Software Carpentry Final Project

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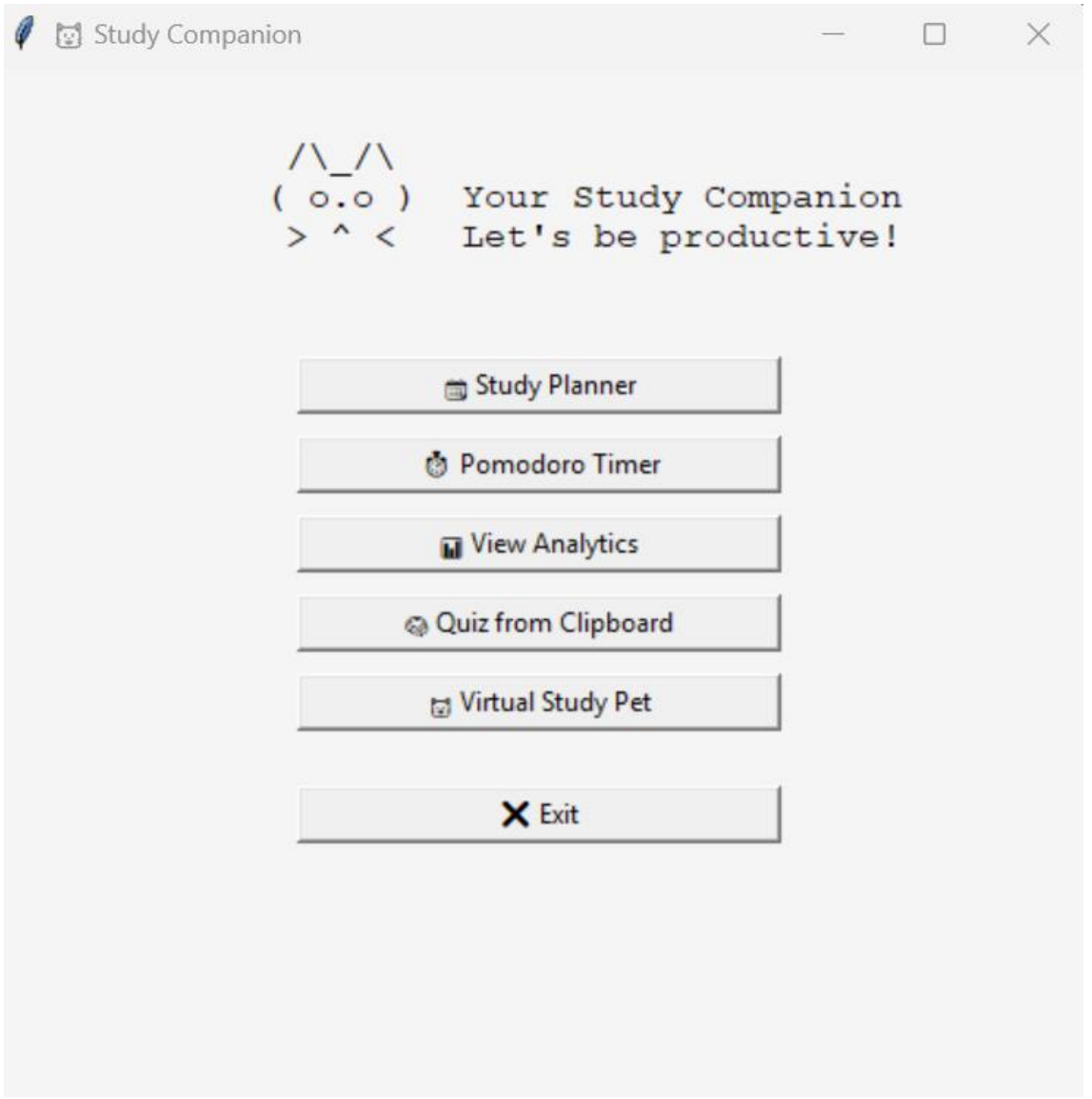
Study Companion



