# Python Introduction

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# Today's Agenda

An Introduction to Python

- What Python Can Do ?
- Why Should I Learn Python In 2018 ?
- Important Features

# Features Of Python

- Simple
- Dynamically Typed
- Robust
- Supports multiple programming paradigms
- Compiled as well as Interpreted
- Cross Platform
- Extensible
- Embedded
- Extensive Library

# Simple

- **Python** is very simple
- As compared to other popular languages like **Java** and **C++**, it is easier to code in **Python**.
- **Python** code is comparitively 3 to 5 times smaller than **C/C++/Java** code

# Print Hello World!

**IN C**

```
#include <stdio.h>
int main(){
    printf("Hello World!");
    return 0;
}
```


**IN JAVA**

```
public class HelloWorld{
        public static void main( String[] args) {
        System.out.println( "Hello World!" );
    }
}
```


**IN PYTHON**

```
print('Hello World!')
```

# Swap 2 Nos

**IN C**

```
int a=10,b=20,temp;
temp=a;
a=b;
b=temp;
```


**IN JAVA**

```
int a=10,b=20,temp;
temp=a;
a=b;
b=temp;
```


**IN PYTHON**

```
a,b=10,20
a,b=b,a
```

# Dynamically Typed

## Dynamically typed vs Statically typed

| Statically Typed (C/C++/Java) | Dynamically Typed – Python |
| --- | --- |
| ▪ Need to declare variable type before using it | ▪ Do not need to declare variable type |
| ▪ Cannot change variable type at runtime | ▪ Can change variable type at runtime |
| ▪ Variable can hold only one type of value throughout its lifetime | ▪ Variable can hold different types of value through its lifetime |

# Dynamically Typed

**IN C**

```
int a;
a=10;
a="World";
```

**IN Python**

```
a=10
a="World"
```

# Robust

Python has very strict rules which every program must

compulsorily follow and if these rules are violated then Python terminates the code by generating "**Exception**"

To understand python's robustness , guess the output of the

following /C++ code:

```
int arr[5];
int i;
for(i=0;i<=9;i++)
{
arr[i]=i+1;
}
```

# Python exceptions

In Python if we write the same code then it will generate **Exception** terminating the code

Due to this other running programs on the computer do not get affected and the system remains safe and secure

# Supports Multiple Programming Paradigms

Python supports both **procedure-oriented** and **object-oriented** programming which is one of the key python features.

In ***procedure-oriented*** languages, the program is built around **procedures** or **functions** which are nothing but reusable pieces of programs.

In ***object-oriented*** languages, the program is built around **objects** which combine **data** and **functionality**

# Compiled
# As Well As Interpreted

Python uses both a compiler as well as interpreter for converting our source and running it

**However , the compilation part is hidden from the programmer** ,so mostly people say it is an interpreted language

# Cross Platform

- Let’s assume we’ve written a Python code for our **Windows machine.**
- Now, if we  want to run it on a **Mac**, we don’t need to make changes to it for the same.
- In other words, we can take one code and run it on any machine, **there is no need to write different code for different machines.**
- This makes Python a **cross platform language**

# Extensible

- Python allows us to call C/C++/Java code from a Python code and thus we say it is an extensible language

- We generally use this feature when we need a critical piece of code to run very fast .

- So we can code that part of our program in C or C++ and then use it from our Python program.

# Embedded

- We just saw that we can put code in other languages in our Python source code.
- However, it is also possible to put our Python code in a source code in a different language like C++.
- This allows us to integrate Python feature into our program of the other language.

# Extensive Library

- The Python Standard Library is huge indeed.
- It can help you do various things like Database Programming , E-mailing ,GUI Programming etc

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# Thank you