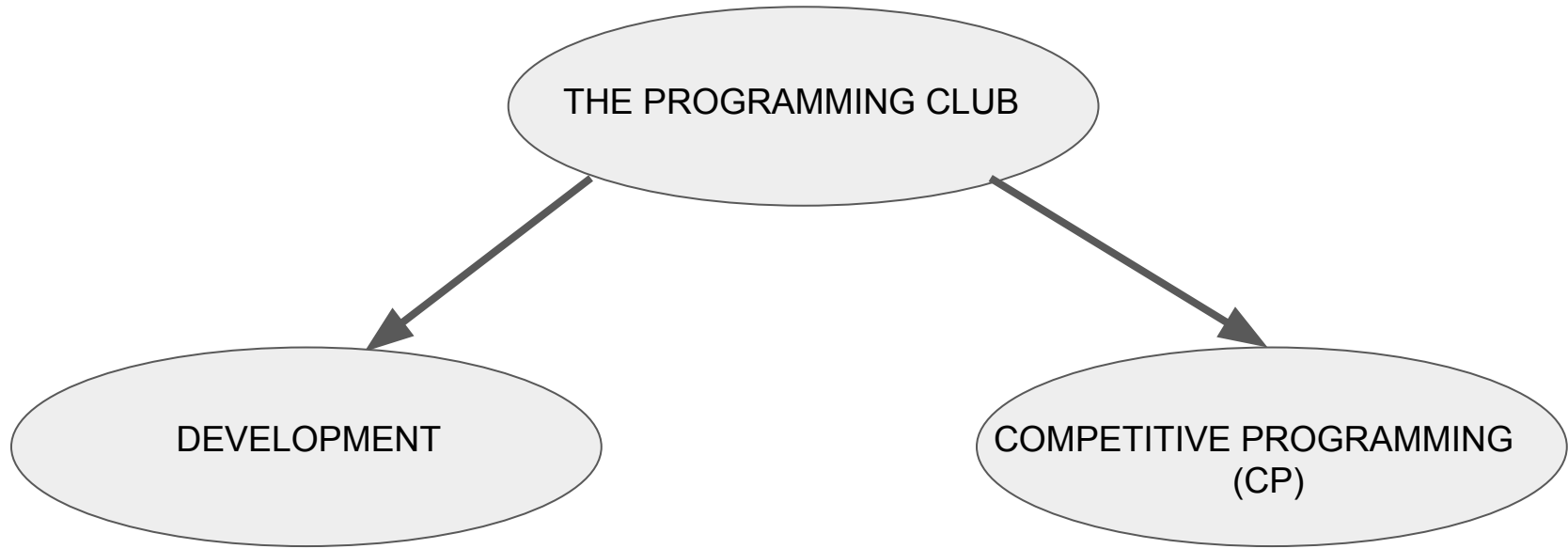


# INTRO TO LANGUAGES

The Programming club, IIT I

# ABOUT RECRUITMENT



# 700 programming languages

What languages are worth learning in 2020?

C++,Python,Java etc..

# 700 programming languages

Can you list 10 programming languages?

Python, Java, C++, C, C#, JavaScript, Kotlin, GO, Ruby, Dart and many more.

# 700 programming languages

Is ::HTML:: a programming language?

**HTML**, as a markup **language** doesn't really “do” anything in the sense that a **programming language** does. **HTML** contains no **programming** logic. It doesn't have common conditional statements such as If/Else. ... This is because **HTML** is not a **programming language**.

# Compiled vs Interpreted

## C++ vs Python

Python is much more beginner-friendly, while C++ is a more complicated, low-level language. C++ has more syntax rules and other programming conventions, while Python aims to imitate the regular English language.

When it comes to their use cases, Python is the leading language for machine learning and data analysis, and C++ is the best option for game development and large systems.

# Compiled vs Interpreted

Compiler: Parses whole code in one go. And shouts out errors at the end :/

In a compiled language, the target machine directly translates the program.

# Compiled vs Interpreted

interpreter: Parses line by line. And shouts out errors then and there :0

In an interpreted language, the source code is not directly translated by the target machine. Instead, a *different* program, aka the interpreter, reads and executes the code.



# Structured programming vs OOPS

NOTE: this is important topic for interview purpose !