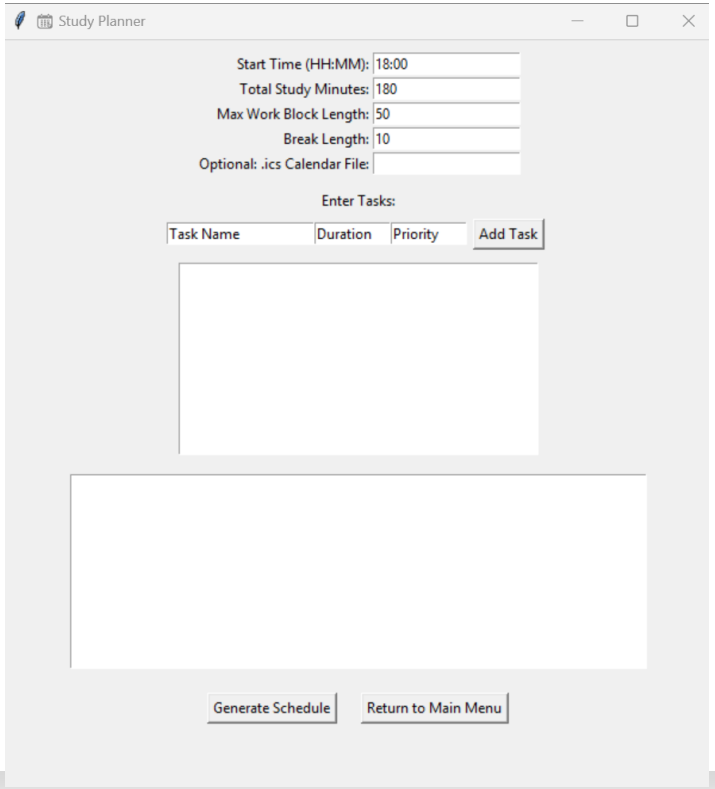
Overview

- Python-based productivity tool to support focused studying.
- Modular system combining 6 productivity functions in one program with GUI.
- Integrates planning, timed work cycles, analytics, and auto-generated quizzes.
- Helps organize tasks, stay focused, and review material effectively.
- Includes optional features for motivation and calendar awareness.

Part I: Smart Study Planner

- Defines a *Task* dataclass to store task name, duration, priority, deadline.
- *build_schedule( )* generates a timeline.
  - Sorts tasks by priority & deadline.
  - Creates timed work blocks using *timedelta*.
  - Inserts breaks between blocks.
  - Avoids calendar conflicts from .ics and exports.ics file for calendar import
- Uses Python's *datetime* module to build continuous schedule.
- Outputs plan via *print_schedule( )* in readable timeline format.

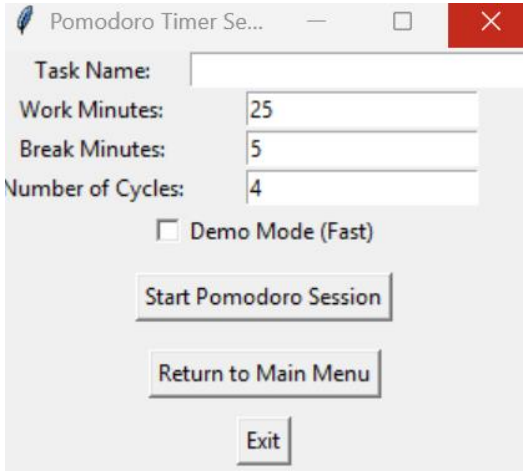
```
Study Plan
--------------------------------------
18:00 - 18:50  Biochem exam review
18:50 - 19:00  Break
19:00 - 19:40  Biochem exam review
19:40 - 20:30  Chinese translation homework
20:30 - 20:40  Break
20:40 - 20:50  Chinese translation homework
20:50 - 21:00  Alternative Energy reading
--------------------------------------
Total window length: 180 min
```

