Python Programming Concepts & Exercises

1. Given the total seconds, compute and print equivalent hours, minutes, and seconds using arithmetic operations.

   Ans:-

   ```
   total_seconds = 5000

   hours = total_seconds // 3600

   remaining_seconds = total_seconds % 3600

   minutes = remaining_seconds // 60

   seconds = remaining_seconds % 60

   print("Hours:", hours)

   print("Minutes:", minutes)

   print("Seconds:", seconds)
   ```

   output:-

   hours: 1hour

   min:- 23min

   seconds:- 20sec

2. Assign the price and quantity of two products. Calculate the total cost including 18% tax. Print a detailed bill.

   Ans:-

   Product 1:

   Price: 250

   Quantity: 2

   Subtotal: 500

Product 2:

Price: 150

Quantity: 3

Subtotal: 450

Subtotal: 950

Tax (18%): 171.00

Total Cost: 1121.00

3. Compute the perimeter and area of a circle given a radius. Use the value of π from the math module.

Ans:-

```
import math


radius = 7  # you can change this value as needed

perimeter = 2 * math.pi * radius

area = math.pi * radius ** 2

perimeter, area
```

result:- 43.982297150257104

4. Given a temperature in Celsius, convert it to Fahrenheit using the formula and print both values.
   (F = C × 9/5 + 32)

Ans:-

```
celsius = 30

fahrenheit = celsius * 9/5 + 32

celsius, fahrenheit
```

output:- (30, 86.0)

5. What is a compiled language? What is an interpreted language?
Explain pros and cons of each. How hybrid languages bring in advantages of both.

Ans:-

COMPILED LANGUAGE

When you write the code and run the compiler it generates an executable file run that executable directly on your system.

Pros of compiled languages:-

 * Runs very fast because it's already translated to machine code.

 * Compilers can optimize the code for performance.

Cons of compiled languages:-

 You need to compile every time you make changes.

 The compiled binary may only work on specific systems with same windows

INTERPRETED LANGUAGE

 When you write a code the interpreted reads the code it executes instructions immediately.

Pros of compiled languages:-

Same source code can run on any system with the interpreter.

Fast development.

Cons of compiled languages:-

Some errors only show up when the code runs.

Hybrid languages

Hybrid languages combine both pros of interpreted and compiled language.

They compile code to like bytecode then the interpreted runs the bytecode.

Advantages:-

Good balance between performance and ease of development.

6. Draw the diagram of how a Python program is executed.

Ans:-

PYTHON SOURCE CODE

↓

COMPLIER

↓

BYTECODE

↓

PYTHON VIRTUAL MACHINE