First the perfect examples:

C

Php (< 5)

FORTRAN

=====

STRUCTURED LANGUAGES

# Structured programming vs OOPS

First the perfect examples:

C++

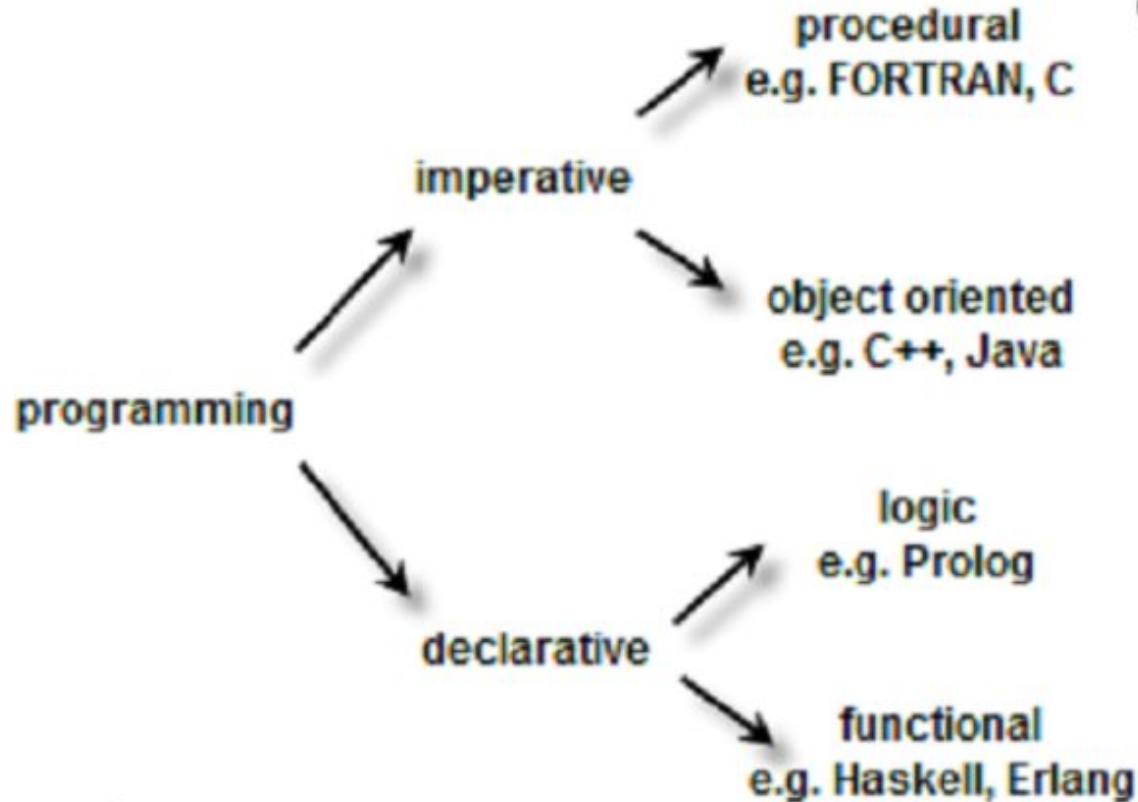
JAVA

PYTHON

=====

OBJECT ORIENTED LANGUAGES

# Structured programming vs OOPS



# Structured programming vs OOPS

OOPS

Classes

// add your explanation

A class in C++ is the building block, that leads to Object-Oriented programming. It is a user-defined data type, which holds its own data members and member functions, which can be accessed and used by creating an instance of that class. A C++ class is like a blueprint for an object.

Q) describe Cars as classes?

Consider the Class of **Cars**. There may be many cars with different names and brand but all of them will share some common properties like all of them will have *4 wheels*, *Speed Limit*, *Mileage range* etc. So here, Car is the class and wheels, speed limits, mileage are their properties.

# Structured programming vs OOPS

// add your explanation

The **main difference** between structured and object oriented programming is that **structured programming allows developing a program using a set of modules or functions, while object oriented programming allows constructing a program using a set of objects and their interactions.**

# C++

// info about c++ etc

## About C++ Programming

- General Purpose Language - You can use C++ to develop games, desktop apps, operating systems, and so on.
- Speed - Like C programming, the performance of optimized C++ code is exceptional.
- Object-oriented - C++ allows you to divide complex problems into smaller sets by using objects.
- Competitive Programming-C++ is the most popular language in competitive programming.

