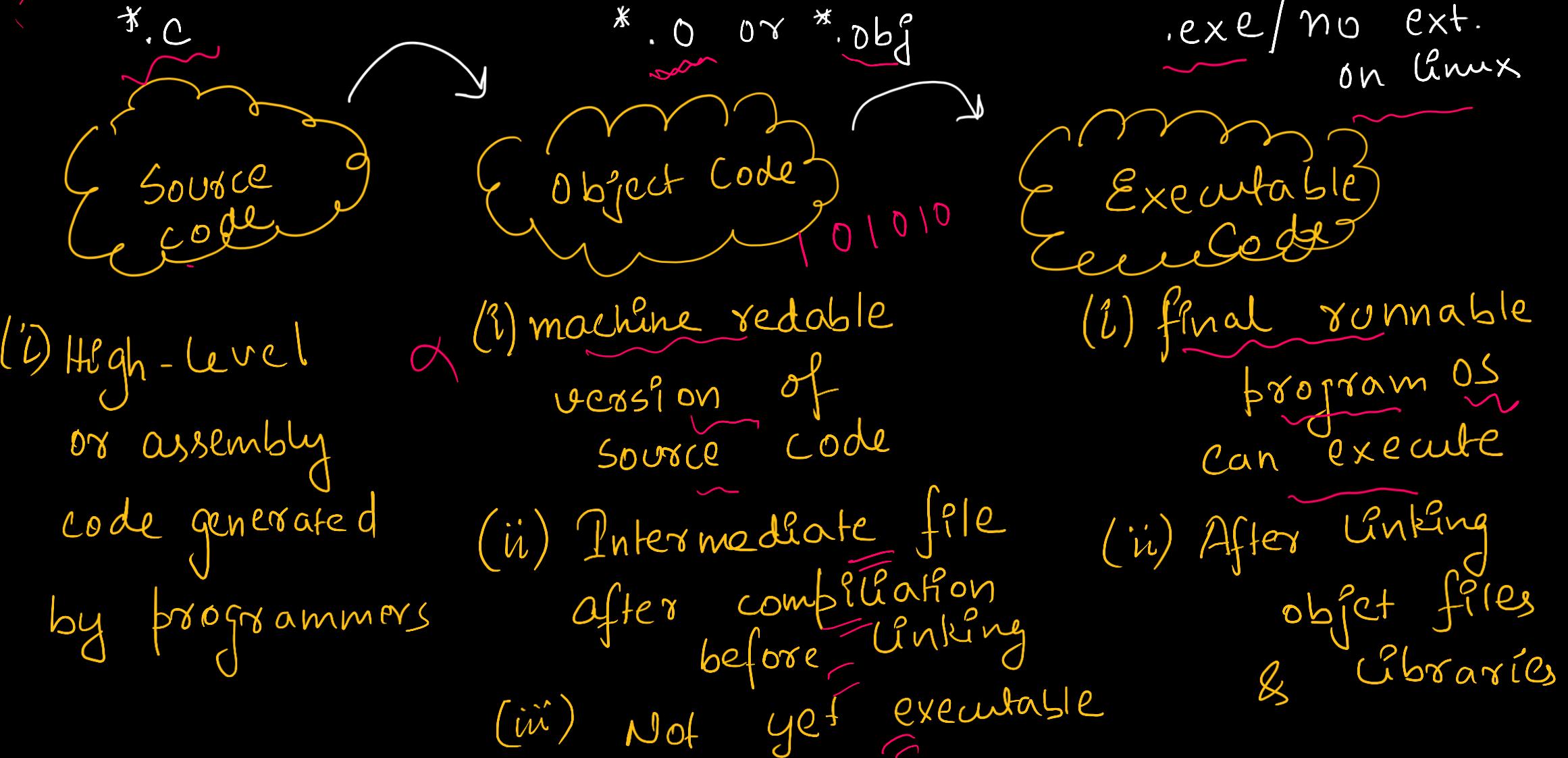
Point Point

int

# Types of Error

- (i) Syntax Errors (Compile-time Errors) {
    - & Semantic Errors
  - (ii) Runtime Errors {
    - int a=6; printf (" ")
    - int b = 0;
    - int c = a/b; int a = 6;
    - int b = 7;
  - (iii) Logical Errors
- sum = a - b;  
a + b = int c;

# \* Object and Executable Code



## Commands



Linking is the process of combining object files & libraries to create an executable file. (Done by linker)

# One Last Function

%f not valid

scanf("%d", &myNum)

%d & %i

↑  
format  
specifier      ↑  
memory address  
of the variable

scanf ("%d %c", &myNum, &myChar);