

Assignment 1 – Office Key Tracker

1. Introduction

In many offices, employees experience delays and confusion due to the lack of visibility on who currently holds important office keys. This problem can lead to wasted time, miscommunication, and operational inefficiencies.

The **Office Key Tracker** is a simple command-line based Python application designed to track the usage of office keys. It records who has taken the keys, displays the current key holder, and alerts if the keys are not returned within a predefined time limit.

2. Business Problem

- Employees wait because there is no visibility on who has the office keys.
- Manual tracking is unreliable and error-prone.
- No alert mechanism exists when keys are not returned on time.

3. Objective

The objective of this assignment is to build a small Python program that:

- Records who took the keys
- Shows the current key holder
- Alerts if the keys are not returned within a specified time
- Uses file handling for persistent storage
- Uses datetime for time tracking
- Provides a simple CLI (Command Line Interface) menu

4. Skills Used

- **File Handling** – To store and retrieve key usage records
- **Datetime Module** – To capture and compare timestamps
- **CLI Menu Design** – To interact with the user through the terminal

5. System Design

5.1 File Design

- **File Name:** `key_log.txt`
- **Purpose:** Stores all key usage records

5.2 Record Format

Each entry in the file is stored in the following format:

EmployeeName | TakenTime | ReturnedTime

- `ReturnedTime` is set to `NOT_RETURNED` if the key is still with the employee.

6. Functional Modules

6.1 Record Key Taken

- Accepts employee name as input
- Records the current timestamp
- Stores the data in the file

6.2 Show Current Key Holder

- Reads the file
- Identifies the latest entry with `NOT_RETURNED`
- Displays employee name and taken time

6.3 Return Key

- Updates the latest unreturned key entry
- Stores the return timestamp

6.4 Alert for Delay

- Compares current time with taken time
- Triggers an alert if the key is not returned within allowed hours

7. CLI Menu Flow

1. Record key taken
2. Show current key holder
3. Return key
4. Check delay alert
5. Exit

The program continues running until the user selects the exit option.

8. Advantages

- Simple and easy to use
- Persistent data storage using files
- Prevents key misplacement
- Improves office efficiency

9. Future Enhancements

- Support for multiple keys
- Database integration
- GUI or web-based interface
- Automatic email/SMS alerts

10. Conclusion

The **Office Key Tracker** effectively solves the problem of key visibility in an office environment. By leveraging Python file handling, datetime, and a CLI interface, the system ensures accountability, reduces delays, and improves overall operational efficiency. This assignment demonstrates practical usage of core Python concepts in a real-world scenario.