# C++

/\*

Points to explain

1. What are datatypes
2. Functions
3. Algorithms

\*/

# C++

Data types:-

int,double ,float,bool,char,string,arrays,structs

Some basic functionalities:-

```
cout<<"Hello World!"; // is used to end the line
```

```
int x;//here we have declared a variable
```

```
cin>>x;//for taking user inputs we write like this
```

```
// is used for comments :)
```



# C++

## Conditional Statements:-

if ( 1<0 )//here we write the conditions in the form of statements which can be T/F.

```
{  
    cout<<"Hello World!";
```

```
}
```

else

```
{
```

```
    cout<<"BYE";
```

```
}
```

# C++

## For Loops:-

Print nos. till 10

```
for(int i=1 //initialization ; i<=10//Here the condition comes ; i++//iteration_expression)
```

```
{
```

```
    cout<<i<<endl; //code goes here
```

```
//At the end the iteration expression runs i.e i++ in this case
```

```
}
```

# C++

## While Loops:-

Print nos till 10;

```
int i=10;//Here the initialization comes before the while loop
```

```
while(i>0)//Here the condition comes
```

```
{
```

```
    cout<<i<<endl;
```

```
    i--;//or we can also write i=i-1;
```

```
}
```

Now You are Ready to dive in :)

# PYTHON

## The FAB of 21st century

Created in 1980s in Netherlands

*# Super Language*

Fun thing to note is python multithreading is fake. Absolute fake!

Read more here -

<https://realpython.com/python-gil/>

# PYTHON

SYNTAX:

You don't have to think much in python

Open IDLE to get Started! :)

# PYTHON

```
>>> print ("open your %s please"%("idle"))
```

# PYTHON

## PRINT FORMATTING

```
>>> print ("open your %d please"%(1))
```

```
>>> print ("open your %0.3lf please"%(3.14156877))
```

```
>>> print ("open your %10.3lf please"%(3.14156877))
```

# PYTHON

Common functions are:

`print()`

`input()`

`help()`



# PYTHON

Define your own functions

```
def add(i,j):
```

```
    ans = i+j
```

```
    return (ans)
```

```
print(add(1,2), end = "\n")
```

# PYTHON

## Datatypes

String

Int

Float

Char

=====

# PYTHON

Other Data types

List

Tuples

Dictionary

# PYTHON

String methods

Split

Strip

Join

```
>>>str[:-1]
```

```
>>>str[::-2]
```

# Final - Solving a problem

Solve this <https://codeforces.com/contest/1415/problem/A>

# JAVA

100% Object Oriented

## DATATYPES

Int, char, float, boolean

String

# JAVA

```
import java.util.*;

public class Main{

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);        // Use the Scanner class

        /*

        int n      = sc.nextInt();        // read input as integer

        long k      = sc.nextLong();        // read input as long

        double d    = sc.nextDouble();        // read input as double

        String str = sc.next();        // read input as String

        String s    = sc.nextLine();        // read whole line as String */

    }

}
```

# JAVA

Refer to this blog for CP in java:

<https://codeforces.com/blog/entry/7018>



# JAVA

Tutorial for java :

<https://www.javatpoint.com/java-tutorial>

/\*

We are going to discuss data structures in java.

\*/

# JAVA

## Methods

```
public int add(int i, int j){
    return i+j;
}

public static void main (String[] args) throws java.lang.Exception
{
    // your code goes here
    Codechef obj = new Codechef();
    Scanner sc = new Scanner(System.in);           // Use the Scanner class
    int n      = sc.nextInt();
    int m      = Integer.parseInt(sc.next());
    System.out.println(obj.add(n,m));
}
```

# JAVA

## METHODS (static)

```
public static int add(int i, int j){  
    return i+j;  
}  
  
public static void main (String[] args) throws java.lang.Exception  
{  
    // your code goes here  
    Scanner sc = new Scanner(System.in);           // Use the Scanner class  
    int n      = sc.nextInt();  
    int m      = Integer.parseInt(sc.next());  
    System.out.println(add(n,m));  
}
```

# JAVA

## DATA-STRUCTURES

### ARRAY

```
int []A=new int[5];//declaration and instantiation
```

# JAVA

## DATA-STRUCTURES

BEHOLD, Collections in Java 🔥 🔥 🔥

“With great power comes great responsibility”

**Read it here**

<https://www.javatpoint.com/collections-in-java>

# JAVA

## DATA-STRUCTURE

interfaces (Set, List, Queue, Deque)

classes (ArrayList, Vector, LinkedList, PriorityQueue, HashSet, LinkedHashSet, TreeSet).