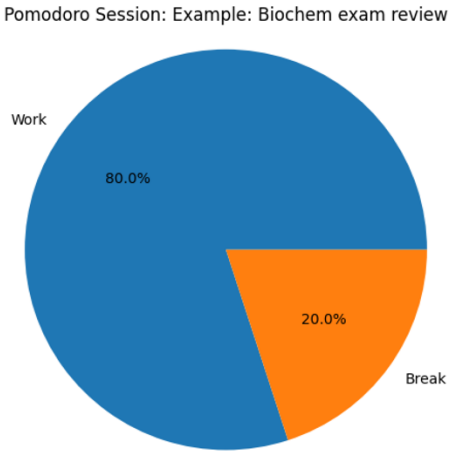


Part II: Pomodoro Timer

- Implements timed work/break cycles for a selected task.
- Uses Two Dataclasses: *PomodoroConfig* (settings) and *PomodoroResult* (summary).
- Core logic in *run_pomodoro*, *run_interval*, and *sleep_unit*.
- Logs each session to *sessions.csv* for later analytics.
- Generates work versus break pie chart with Matplotlib (*plot_session_pie*).
- Two Moes: Demo Mode & Real-Time Mode

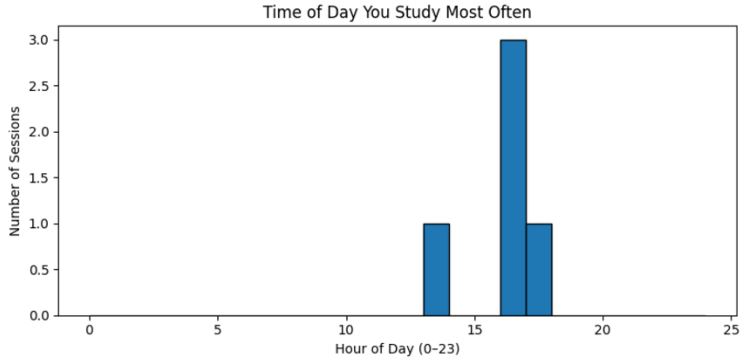
```
=== Cycle 1/2 ===

--- Work for 2 minute(s) ---
Work time remaining: ~1 min
Work time remaining: ~1 min
Work time remaining: ~0 min
Work time remaining: ~0 min
Work time remaining: ~0 min
*** Work interval finished! ***

--- Break for 1 minute(s) ---
Break time remaining: ~0 min
Break time remaining: ~0 min
Break time remaining: ~0 min
Break time remaining: ~0 min
Break time remaining: ~0 min
*** Break interval finished! ***

=== Cycle 2/2 ===

--- Work for 2 minute(s) ---
Work time remaining: ~1 min
Work time remaining: ~1 min
Work time remaining: ~0 min
Work time remaining: ~0 min
Work time remaining: ~0 min
*** Work interval finished! ***

Pomodoro Summary
----------------
Task:                Example: Biochem exam review
Cycles completed:    2
Focused work time:   4 min
Break time:          1 min
Total session time:  5 min
Started at:          2025-12-07 17:55
Finished at:         2025-12-07 17:56

Session logged to: sessions.csv
Session summary pie chart saved to: session_summary.png
```

