Getting Started with Keil Studio Online IDE for MBED

For the MBED assignments, you will be setting up and implementing MBED code using the Keil Studio Online Integrated Development Environment (IDE). To begin, you will need an ARM or an MBED account; login here (or https://studio.keil.arm.com). You can use your existing ARM or MBED account to login, or sign up for a new account. Upon logging in, you will see an IDE environment, as shown in Figure 1. The side menu bar options can be used to navigate between the *Explorer*, *Search*, *Source/Version Control*, *History*, and *Extension* menu options. The highlighted area in Figure 1, is where you set the *Active Project*, the *Target Hardware*, and *build* a project. Note, the Active Project is the current project you are actively working on. The *build project* tool is used to compile and build the active project, which creates a *.bin* executable file to be downloaded and ported to an MBED device.
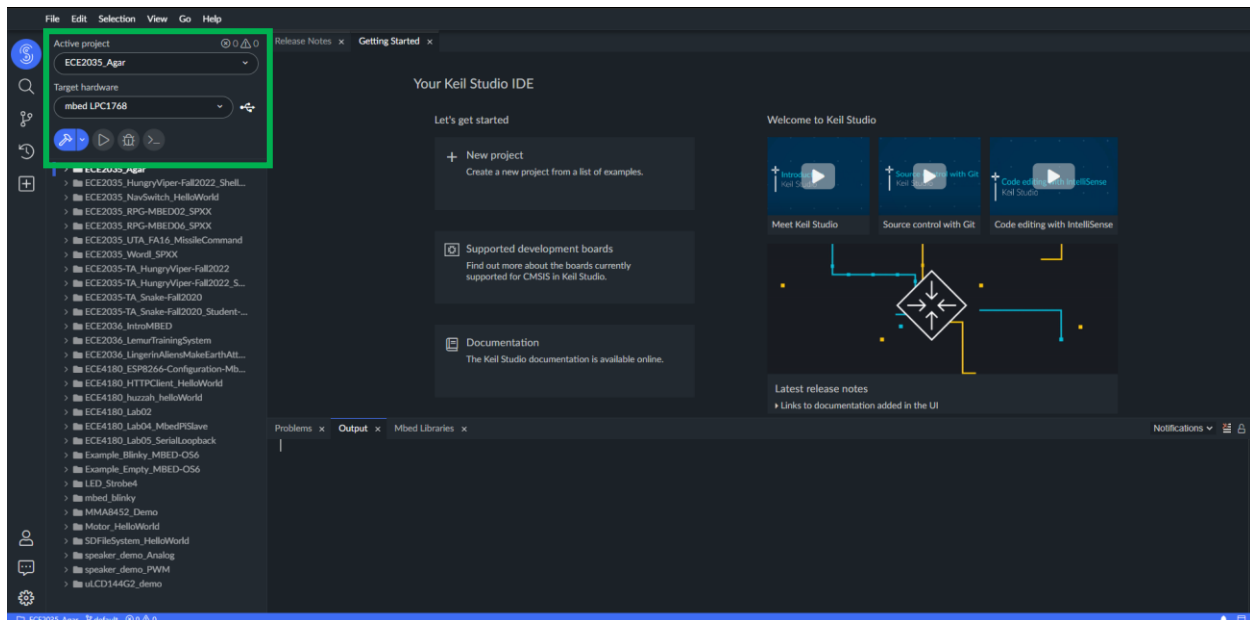

Figure 1: Keil Studio Online IDE. looks like Microsoft Visual Studio Code.

To import an existing project (e.g., shell code) into the IDE, you can either use the provided link, or directly upload the project files. These two options are described next.

Project Setup

Import via Direct Upload

To import the project via direct upload, we first need to download the provided project archive file to your local computer from Canvas. If you already have an archive utility tool (*WinRAR* or *7-Zip*) installed, you can use them to extract the tar-file into a named directory, like 'ECE2035-HW3/'. Alternatively, you can use the Linux/Unix-based command tools in your WSL or MAC terminal shell, like below:

```
# Navigate into the directory that contains your downloaded tar-file.
# You can use the 'ls' command to confirm that the tar-file
# is in the directory you have navigated into.
[BASH] $ cd <parent_directory_of_tar-file>
# Create a destination directory to hold extracted files
[BASH] $ mkdir ECE2035_HW3
```

```
# Extract the tar-file into created target directory
[BASH] $ tar -xvf ECE2035_HW3.tar -C ECE2035_HW3
```

