OIM3640 - Problem Solving and Software Design

2022 Fall

Session 18 (11/01)

Today's Agenda

1. Welcome/News/Announcements
2. Revisit Assignment 2
3. Debugging
4. Introduction to Web Application - using **Flask**

Welcome/News/Announcements

1. Quiz 4 Grading
2. Assignments
   1. Assignment 2: not graded yet
   2. Assignment 3: will be posted on Thursday
   3. Assignment 4: Build a Better Python Community
3. Project Proposal: due ~~Thursday 10/03~~ **Monday 10/07**
4. Next Class:
   1. IO Programming
   2. Working on Assignment 3. **Please sit in project groups**

What we have learned so far...

- Variables, Expressions, Statements
- Types: int, float, string, boolean, Nonetype, string, list, dictionary, tuple, set
- Functions
- Conditional Statements
- Iterations
- Pseudo-code

Assignment 2 - Text Mining Project

- What do you think?

Feedback on Assignment 2 - Text Mining Project

- Data
  - What is your goal?
  - Data cleaning
  - Choose proper data structures
- Analysis
  - Basic statistics
  - Have you excluded `stopwords`?
  - `nltk` - Error `Resource vader_lexicon not found`
  - Markov analysis

Feedback on Assignment 2 - Text Mining Project (cont.)

- Reflections
  - What else have you **tried**? What else **can** you do?
  - Writing in **Markdown**
  - Protect sensitive information
- How to improve
  - Break the program into small and self-containing functions
  - Write docstrings and proper comments
  - One should run code starting from `if __name__ ==` in `main.py` (or `app.py`).
  - If user input is required, prompt should be understandable and executable.

Assignment 2 - Text Mining Project (cont.)

- Submission does not mean the end of the project!
- What to do next
  - Improve code
  - Add more analyses
  - Optimize project file/folder structure
  - Modify write-up using real Markdown
- Finish it by **End of Friday**

Debugging

1. Debugging
2. 29_common_beginner_Python_errors

Q&A

- Questions from past exercises, quizzes, assignments.
- Issues on GitHub
- Any question today?

Introduction to Web Application - Flask

- What is Flask?
  - Flask is a micro web framework written in Python.
- Popular sites using Flask:
  - Whole webiste: Pinterest, Twilio
  - In tech stack:
    - Reddit
    - LinkedIn
    - Netflix
    - Lyft
    - ...

Flask - Routing

- What is routing?

  > Modern web applications use meaningful URLs to help users. Users are more likely to like a page and come back if the page uses a meaningful URL they can remember and use to directly visit a page.

- Examples:
  - www.MySuperAwesomeVlog.com/new
  - www.MySuperAwesomeVlog.com/1
  - www.MySuperAwesomeVlog.com/1/edit

Quick Tutorial on Flask

1. Installation

```
> python -m pip install flask
# macOS/Linux users:
> python3 -m pip install flask
```

2. Creating our first Flask application
3. Turn on **Debug Mode**
4. Resources:
    - Flask Quickstart
    - Flask Web App Demo
    - HTML for Flask
    - 10 Best Flask Tutorials For Beginners in 2022

Flask Practice

- In *helloflask* project/folder, add one web page and a route that asks user to enter a location and display the current temperature.