

Python Programming (B.Tech CSE - Sem 2)

Experiment 05 – Exercise Sheet

Collections and Mini-Apps

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February 14, 2026

Repository: <https://github.com/tali7c/Python-Programming>

Note: This document contains only problem statements (no solutions).

Instructions

- Write a separate Python program for each exercise.
- Use appropriate data structures (list/tuple/dict) based on the task.
- Validate input and handle edge cases (empty input, duplicates).
- For menu-driven tasks, keep the menu clear and loop until Exit.

Exercises

Exercise 01: Count Occurrences (0 to 3)

Read n integers (each expected in the range 0 to 3). Count occurrences of 0, 1, 2, and 3 and display the counts.

Input: n and n integers

Output: counts for 0, 1, 2, and 3

Exercise 02: Tuple Average

Read n numbers, store them in a tuple, and compute the average.

Input: n and n numbers

Output: the tuple and its average

Exercise 03: Runner-Up Score

Read n scores and print the runner-up score (the second highest distinct score). If there are fewer than two distinct scores, print a suitable message.

Input: n and n integers

Output: runner-up score (or message if not possible)

Exercise 04: Name-City Dictionary and City Counts

Read details of n persons (name and city) and store them in a dictionary. Then:

- print all names,
- print all cities,
- print name and city pairs,
- compute and print how many persons belong to each city.

Input: n pairs of (name, city)

Output: names, cities, pairs, and city-wise counts

Exercise 05: Movie Dictionary Queries

Read details of n movies and store them in a dictionary. For each movie, store: name, year, director, production cost, and collection. Then:

- print all movie details,
- list movies released before 2015,
- list movies that made a profit (collection > cost),
- ask for a director name and list movies by that director (case-insensitive).

Input: movie details and a director name to search

Output: results of the queries

Exercise 06: Contact Book (Menu-Driven)

Build a contact book using a dictionary with the following operations:

- Add a contact (name, phone),
- Search by name,
- Update phone number,
- Delete a contact,

- View all contacts,
- Exit.

Input: menu choices and contact details

Output: results of operations and current contacts

Exercise 07: Todo List Manager (Menu-Driven)

Build a todo list manager using a list with the following operations:

- Add a task,
- View all tasks (with numbering),
- Remove a task by its number,
- Exit.

Input: menu choices and task details

Output: updated task list after each operation