ST. XAVIER'S COLLEGE (AUTONOMOUS), KOLKATA
Department of Information Technology
B. Com Semester VI
Business Data Analytics Practical under NEP

Unit 1: Introduction to Python for Business Data Analytics

A. Introduction to Python

Assignment 2: Python Control Flow, Functions, Modules for Business Data Analytics

Topics Covered: Control Flow (Conditional Statements, Loops); Function; Module

This assignment aims to reinforce understanding of Python control flow structures – conditional statements, loops, functions, and working with modules for handling business-related data.

Control Flow

Explain Control Flow: Describe the concept of control flow in Python with examples.
Conditional Statements: Provide business-related scenarios where conditional statements can be applied for data analysis.

Loop

Loop Types: Explain the usage of for loops and while loops with examples in business data analysis contexts. Iterating through Data: Apply loops to iterate through business-related datasets for analysis or transformation.

Function

Function Creation: Demonstrate the creation of functions to perform specific tasks related to business data manipulation or analysis.
Function Application: Apply functions to perform operations on business data, such as calculations or data transformations.

Module Creation and Usage

Module Creation: Create a Python module containing reusable functions or data structures applicable to business data analytics.
Module Usage: Import and use functions or data structures from the created module in a business data analysis scenario.

Students are required to create a folder as FourDigitRollno_Roomno_DeptCode_BDA (For Example, 0012_14_COMA_BDA) on their desktop. All the files related to the assignment should be saved within this folder. Students are required to use either Spyder or Jupyter Notebook to complete the assignment. The final working code should be saved as AssignmentNo_Rollno.py

Control Flow

Conditional Statements

1. **Customer Discount Eligibility and Billing:** Input the total purchase amount made by a customer during his/her shopping at the departmental store. Using an if statement, calculate the discount amount a customer is eligible for based on the following conditions.

Total Purchase Amount	Discount (%)
>10000	20
>5000	10
>1000	5
Otherwise	0

Print total payable amount for the customer.

Loops

2. **Annual Sales Performance Analysis:** A list of monthly sales data (in USD) for a year is given as follows: sales = [15000, 18000, 21000, 23000, 22000, 25000, 27000, 26000, 24000, 20000, 19000, 22000]

a. Calculate the total annual sales using for loop.
b. Calculate the average monthly sales and print the result.

3. **Weekly Product Sales Tracking:** The following list represents the number of cakes sold each day in the first week of December: [100, 250, 300, 450, 550, 600, 700].
   Calculate and print the total number of cakes sold during that week using while loop.

Functions

4. **Customer Relationship Management (CRM) – Client Greeting:** Define a function greet_client that accepts a client's name as a parameter and prints a personalized message such as: "Hello [client name], thank you for choosing our service!"
   The function should only display the message and should not return any value.
5. **Employee Payroll and Bonus Computation:** Accept the basic salary and years of service of an employee in your company. Define a function named calculate_bonus that takes basic salary and years of service as parameters and calculates the bonus amount based on the following rule: If the employee's years of service are more than 3 years, the bonus is 5% of the basic salary. Otherwise, the bonus is 0.
   The function should return the bonus amount.
   After calculating the bonus, compute and print the net salary of the employee using the formula:
   Net Salary =(Basic Salary+DA+HRA+Bonus)−TDS
   Where:
   DA (Dearness Allowance) = 10% of Basic Salary
   HRA (House Rent Allowance) = 3% of Basic Salary
   TDS (Tax Deducted at Source) = 5% of Basic Salary

Module Creation and Usage

6. **Retail Sales Analytics and Performance Evaluation:** Create a Python Module sales_analysis.py that contains the following functions:
   - total_sales(data): Returns the total sales from a list of sales data, where each entry in the list contains the sales for a particular store.
   - average_sales(data): Returns the average sales per store.
   - sales_growth(old_sales, new_sales): Calculates and returns the percentage growth in sales between two months (old and new sales data).

   Import the module to analyze the sales data of a retail company. Consider the following sales data for three stores over a period of six months.
   Store A: [1200, 1300, 1400, 1500, 1600, 1700]
   Store B: [1000, 1100, 1200, 1300, 1400, 1500]
   Store C: [800, 850, 900, 950, 1000, 1050]

****