

# Unit 1 : Introduction to Python

## 1. What is Python?

👉 Python is a high-level, interpreted, object-oriented programming language with simple syntax.

## 2. What are variables in Python?

👉 Variables are used to store data values, and their type is decided automatically.

## 3. What is dynamic typing?

👉 Python decides the data type at runtime.

Example:

```
x = 10
x = "Hello"
```

## 4. What are basic data types in Python?

👉 int, float, str, bool, list, tuple, set, dictionary

## 5. Difference between int, float, str, bool?

👉 int: whole numbers

👉 float: decimal numbers

👉 str: text

👉 bool: True/False

## 6. How do you take input from user?

👉 Using input() function

## 7. Difference between input() and print()?

👉 input() takes input, print() displays output

## 8. What is type casting?

👉 Converting one data type into another

**Example:** int("10")

**Explanation :** int() function converts String into integer.

## 9. What are operators?

👉 Symbols used to perform operations like +, -, \*, /

## 10. Difference between = and ==

👉 = assigns value

👉 == compares values

### 11. What is // operator?

👉 It performs floor division

### 12. What are logical operators?

👉 and, or, not

### 13. What is indentation?

👉 Space used to define code blocks in Python

### 14. What are comments?

👉 Lines ignored by interpreter

👉 # for single-line

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### 15. What is a list?

👉 Ordered, mutable collection , can store different types of elements

Example: [1, 2, 3]

### 16. Difference between list and array?

👉 List can store different data types, array stores same type

### 17. What is mutable and immutable?

👉 Mutable can change (list), immutable cannot (tuple)

### 18. Explain list indexing and slicing

👉 Indexing: a[0]

👉 Slicing: a[1:3]

### 19. Common List Methods (Syntax Only)

#### 👉 append()

- Adds element at end
- Syntax: list.append(element)

#### 👉 remove()

- Removes specific element
- Syntax: list.remove(element)

#### 👉 pop()

- Removes element by index
- Syntax: list.pop(index)

## 👉 `sort()`

- Sorts the list
  - Syntax: `list.sort()`
- 

## 20. What is a tuple?

👉 Ordered, immutable collection

Example: (1, 2, 3)

## 21. Difference between list and tuple?

👉 List is mutable, tuple is immutable

## 22. Why tuples are faster?

👉 Because they are immutable

## 23. Can tuple be modified?

👉 No

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## 24. What is a set?

👉 Unordered collection with unique elements

## 25. Why duplicates not allowed in sets?

👉 Sets store only unique values

## 26. Set operations?

👉 Union (`()`), Intersection (`&`) Difference (`-`)

## 27. Difference between set and list?

👉 Set unordered, list ordered

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## 28. What is a dictionary?

👉 Collection of key-value pairs

Example: `{"name": "Bhaskar"}`

## 29. What are keys and values?

👉 Key identifies value

## 30. Can keys be duplicated?

👉 No

**31. How to access dictionary values?**

👉 `dict["key"]`

**32. Difference between dictionary and list?**

👉 Dictionary uses key-value, list uses index

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**33. Difference between C and Python syntax?**

👉 C is complex, Python is simple

**34. Why Python does not use semicolon?**

👉 Uses newline instead

**35. How blocks are defined in Python?**

👉 Using indentation

**36. Difference between printf and print?**

👉 `printf` in C, `print` in Python

**37. How memory is managed in Python?**

👉 Automatically using garbage collection

**38. What is interpreted language?**

👉 Code executed line by line

**39. Why Python is beginner-friendly?**

👉 Simple syntax and less code

**40. Give example of same logic in C and Python**

👉 Python:

```
print("Hello")
```

👉 C:

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

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**41. Output of:**

```
a = 10
```

```
b = 3
```

```
print(a // b)
```

👉 Output: 3

**42. Output of:**

```
x = "5"  
y = 2  
print(x * y)
```

👉 Output: 55

**43. Identify data type:**

```
a = (1, 2, 3)
```

👉 Tuple

**44. Output of:**

```
set1 = {1, 2, 2, 3}  
print(set1)
```

👉 Output: {1, 2, 3}

**45. Write statement to take integer input**

👉 num = int(input("Enter number: "))

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**46. Is Python case-sensitive?**

👉 Yes

**47. Can variable start with number?**

👉 No

**48. What happens if indentation is wrong?**

👉 Error occurs

**49. Difference between is and ==**

👉 is checks memory location

👉 == checks value

**50. Why dictionary is faster than list?**

👉 Because it uses key-based lookup (hashing)