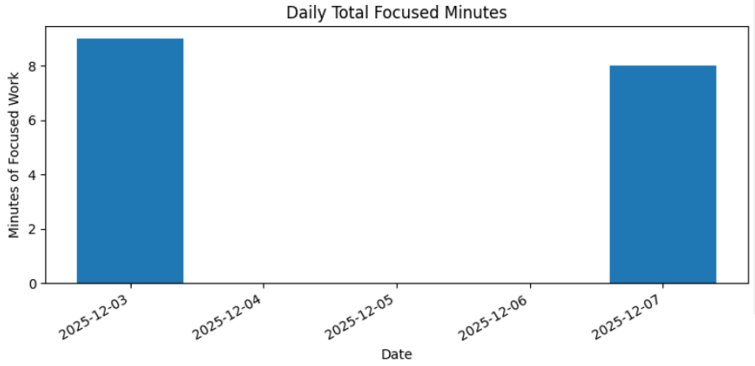




sessions

date	task_name	cycles_completed	work_minutes	break_minutes	started_at	finished_at
2025-12-03	Example: Biochem exam review	2	4	1	2025-12-03T16:34:57	2025-12-03T16:35:13
2025-12-03	Example: Biochem exam review	2	4	1	2025-12-03T16:40:02	2025-12-03T16:40:17
2025-12-03	Chem	1	1	0	2025-12-03T16:40:57	2025-12-03T16:41:57
2025-12-07	Example: Biochem exam review	2	4	1	2025-12-07T13:28:40	2025-12-07T13:28:55
2025-12-07	Example: Biochem exam review	2	4	1	2025-12-07T17:55:53	2025-12-07T17:56:08

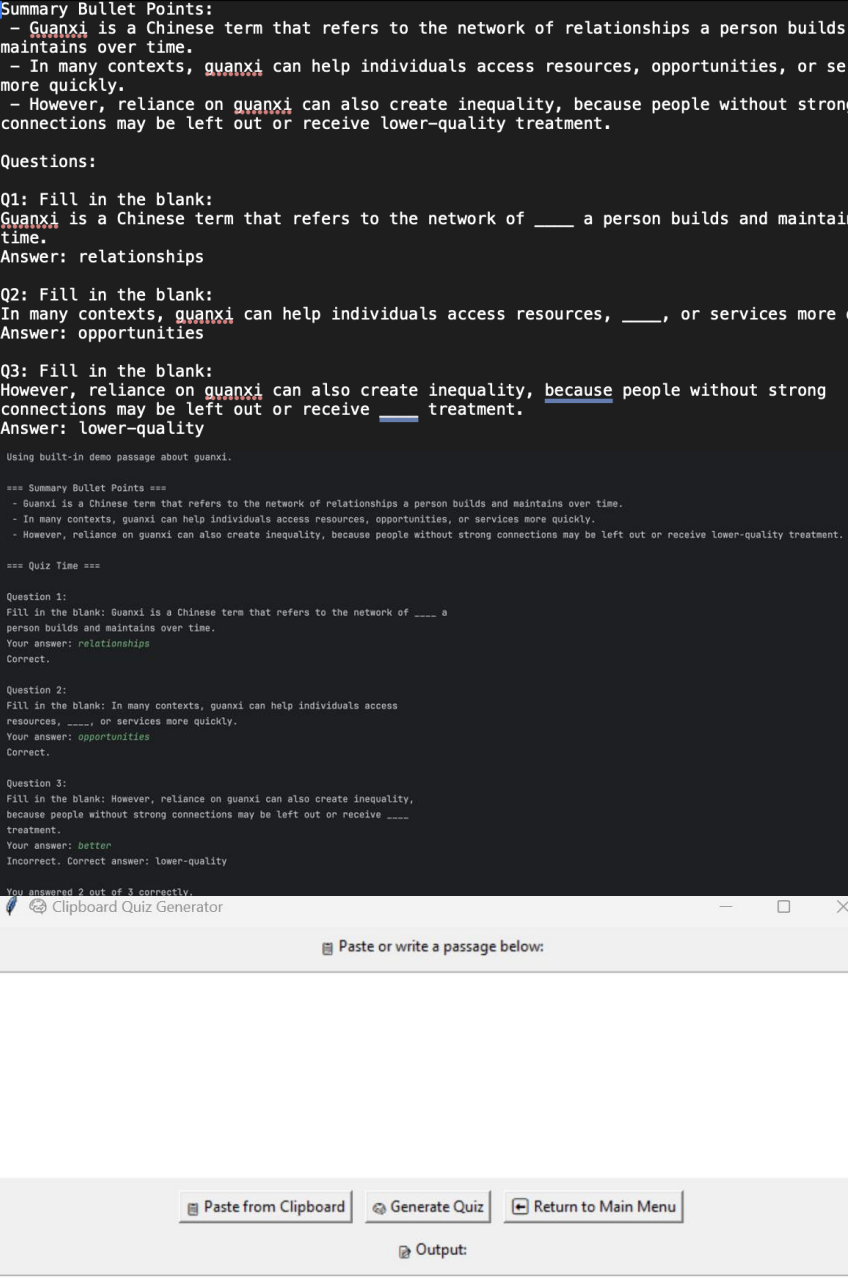





```
=== Study Companion - Productivity Analytics Dashboard ===
Mode: REAL DATA

--- Text Summary ---
Study streak (longest consecutive days): 1 day(s)
Average focused minutes per session:     3.4 min
Most common study start hour:           16:00

Total focused minutes (today):          0 min
Total focused minutes (this week):      0 min
Total focused minutes (all time):       17 min

Generating charts...
Saved: analytics_daily_focus.png
Saved: analytics_time_of_day.png

Analytics complete. Open the PNG files to view the charts.
```

