

3RD SEPTEMBER NOTES

Introduction to Python

- Python is a high-level, interpreted programming language.
- It is known for simplicity, readability, and flexibility.
- It supports multiple programming paradigms: procedural, object-oriented, functional.
- Python uses indentation instead of braces {} → makes code clean but strict about spacing.

Tip: Consistent indentation is very important. Even a single space mismatch will throw an error.

Basic Input and Output

- **input()** → accepts user input (always as a string).
- **print()** → displays output.
- Must convert input to numbers using **int()** or **float()**.
- **f-strings** are the most modern way for formatted output.

Example: Simple I/O

```
name = input("Enter your name: ")
age = int(input("Enter your age: "))
print(f"Hello {name}, you are {age} years old.")
```

Arithmetic with formatted output

```
x, y = 5, 7
print(f"The sum of {x} and {y} is {x+y}")
```



Variables and Data Types

- A **variable** is just a name pointing to a value in memory.

- No need to declare type explicitly → decided at runtime.
- **Common types:**
 - int, float, str, bool, complex
 - list, tuple, set, dict for collections.
- Use type(variable) to check type.

Operators in Python

- **Arithmetic:** + - * / % // **
- **Relational:** > < >= <= == != → return True or False.
- **Logical:** and, or, not.

💡 **Tip:** Combine relational + logical operators in conditions.

```
n = 12
```

```
if n % 2 == 0 and n % 3 == 0:
```

```
    print("Divisible by both 2 and 3")
```

Control Flow (if / elif / else)

- Used for decision-making.
- Indentation is critical.

```
age = int(input("Enter age: "))
```

```
nat = input("Enter nationality: ")
```

```
if age >= 18 and nat.lower() == "india":
```

```
    print("Eligible to vote in India")
```

```
else:
```

```
    print("Not Eligible")
```

Loops in Python

◆ For Loop

Used for iterating through sequences or ranges.

```
# Factorial
```

```
n = int(input("Enter n: "))
```

```
fact = 1

for i in range(1, n+1):

    fact *= i

print(f"Factorial of {n} = {fact}")
```

◆ **While Loop**

Runs until a condition becomes False.

```
# Fibonacci

terms = int(input("Enter number of terms: "))

a, b = 0, 1

for _ in range(terms):

    print(a, end=" ")

    a, b = b, a+b
```