

Project Objective – Assignment Tracker

The **Assignment Tracker** project is designed to help university students and professors manage academic tasks in a simple, structured, and collaborative way. The system provides a **command-line interface (CLI)** for entering assignments with essential details such as student ID, course, title, deadline, weight, and estimated study hours. Each assignment is stored locally in a CSV file and can be automatically synchronized with a **Google Sheet dashboard**, making it easy to visualize progress and share information across multiple students.

By combining **local tracking** with **cloud synchronization**, the project demonstrates how everyday academic workflows can be streamlined using Python automation and Google APIs.

Core Objectives:

1. Centralized Assignment Management
 - Store all student assignments with unique IDs.
 - Include deadlines, weights, and estimated hours for planning.
2. Multi-Student Support
 - Use **Student ID** as a unique identifier.
 - Allow professors/advisors to filter and view assignments per student.
3. Deadline Tracking
 - List assignments due in the next N days.
 - Highlight urgency to prevent missed submissions.
4. Progress Monitoring
 - Mark assignments as “done.”
 - Keep a history of tasks with timestamps.
5. Google Sheets Synchronization
 - Export and update assignments to a shared Google Sheet.
 - Enable professors and collaborators to view tasks in real time.
6. Scalability & Simplicity
 - Lightweight CSV storage for portability.
 - Easy to set up on any computer with Python 3.

Setup Instructions:

To set up Google integration, first create a new project in **Google Cloud Console** and enable the **Google Sheets API** and **Google Drive API**. Next, create a **Service Account** under *APIs & Services* → *Credentials*, generate a **JSON key**, and download it as `service_account.json` (this file is private and must be kept secure). Then, create a new **Google Sheet** in your Google Drive, copy its **Sheet ID** from the URL, and add two tabs named *Assignments* and *Subtasks*. Finally, share the sheet with your service account's email (found inside the JSON key) and give it **Editor** access so your Python script can write to it.

Watch the PPT to understand it better [link](#)

Features

Initial Pages

```
assignments.csv X
assignments.csv
1 id,student_id,student_name,course,title,deadline,weight,est_hours,status,created_at
2
3
```

A	B	C	D	E	F	G	H	I	J
id	student_id	student_name	course	title	deadline	weight	est_hours	status	created_at

1. Adding an item (assignment)

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
narendramishra@Mac demo % export SHEET_ID=1qj7rrBkFJ97eLnCJp0ob7C-88E7fLrtfbxtWKBtJiCw
narendramishra@Mac demo % export SERVICE_ACCOUNT_JSON=/Users/narendramishra/Desktop/demo/service_account.json
narendramishra@Mac demo % export SHEET_TAB=Assignments
narendramishra@Mac demo % /usr/local/bin/python3 tracker.py add \
--student-id 103 --student-name "Test User" \
--course TEST100 --title "Sync Check" \
--deadline 2025-10-20 --weight 5 --est-hours 1 --sync

Synced 1 rows to Sheet 'Assignments' (1qj7rrBkFJ97eLnCJp0ob7C-88E7fLrtfbxtWKBtJiCw).
Synced to Google Sheet tab 'Assignments'.
Added assignment #1 for Student 103: TEST100 - Sync Check (due 2025-10-20)
narendramishra@Mac demo % /usr/local/bin/python3 tracker.py add \
--student-id 100 --student-name "Narendra Mishra" \
--course TEST100 --title "Java assignment" \
--deadline 2025-10-2 --weight 15 --est-hours 4 --sync

Synced 2 rows to Sheet 'Assignments' (1qj7rrBkFJ97eLnCJp0ob7C-88E7fLrtfbxtWKBtJiCw).
Synced to Google Sheet tab 'Assignments'.
Added assignment #2 for Student 100: TEST100 - Java assignment (due 2025-10-2)
narendramishra@Mac demo % /usr/local/bin/python3 tracker.py add \
--student-id 100 --student-name "King Robert" \
--course TEST100 --title "Maths assignment" \
--deadline 2025-10-12 --weight 25 --est-hours 5 --sync

