CSC 391/491
Programming Assignment 2
Web Contents, Background Processing, & JSON Parsing

Due Date & Submission

- Submit your assignment in D2L Dropbox.
- Submit a single zip file that contains the contents of the project folder
  - To zip your project folder: Ctrl-click your project folder and select "Compress …" from the context menu.
  - **It is mandatory to use Xcode 15 and Storyboard for this assignment.**
- Include only your source code files, including
  - *.swift, *.plist, *.xib, *.storyboard
  - image files
  - project files (.xcodeproj)
  - test folders
  - Screenshot
- You must use a unique prefix for the project name. (I suggest you use your last name and first initial as your prefix.) Please use the same prefix for all your assignments.
  - Note you only need to use the prefix for the project name. It is not necessary to use the prefix on other files in your project.
- Do not include unused or unrelated files.
- Before you submit, build and run the project, make sure everything compiles and works. Close your project before zipping the folder.
- Here are the most common reasons assignments are marked down:
  - Project does not build.
  - Project does not build without warnings.
  - One or more items in the Requirements section were not satisfied.
  - A fundamental concept was not understood.
  - Code is sloppy and hard to read (e.g. indentation is not consistent, etc.).
  - Your solution is difficult (or impossible) for someone reading the code to understand due to lack of comments, poor variable/method names, poor solution structure, etc.

Goals

- Building an app that asynchronously accesses web contents provided in JSON format.
- Properly handle error conditions that may occur during the communication and in the data content.

Requirements

Develop an iOS app that accesses web contents provided in JSON format from a web site such as the CTA train and bus trackers. You may also use a different web site that provides data content similar in complexity to the ones provided by CTA. The specific requirements are:

- Access the data content in the JSON format and properly handle errors that may occur during communication.
- Properly parse the JSON data and properly handle errors and anomalies that may be contained in the data content.
- Design an appropriate UI to access, display, and interact with the data. Update the content display in the UI at an appropriate interval. For example, using the CTA train tracker API, you should be able to select all or some of the lines, select all or some of the stops, and update the UI for upcoming arrivals, etc. Therefore, the app should have at least 2-3 screens.
- The UI should present the data in an informative and usable manner.
- The data access should be handled in the background allowing the UI to remain responsive and informative at all time.
- The app should be robust. Even when errors or anomalies are encountered during the communication or in the data content, it should able to continue to function to the best possible extent by providing appropriate messages, responses, and the best available information in the UI.

Documentation

It is mandatory to include a brief document that discusses
- The software design of your app, including diagrams of the key components (classes) and their relations.

- The measure you took to avoid cyclic strong references in your code.

Possible bonus points for this assignment in one or more of the following areas:
- Exceptional quality in the design of your code, e.g., using suitable design patterns, language features, etc. to achieve simplicity.

- Properly handle all possible scenarios that may arise during the execution of the app.

- Clean, well-organized, and easy to understand code.
  Document the areas that exhibit these exceptional qualities in your app.

Troubleshooting

- If your project doesn't build and run correctly,
  - Make sure that iOS SDK and Xcode is installed and working on the machine
  - Verify that you have **iPhone Simulator** selected