ARTIFICIAL INTELLIGENCE

Subject Code: 417 | Class IX

CBSE Curriculum 2026-27

PYTHON PRACTICAL FILE

Unit 5: Introduction to Python — All Programs with Code & Expected Output

Student Name	_____
Class & Section	IX ___
Roll Number	_____
School Name	_____
Session	2025 - 2026
Subject Code	417 — Artificial Intelligence

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SECTION A — PRINT Programs

Prog. 01 — Print personal information

Topic: PRINT

► Python Code:

```
# Program 1: Print personal information
print("Name        : Arjun Sharma")
print("Father Name: Mr. Rajesh Sharma")
print("Class       : IX - A")
print("School      : Kendriya Vidyalaya, Jabalpur")
```

► Expected Output:

```
Name        : Arjun Sharma
Father Name: Mr. Rajesh Sharma
Class       : IX - A
School      : Kendriya Vidyalaya, Jabalpur
```

Prog. 02 — Print star patterns using multiple print commands

Topic: PRINT

► Python Code:

```
# Program 2: Print star patterns
print("*")
print("* *")
print("* * *")
print("* * * *")
print("* * * * *")
```

► Expected Output:

```
*
* *
* * *
* * * *
* * * * *
```

Prog. 03 — Find square of number 7

Topic: PRINT

► Python Code:

```
# Program 3: Find square of number 7
num = 7
square = num * num
print("Square of", num, "is", square)
```

► Expected Output:

```
Square of 7 is 49
```

Prog. 04 — Find the sum of two numbers 15 and 20

Topic: PRINT

► **Python Code:**

```
# Program 4: Sum of two numbers
a = 15
b = 20
total = a + b
print("Sum of", a, "and", b, "=", total)
```

► **Expected Output:**

```
Sum of 15 and 20 = 35
```

Prog. 05 — Convert length given in kilometres to metres

Topic: PRINT

► **Python Code:**

```
# Program 5: Convert kilometres to metres
km = 5
metres = km * 1000
print(km, "kilometre(s) =", metres, "metres")
```

► **Expected Output:**

```
5 kilometre(s) = 5000 metres
```

Prog. 06 — Print the table of 5 up to five terms

Topic: PRINT

► **Python Code:**

```
# Program 6: Table of 5
print("5 x 1 =", 5*1)
print("5 x 2 =", 5*2)
print("5 x 3 =", 5*3)
print("5 x 4 =", 5*4)
print("5 x 5 =", 5*5)
```

► **Expected Output:**

```
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
```

Prog. 07 — Calculate Simple Interest

Topic: PRINT

► **Python Code:**

```
# Program 7: Simple Interest
# Formula: SI = (P * R * T) / 100
principle_amount = 2000
rate_of_interest = 4.5
time = 10
SI = (principle_amount * rate_of_interest * time) / 100
print("Principal  :", principle_amount)
print("Rate       :", rate_of_interest, "%")
print("Time       :", time, "years")
```

```
print("Simple Interest :", SI)
```

► **Expected Output:**

```
Principal  : 2000
Rate       : 4.5 %
Time       : 10 years
Simple Interest : 900.0
```

SECTION B — INPUT Programs

Prog. 08 — Calculate Area and Perimeter of a rectangle

Topic: INPUT

► Python Code:

```
# Program 8: Area and Perimeter of Rectangle
length = float(input("Enter length of rectangle: "))
breadth = float(input("Enter breadth of rectangle: "))
area = length * breadth
perimeter = 2 * (length + breadth)
print("Area of Rectangle      :", area)
print("Perimeter of Rectangle :", perimeter)
```

► Expected Output:

```
Enter length of rectangle: 8
Enter breadth of rectangle: 5
Area of Rectangle      : 40.0
Perimeter of Rectangle : 26.0
```

Prog. 09 — Calculate Area of a triangle with Base and Height

Topic: INPUT

► Python Code:

```
# Program 9: Area of Triangle
# Formula: Area = (1/2) * base * height
base = float(input("Enter base of triangle: "))
height = float(input("Enter height of triangle: "))
area = 0.5 * base * height
print("Area of Triangle :", area)
```

► Expected Output:

```
Enter base of triangle: 10
Enter height of triangle: 6
Area of Triangle : 30.0
```

Prog. 10 — Calculate average marks of 3 subjects

Topic: INPUT

► Python Code:

```
# Program 10: Average marks of 3 subjects
marks1 = float(input("Enter marks of Subject 1: "))
marks2 = float(input("Enter marks of Subject 2: "))
marks3 = float(input("Enter marks of Subject 3: "))
average = (marks1 + marks2 + marks3) / 3
print("Average Marks :", average)
```