Part III: Productivity Analytics Dashboard

- Reads session history from *sessions.csv* to computer key. Metrics like study streak, average session length, peak study hour, total focused minutes.
- Converts times into Python *datetime* objects.
- Creates visualizations using Matplotlib (daily focus chart + time-of-day histogram).
- Includes a demo mode that generates fake data for testing.
- Uses simple Python data processing; reading CSV, aggregating minutes, counting hours, and summarizing patterns.



Part IV: Quiz Generator

- Takes text from demo mode or user-provided input.
- Cleans and splits text into sentences.
- Generates bullet-point summaries.
- Pulls out important words and scores sentences based on number of keywords and time appeared in text.
- Creates fill-in-the-blank quiz questions.
- Allows interactive quiz and saves results to a .txt file.
- Uses helper functions for keyword extraction and sentence scoring.

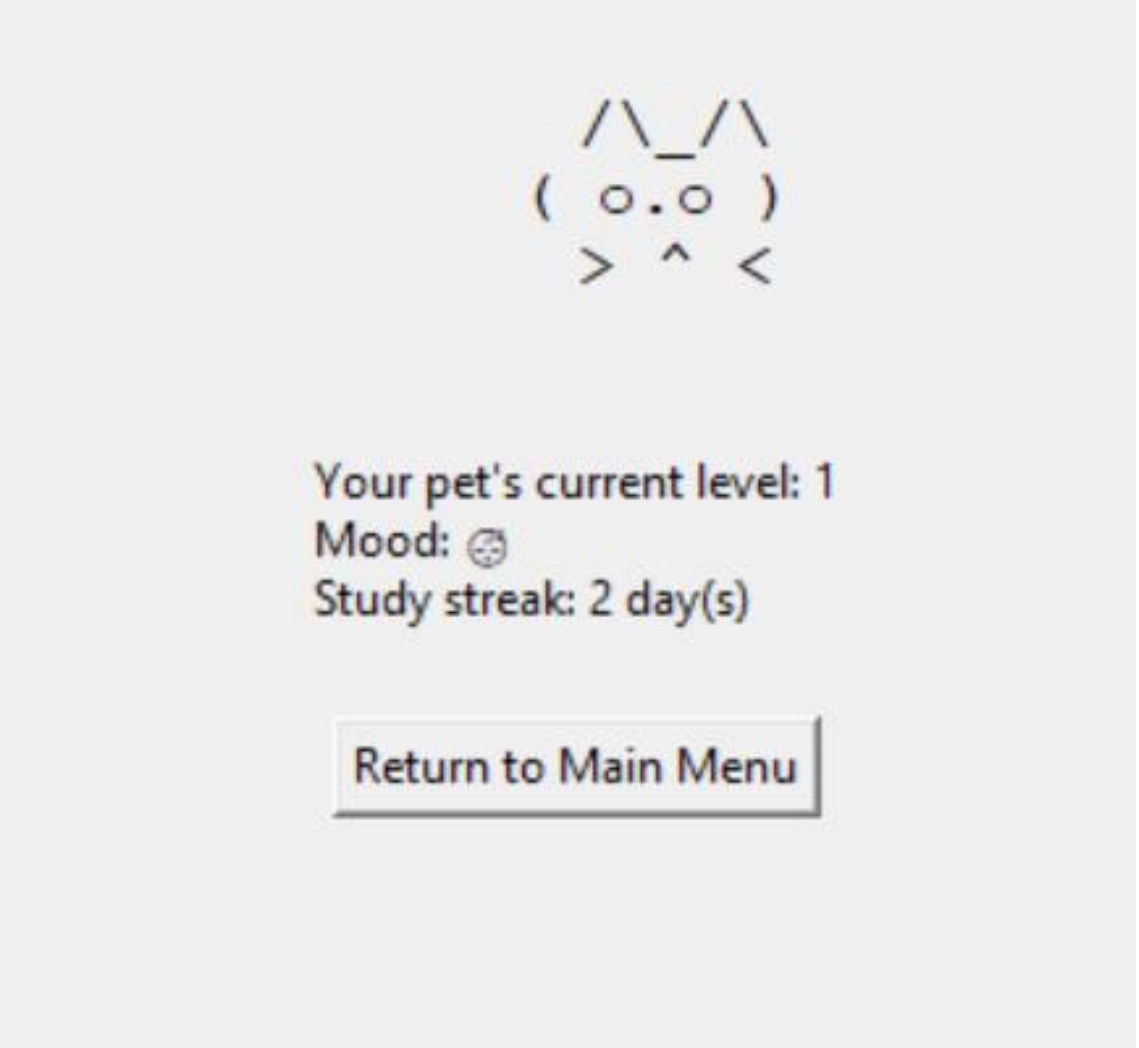
Part V: Calendar Sync

- The user is prompted to upload a .ics file, which parsed using the ics Python Package.
- Busy times are stored as (start, end) blocks.
- During scheduling, we check each study task:
  - it it overlaps with a calendar event -> we shift it.

```
18:00 – 18:30  Study: Math
18:30 – 19:00  Break
(Skipped 19:00–20:00 because of a calendar event)
20:00 – 20:45  Study: Biology
```

Part VI: Virtual Study Pet

- Reads `sessions.csv` from Pomodoro logs.
- Tracks the total focused time and longest study streak
- Calculates the pet's:
