

Laboratory Activities: Basic Python (Part I)

CP020001 Computer Programming
Khon Kaen University

(10 Points) Python Basic Exercise for Beginners

Question	Description	# Sample Test Case	# Expected Output
1	Convert length from feet to inches.	feet_length = 5	Length in inches: 60
2	Convert distance from kilometres to miles.	kilometers = 10	Distance in miles: 6.213711922373339
3	Calculate the perimeter of a rectangle given its length and width.	length = 6 width = 3	The perimeter of the rectangle: 18
4	Calculate the circumference of a circle given its radius.	radius = 5	Circumference of the circle: 31.41592653589793
5	Convert weight from pounds to kilograms.	pounds_weight = 150	Weight in kilograms: 68.0388
6	Convert area from acres to square meters.	acres_area = 10	Area in square meters: 40468.6
7	Convert length from inches to centimetres.	inches_length = 20	Length in centimetres: 50.8
8	Convert volume from gallons to litres.	gallons_volume = 8	Volume in liters: 30.28328
9	Convert length from yards to meters.	yards_length = 15	Length in meters: 13.716
10	Convert area from square inches to square centimetres.	square_inches_area = 100	Area in square centimetres: 645.16

Question 11: Arithmetic Progression Sum Calculation

Problem Statement:

You are tasked with writing a Python program to compute the sum of an arithmetic progression without using loops, if-else statements, or defining functions. The goal is to calculate the sum of a given arithmetic sequence using the formula directly within the code.

Problem Description:

An arithmetic progression is a sequence of numbers in which the difference between consecutive terms is constant. The sum of an arithmetic progression up to a certain number of terms can be calculated using the formula:

$$S = \frac{n}{2} \times (2a + (n - 1)d)$$

Where:

S is the sum of the arithmetic progression.

n is the number of terms in the progression.

a is the first term of the progression.

d is the typical difference between consecutive terms.

Your task is to implement a Python program that calculates the sum of an arithmetic progression using the provided constants for the first term, common difference, and the number of terms. The program should output the calculated sum.

Sample Test Case Input:

`first_term = 3` # First term of the arithmetic progression

`common_difference = 5` # Common difference of the arithmetic progression

`num_terms = 10` # Number of terms in the arithmetic progression

Sample Test Case Output:

Expected Output: The sum of the arithmetic progression is 255.0