In Keil Studio Online IDE, you create a new project from **File > New… > Mbed Project**. For *Example Project*, select **mbed2-example-blinky** under **Mbed 2**. Name the folder accordingly (e.g., change the default blinky name to ECE2035_HW3). Leave both checkmarks checked and create the project. The created folder will appear in the project list under the explorer pane on the left.
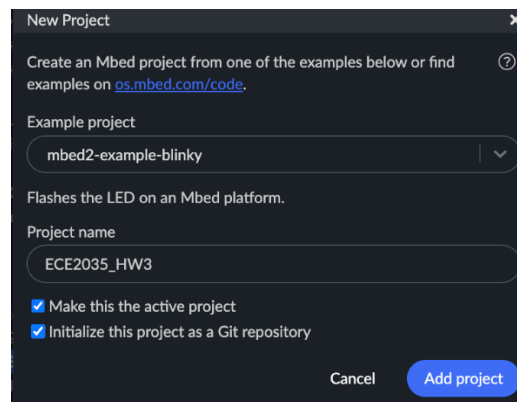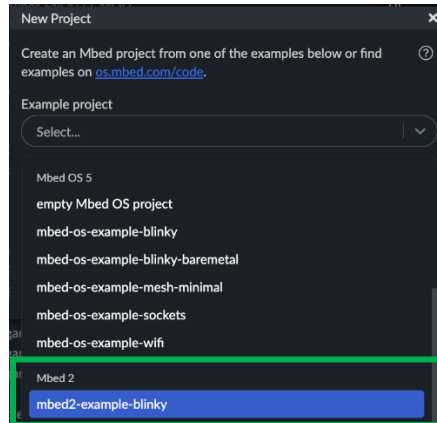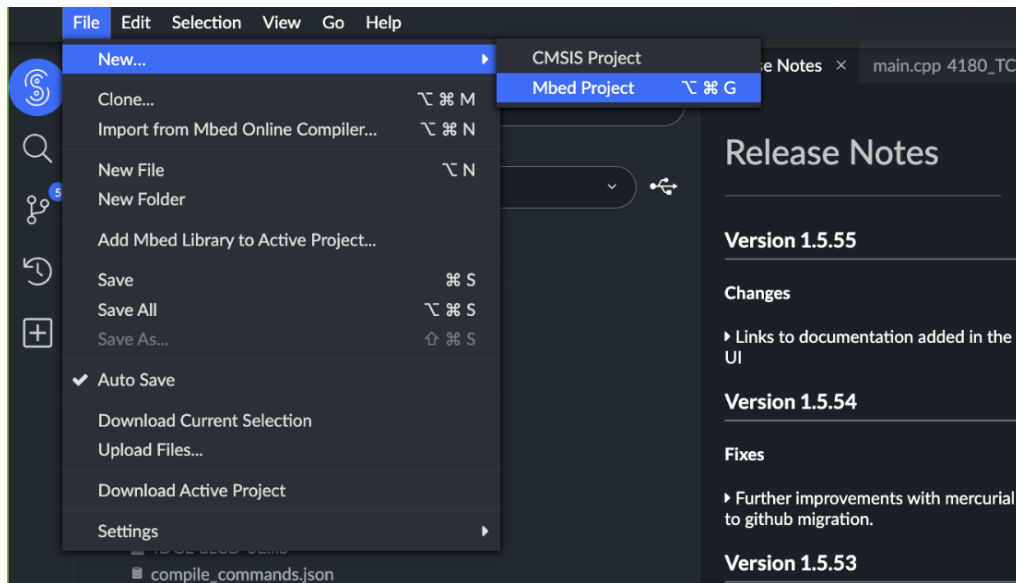

To add the project files to the newly created project folder, select the newly created project folder, then click on **File > Upload Files…** to add the project files from your local computer.
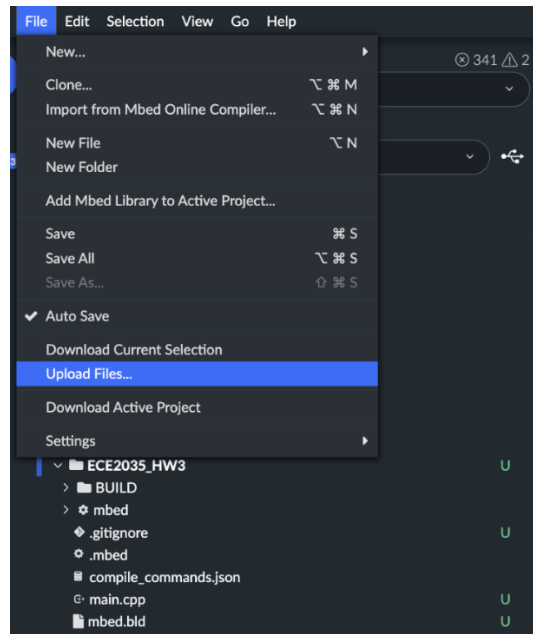
In the file explorer window that opens, navigate to the directory that holds our extracted project files. Select **all** the files and folders. You can use the **'CTRL/CMD + A'** shortcut. Click '*Open*' to complete the direct upload of the project files.