- **Mood**: tired 😴 / happy 😊 / proud 😺
- **Level**: increases every 2 hours of focus.
- Displays ASCII art of a pet.



Study Companion (Main Launcher)

Planner

- **Functions:**
  - build_schedule() – schedules tasks with breaks and calendar conflicts
  - run_example_scenario() – demo schedule
  - run_interactive_scenario() – custom GUI planner
  - run_planner_gui() – main GUI function
- **Imports:**
  - calendar_sync.py (ICS import)
  - calendar_export.py (ICS export)

Pomodoro

- **Functions:**
- run_pomodoro() – runs the timer and logs result
- run_interactive() – GUI to configure timer
- append_to_log() – logs session to sessions.csv
- plot_session_pie() – creates pie chart summary
- **Supports: Demo mode, CLI, and GUI**

Analytics

- **Functions:**
- `load_sessions()` – reads `sessions.csv`
- `generate_demo_sessions()` – mock data for testing
- `run_analytics_gui()` – `tkinter` GUI

- **Uses matplotlib for bar chart of time spent per task**

Quiz Generator

- QuizQuestion dataclass
- **Functions:**
- load_pomodoro_history() – loads session data from sessions.csv
- calculate_pet_stats() – computes stats for level/mood
- export_to_text() – saves quiz to .txt
- **Supports clipboard input using pyperclip**

Virtual Pet

- QuizQuestion dataclass
- **Functions:**
- load_pomodoro_history() – loads session data fromsessions.csv
- calculate_pet_stats() – computes stats for level/mood
- run_pet_dashboard_gui() – pet GUI with ASCII art
- **Pet levels up with more focus time and cycles**


Thank You!