► Expected Output:

```
Enter marks of Subject 1: 85
Enter marks of Subject 2: 90
Enter marks of Subject 3: 78
Average Marks : 84.33333333333333
```

Prog. 11 — Calculate discounted amount with discount %

Topic: INPUT

► **Python Code:**

```
# Program 11: Discounted Amount
original_price = float(input("Enter original price: "))
discount_percent = float(input("Enter discount percentage: "))
discount_amount = (original_price * discount_percent) / 100
final_price = original_price - discount_amount
print("Original Price  : Rs.", original_price)
print("Discount Amount : Rs.", discount_amount)
print("Final Price     : Rs.", final_price)
```

► **Expected Output:**

```
Enter original price: 500
Enter discount percentage: 20
Original Price  : Rs. 500.0
Discount Amount : Rs. 100.0
Final Price     : Rs. 400.0
```

Prog. 12 — Calculate Surface Area and Volume of a Cuboid

Topic: INPUT

► **Python Code:**

```
# Program 12: Surface Area and Volume of Cuboid
# Formula: SA = 2(lb + bh + hl), Volume = l*b*h
l = float(input("Enter length of cuboid: "))
b = float(input("Enter breadth of cuboid: "))
h = float(input("Enter height of cuboid: "))
surface_area = 2 * (l*b + b*h + h*l)
volume = l * b * h
print("Surface Area of Cuboid :", surface_area)
print("Volume of Cuboid       :", volume)
```

► **Expected Output:**

```
Enter length of cuboid: 5
Enter breadth of cuboid: 4
Enter height of cuboid: 3
Surface Area of Cuboid : 94.0
Volume of Cuboid       : 60.0
```

SECTION C — LIST Programs

Prog. 13 — List operations on children selected for science quiz

Topic: LIST

► Python Code:

```
# Program 13: List operations - Science quiz children
children = ['Arjun','Sonakshi','Vikram','Sandhya','Sonal','Isha','Kartik']

# Print the whole list
print("Original List:", children)

# Delete 'Vikram' from the list
children.remove('Vikram')
print("After removing Vikram:", children)

# Add 'Jay' at the end
children.append('Jay')
print("After adding Jay:", children)

# Remove item at second position (index 1)
children.pop(1)
print("After removing 2nd position item:", children)
```

► Expected Output:

```
Original List: ['Arjun', 'Sonakshi', 'Vikram', 'Sandhya', 'Sonal', 'Isha',
'Kartik']
After removing Vikram: ['Arjun', 'Sonakshi', 'Sandhya', 'Sonal', 'Isha', 'Kartik']
After adding Jay: ['Arjun', 'Sonakshi', 'Sandhya', 'Sonal', 'Isha', 'Kartik',
'Jay']
After removing 2nd position item: ['Arjun', 'Sandhya', 'Sonal', 'Isha', 'Kartik',
'Jay']
```

Prog. 14 — List operations with num=[23,12,5,9,65,44]

Topic: LIST

► Python Code:

```
# Program 14: List num operations with indexing
num = [23, 12, 5, 9, 65, 44]

# Print length of list
print("Length of list:", len(num))

# Print elements from 2nd to 4th using positive indexing
print("Elements from index 1 to 3 (positive):", num[1:4])

# Print elements from 3rd to 5th using negative indexing
print("Elements from index -4 to -1 (negative):", num[-4:-1])
```

► Expected Output:

```
Length of list: 6
Elements from index 1 to 3 (positive): [12, 5, 9]
Elements from index -4 to -1 (negative): [5, 9, 65]
```

Prog. 15 — Create list of first 10 even numbers, add 1 to each and print

Topic: LIST

► Python Code:

```
# Program 15: First 10 even numbers, add 1 to each
even_numbers = [2, 4, 6, 8, 10, 12, 14, 16, 18, 20]
print("Original even numbers list:", even_numbers)

# Add 1 to each element
new_list = []
for num in even_numbers:
    new_list.append(num + 1)

print("After adding 1 to each element:", new_list)
```

► Expected Output:

```
Original even numbers list: [2, 4, 6, 8, 10, 12, 14, 16, 18, 20]
After adding 1 to each element: [3, 5, 7, 9, 11, 13, 15, 17, 19, 21]
```

Prog. 16 — List_1 — extend and sort operations

Topic: LIST

► Python Code:

```
# Program 16: Extend and Sort list
List_1 = [10, 20, 30, 40]
print("Original List_1:", List_1)

# Add elements using extend
List_1.extend([14, 15, 12])
print("After extend:", List_1)

# Sort in ascending order
List_1.sort()
print("After sorting ascending:", List_1)
```

