(11) Functions Part (1) [11 day]

1) what is functions
2) why functions
3) Function Syntax
4) Difference between
   - Function Declaration
   - Function Defination
   - Function Invocation /call

5) Functions are super important for interviews
6) What is main function? How it is used?
7) What are command line arguments?
8) Why python doesn't have main?

1) What is functions?
⇒ Functions are a block of organized, reusable code, used to perform a specific task.

2) Why have functions?
- Reusability → time, money saves
- Readability

3) Function syntax

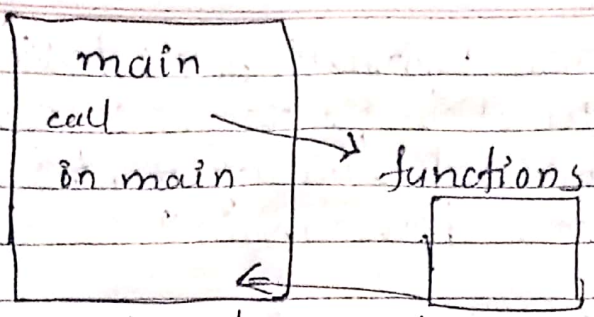
~~<ReturnType~~
<ReturnType> functionName(input arguments)
↓ ↓ ↓
not compulsory compulsory not compulsory

void functionName() → java, c
def function_name() → python

Examples:
① int getSum(int num1, int num2)

② void print(String message)
③ void likeMessage(String message_ID) { }
def like_message(message_id):

④ Functions declaration, definition, Invocation / call



functions loop inside main

(4) i) Declaration :- It means telling that program about the function name, return type and parameters (mainly in java, C)

ex:- public int add(int a, int b); //declaration

2) Definition:- means that where you write the actual body of function - what it does

ex:- def add(a, b): // definition
return a+b

2) Java

```
public int add(int a, int b) {
    return a+b; //definition
}
```

3) Invocation/calling:- calling the function by passing required arguments

ex:- print(add(5,3) # invocation in py

2) sout(add(5,3)); // invocation inside main method in Java

use proper input argument inside (declare function

in: def add (num1, num2): //declaration
py pass

java int add (int num1, int num2); //declaration

py def add(num1, num2):
sum = num1 + num2 } definition
return sum

java int add (int num1, int num2) {
int sum = num1 + num2; } definition
return sum;
}

Invocation

java int getSum(int num1, int num2) {
int sum = num1 + num2;
return sum;
}

Java Main
result = getSum(5, 7); //Invocation
sout(result);

py result = add(5, 6) Invocation
print(result)

⑤ Functions are super important for interviews
=> use proper function name and proper input arguments
-> make code readability

⑥ What is Main function? How it is used?
=> starting point of code for execution

Java : public static void main(String[] args)

C : int main()

py : if __name__ == "__main__":
underscore -> not compulsory but recommended

⑦ What are command line argument
=> are values passed to a program when it is run from the command line (terminal / shell)

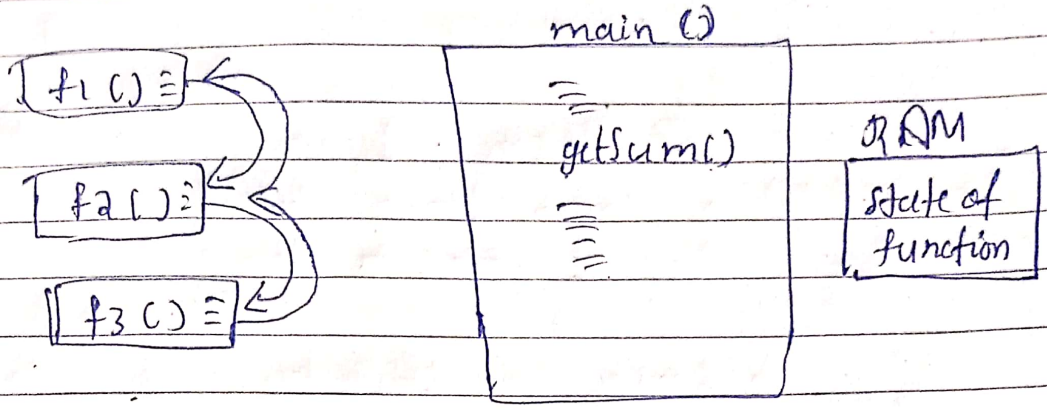
```
Java: public class Main {

    public static void main(String[] args) {
        System.out.println(args.length);

        for(int i=0; i<arg.length; i++) {
            System.out.println("args[" + i + "]: " +
                                args[i]);
        }
    }
}
```

args

Run: java Main.java Hello Hi

o/p : 2 -> length of input arguments
args[0] : Hello
args[1] : Hi

Call Stack



Stack Memory Heap Memory
dive deep in coming sessions stay tuned

python : command line argument

```
import sys
def print_arguments(args):
    print(f"Number of arguments: {len(args)}")

    for i, arg in enumerate(arg):
        print(f"args[{i}]: {arg}")

if name
if __name__ == "__main__":
    print_arguments(sys.argv)
```

if __name__ == "__main__":
-> It is a python convention used to control the execution of code
"Only run this block if the file is being executed directly, not if it's being imported"