“Don’t Break a sweat, You only need 3 things Arraylist, Hashset, set”

# JAVA

## DATA-STRUCTURES

### Array-list

```
ArrayList<String> list=new ArrayList<String>();//Creating arraylist
```

Methods :

Add(), size() etc

# JAVA

## DATA-STRUCTURES

### Hashmaps: key-value dictionary

```
HashMap<Integer,String> map=new HashMap<Integer,String>();//Creating HashMap
```

```
map.put(1,"Mango"); //Put elements in Map
```

```
map.put(2,"Apple");
```

```
map.put(3,"Banana");
```

```
map.put(4,"Grapes");
```



# JAVA

Java is Hard to master!

One good use is for native android development!

# GITHUB

Make an account on github please. To be explained in other workshops

What is GITHUB?

Free Storage UNLIMITED!!! Or is it?

# FUN THINGS TO EXPLORE

“Coders, Your Sword is your terminal”

*Open CMD in Windows*

*Open TERMINAL in LINUX*

*MAC-OS (Not a fan!. Maybe terminal?)*

# FUN THINGS TO EXPLORE

// open cmd in a folder or cd to it

***Caution irreversible things handle with care!!***

mkdir temp

cd temp

echo hello world

# FUN THINGS TO EXPLORE

`curl parrot.live`

# FUN THINGS TO EXPLORE

for linux users!

fortune | cowsay

This is why linux is so hyped!

# FUN THINGS TO EXPLORE

Customize your CMD

Command Prompt

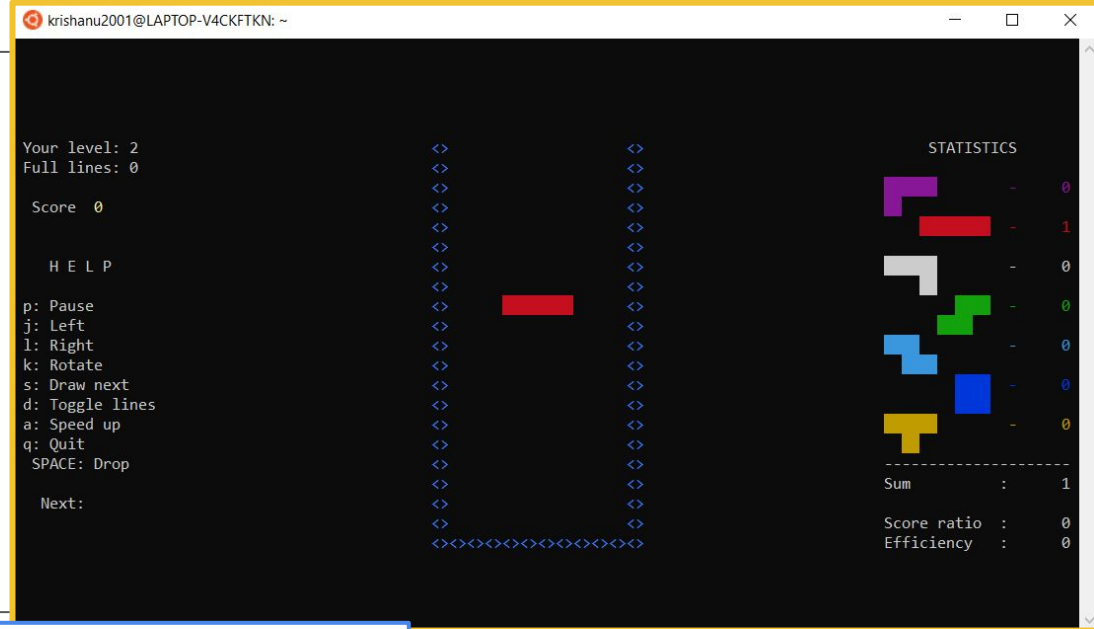
- Restore
- Move
- Size
- Minimize
- Maximize
- Close**
- Edit >
- Defaults
- Properties

```
[Version 10.0.19041.630]  
Corporation. All rights reserved.
```

# FUN THINGS TO EXPLORE

Using WSL for other purposes!

Let's play TETRIS



Step 1

```
sudo apt-get update -y
```

Step 2

```
sudo apt-get install -y tint
```



# THANK YOU

Somya & Krishanu - The Programming Club

*For educational use only*