► Expected Output:

```
Original List_1: [10, 20, 30, 40]
After extend: [10, 20, 30, 40, 14, 15, 12]
After sorting ascending: [10, 12, 14, 15, 20, 30, 40]
```

SECTION D — IF, FOR, WHILE Programs

Prog. 17 — Check if a person can vote (if-else)

Topic: IF/ELSE

► Python Code:

```
# Program 17: Check voting eligibility
age = int(input("Enter your age: "))
if age >= 18:
    print("You are eligible to vote.")
else:
    print("You are NOT eligible to vote.")
    print("You need", 18 - age, "more year(s) to vote.")
```

► Expected Output (when age = 20):

```
Enter your age: 20
You are eligible to vote.
```

► Expected Output (when age = 15):

```
Enter your age: 15
You are NOT eligible to vote.
You need 3 more year(s) to vote.
```

Prog. 18 — Check the grade of a student

Topic: IF/ELIF/ELSE

► Python Code:

```
# Program 18: Student grade checker
marks = int(input("Enter marks (out of 100): "))
if marks >= 90:
    print("Grade: A+ (Outstanding)")
elif marks >= 75:
    print("Grade: A  (Excellent)")
elif marks >= 60:
    print("Grade: B  (Good)")
elif marks >= 45:
    print("Grade: C  (Average)")
elif marks >= 33:
    print("Grade: D  (Pass)")
else:
    print("Grade: F  (Fail)")
```

► Expected Output (when marks = 82):

```
Enter marks (out of 100): 82
Grade: A  (Excellent)
```

Prog. 19 — Input a number and check if positive, negative or zero

Topic: IF/ELIF/ELSE

► Python Code:

```
# Program 19: Check positive, negative or zero
num = float(input("Enter a number: "))
if num > 0:
```

```
    print(num, "is a Positive number.")
elif num < 0:
    print(num, "is a Negative number.")
else:
    print("The number is Zero.")
```

► **Expected Output (when num = -7):**

```
Enter a number: -7
-7.0 is a Negative number.
```

Prog. 20 — Print first 10 natural numbers using for loop

Topic: FOR loop

► **Python Code:**

```
# Program 20: First 10 natural numbers
print("First 10 Natural Numbers:")
for i in range(1, 11):
    print(i, end=" ")
print()  # new line
```

► **Expected Output:**

```
First 10 Natural Numbers:
1 2 3 4 5 6 7 8 9 10
```

Prog. 21 — Print first 10 even numbers using for loop

Topic: FOR loop

► **Python Code:**

```
# Program 21: First 10 even numbers
print("First 10 Even Numbers:")
for i in range(2, 21, 2):
    print(i, end=" ")
print()
```

► **Expected Output:**

```
First 10 Even Numbers:
2 4 6 8 10 12 14 16 18 20
```

Prog. 22 — Print odd numbers from 1 to n

Topic: FOR loop

► **Python Code:**

```
# Program 22: Odd numbers from 1 to n
n = int(input("Enter value of n: "))
print("Odd numbers from 1 to", n, ":")
for i in range(1, n+1, 2):
    print(i, end=" ")
print()
```

► **Expected Output (when n = 15):**

```
Enter value of n: 15
Odd numbers from 1 to 15 :
```

```
1 3 5 7 9 11 13 15
```

Prog. 23 — Print sum of first 10 natural numbers

Topic: FOR loop

► **Python Code:**

```
# Program 23: Sum of first 10 natural numbers
total = 0
for i in range(1, 11):
    total = total + i
print("Sum of first 10 natural numbers =", total)
```

► **Expected Output:**

```
Sum of first 10 natural numbers = 55
```

Prog. 24 — Find sum of all numbers stored in a list

Topic: FOR loop

► **Python Code:**

```
# Program 24: Sum of all numbers in a list
numbers = [10, 20, 30, 40, 50]
print("List:", numbers)
total = 0
for num in numbers:
    total = total + num
print("Sum of all numbers in list =", total)
```

► **Expected Output:**

```
List: [10, 20, 30, 40, 50]
Sum of all numbers in list = 150
```

📝 Certificate & Signature

This is to certify that the above practical file has been completed by the student under my supervision as per the CBSE Class IX AI syllabus (Code 417) for the session 2026-27.

Teacher's Signature

_____

Name: _____

Date: _____

Student's Signature

_____

Name: _____

Date: _____