# Module Python -Fundamentals of Python Language

Vrinda Mavadhiya 10th June Python

**Introduction to for and while loops.**

** How loops work in Python.**

** Using loops with collections (lists, tuples, etc.)**

**for Loop in Python**

**🔸 Syntax:**

**for variable in iterable:**

**# code block**

**Using List with a for Loop**

**A list of student names:**

**students = ["Alice", "Bob", "Charlie"]**

**for student in students:**

**print("Hello", student)**

**✅ Explanation:**

* **A list is an ordered, mutable collection.**
* **for loop visits each element one by one.**

**Output:**

**Hello Alice**

**Hello Bob**

**Hello Charlie**

**Using Tuple with a for Loop**

**A list of tuples with student names and marks:**

**student\_data = [("Alice", 85), ("Bob", 72), ("Charlie", 90)]**

**for name, marks in student\_data:**

**print(f"{name} scored {marks}")**

**✅ Explanation:**

* **Each element is a tuple: an immutable pair.**
* **We use tuple unpacking inside the for loop.**

**Output:**

**Alice scored 85**

**Bob scored 72**

**Charlie scored 90**

**Using Dictionary with a for Loop**

**A dictionary of students and their marks:**

**student\_dict = {"Alice": 85, "Bob": 72, "Charlie": 90}**

**for name in student\_dict:**

**print(f"{name}'s marks are {student\_dict[name]}")**

**✅ Explanation:**

* **dict stores key-value pairs.**
* **Loop iterates through keys by default.**

**Output:**

**Alice's marks are 85**

**Bob's marks are 72**

**Charlie's marks are 90**

**You can also loop through keys & values:**

**for name, marks in student\_dict.items():**

**print(f"{name}: {marks}")**

**Using Set with a for Loop**

**A set of student names (unordered, unique):**

**student\_set = {"Alice", "Bob", "Charlie", "Alice"} # "Alice" appears only once**

**for student in student\_set:**

**print("Student:", student)**

**✅ Explanation:**

* **set is unordered and holds unique elements.**
* **Output order may vary each time.**

**Output:**

**Student: Alice**

**Student: Charlie**

**Student: Bob**

**Using a while Loop (Simulating a Repetitive Check)**

**marks = 85**

**grade\_given = False**

**while not grade\_given:**

**if marks >= 90:**

**print("Grade: A")**

**elif marks >= 75:**

**print("Grade: B")**

**elif marks >= 60:**

**print("Grade: C")**

**else:**

**print("Grade: F")**

**grade\_given = True # Exit after one check**

**✅ Explanation:**

* **The while loop runs until grade\_given becomes True.**
* **This is used when you don't know in advance how many times you’ll loop.**