Synced 3 rows to Sheet 'Assignments' (1qj7rrBkFJ97eLnCJp0ob7C-88E7fLrtfbxtWKBtJiCw).
Synced to Google Sheet tab 'Assignments'.
Added assignment #3 for Student 100: TEST100 - Maths assignment (due 2025-10-12)
narendramishra@Mac demo %
```

```
assignments.csv X
assignments.csv
1 id,student_id,student_name,course,title,deadline,weight,est_hours,status,created_at
2 1,103,Test User,TEST100,Sync Check,2025-10-20,5.0,1.0,todo,2025-08-29T00:41:40
3 2,100,Narendra Mishra,TEST100,Java assignment,2025-10-2,15.0,4.0,todo,2025-08-29T00:42:35
4 3,100,King Robert,TEST100,Maths assignment,2025-10-12,25.0,5.0,todo,2025-08-29T00:43:01
5
```

A	B	C	D	E	F	G	H	I	J	K
id	student_id	student_name	course	title	deadline	weight	est_hours	status	created_at	
1	103	Test User	TEST100	Sync Check	2025-10-20	5	1	todo	2025-08-29 0:41:40	
2	100	Narendra Mishra	TEST100	Java assignment	2025-10-02	15	4	todo	2025-08-29 0:42:35	
3	100	King Robert	TEST100	Maths assignment	2025-10-12	25	5	todo	2025-08-29 0:43:01	

2. List all the tasks

```
● narendramishra@Mac demo % /usr/local/bin/python3 tracker.py list
ID  StuID  Course  Title                Deadline           W%   Hrs  Status
-----
2   100    TEST100  Java assignment      2025-10-2         15.0 4.0  todo
3   100    TEST100  Maths assignment    2025-10-12        25.0 5.0  todo
1   103    TEST100  Sync Check          2025-10-20        5.0  1.0  todo
```

3. "Due In" view (tie awareness)

```
● narendramishra@Mac demo % /usr/local/bin/python3 tracker.py due-in --days 7
No assignments due in next 7 days.
● narendramishra@Mac demo % /usr/local/bin/python3 tracker.py due-in --days 30
No assignments due in next 30 days.
● narendramishra@Mac demo % /usr/local/bin/python3 tracker.py due-in --days 100
Assignments due in next 100 days:
  • #2 [100] TEST100 - Java assignment (due 2025-10-2, in 34 days) [todo]
  • #3 [100] TEST100 - Maths assignment (due 2025-10-12, in 44 days) [todo]
  • #1 [103] TEST100 - Sync Check (due 2025-10-20, in 52 days) [todo]
```

4. Mark Progress (Done)

```
● narendramishra@Mac demo % /usr/local/bin/python3 tracker.py done --id 1
Marked assignment #1 as done.
● narendramishra@Mac demo % /usr/local/bin/python3 tracker.py list
ID  StuID  Course  Title                Deadline           W%   Hrs  Status
-----
2   100    TEST100  Java assignment      2025-10-2         15.0 4.0  todo
3   100    TEST100  Maths assignment    2025-10-12        25.0 5.0  todo
1   103    TEST100  Sync Check          2025-10-20        5.0  1.0  done
○ narendramishra@Mac demo %
```

5. Sync After a manual update

```
● narendramishra@Mac demo % /usr/local/bin/python3 sync_to_sheet.py \
  --sheet-id 1qj7rrBkFJ97eLnCJp0ob7C-88E7fLrtfbxtWKBtJiCw \
  --service-account /Users/narendramishra/Desktop/demo/service_account.json \
  --csv assignments.csv \
  --tab Assignments

Synced 3 rows to Sheet 'Assignments' (1qj7rrBkFJ97eLnCJp0ob7C-88E7fLrtfbxtWKBtJiCw).
○ narendramishra@Mac demo %
```

A	B	C	D	E	F	G	H	I	J
id	student_id	student_name	course	title	deadline	weight	est_hours	status	created_at
1	103	Test User	TEST100	Sync Check	2025-10-20	5	1	done	2025-08-29 0:41:40
2	100	Narendra Mishra	TEST100	Java assignment	2025-10-02	15	4	todo	2025-08-29 0:42:35
3	100	King Robert	TEST100	Maths assignment	2025-10-12	25	5	todo	2025-08-29 0:43:01