

Week 1 Mini-Project: Python Basics

Objective:

Learners will practice fundamental Python concepts like variables, dictionaries, functions, conditionals, loops, and input handling through six fun exercises.

Project Setup:

1. Create a folder named Week1_MiniProject in the GDGOC_ML/DL GitHub repo.
2. Save all the solutions in a single Python file named week1_project.py
3. Upload your file to GitHub upon completion.

Questions & Code Implementation Guide

Question 1: User Data Collector

Concepts Used: Input handling, dictionaries, validation, formatted strings

Task:

- Prompt the user to enter their name, age, email, and favorite number.
- Store them in a dictionary.
- Validate the email format (must contain @ and .).
- Display a formatted output.

◆ Hint: Use Python's in keyword to check if @ and . exist in the email.

Question 2: Even or Odd?

Concepts Used: Functions, conditionals

Task:

- Create a function is_even(number) that checks if a number is even.
- Print whether the number is even or odd.

◆ Hint: Use the modulo operator % (i.e., number % 2 == 0).

Question 3: Temperature Converter

Concepts Used: Functions, conditionals, arithmetic operations

Task:

- Create a function `convert_temperature(temp, scale)` that takes:
- A temperature value
- A scale ("C" for Celsius, "F" for Fahrenheit)

Convert:

- Celsius \rightarrow Fahrenheit: $(temp * 9/5) + 32$
- Fahrenheit \rightarrow Celsius: $(temp - 32) * 5/9$
- Display the converted temperature.

- ♦ Hint: Use if conditions to check which scale to convert.

Question 4: Finding Min & Max

Concepts Used: Lists, functions, input handling

Task:

Create a function `find_max_min(numbers_list)` that returns the max and min values from a list.

Prompt the user to enter 5 numbers, store them in a list, and find the min/max.

- ♦ Hint: Use Python's built-in `max()` and `min()` functions.

Question 5: Student Data Manager

Concepts Used: Lists, tuples, dictionaries, loops

Task:

- Prompt the user to enter details of 3 students (name, age, grade).
- Store them as tuples in a list.
- Convert this list into a dictionary, where:
- Key \rightarrow Student name
- Value \rightarrow Tuple (age, grade)
- Display the dictionary.

- ♦ Hint: Use a for loop and dict() to create the dictionary.

Question 6: Inventory Management System

Concepts Used: Dictionaries, functions, conditionals

Task:

- Create a function update_inventory(inventory_dict, item, quantity) that:
 - Takes an inventory dictionary {item: quantity}
 - Updates the quantity (+ for adding, - for removing)
 - Ensures quantity doesn't go below zero
 - Returns the updated inventory
 - Initialize an inventory with 5 items.
 - Prompt the user to update the inventory for 3 items.
 - Display the updated inventory.
- ♦ Hint: Use max(0, updated_quantity) to prevent negative values.

Submission Guidelines

1. Create a folder Week1_MiniProject inside your GitHub repo GDGOC_ML/DL.
2. Save your Python file as week1_project.py inside this folder.
3. Push it to GitHub.