Please, note that you cannot upload the archive tarfile, as automatic archive extraction is currently not supported by the Keil Studio Online IDE.

After this is successful, you might encounter some error during the library import. To fix this, click to open the *Mbed Libraries* tab in the bottom pane. If you see an **exclamation mark,** as shown in the figure below. Click on the marked button and click **Fix all** in the open pop-up to fix the import issues.
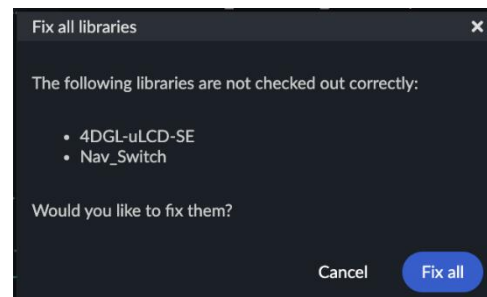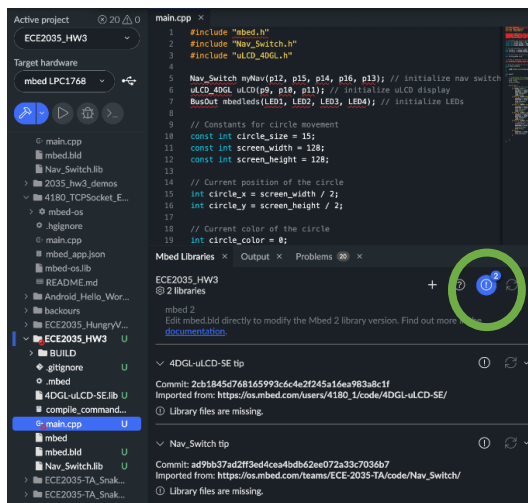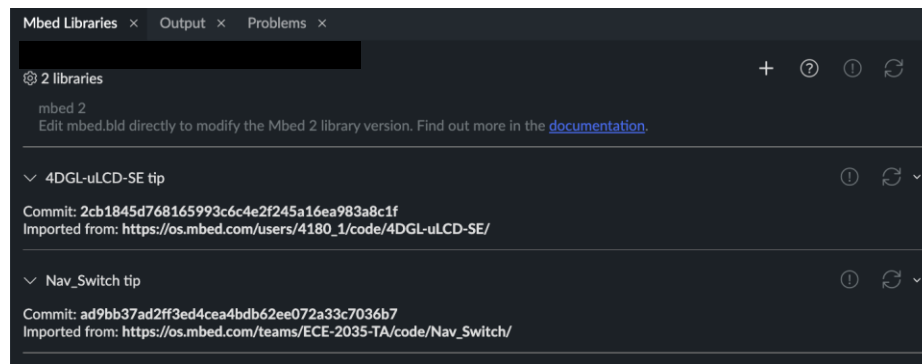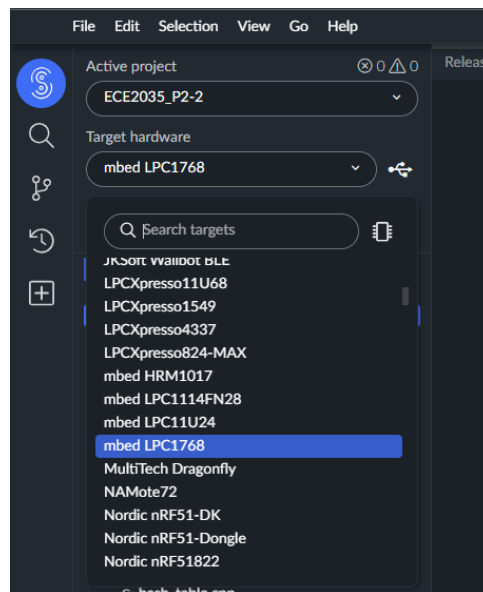
After adding the project, check that the needed Mbed Libraries are recognized as shown below.
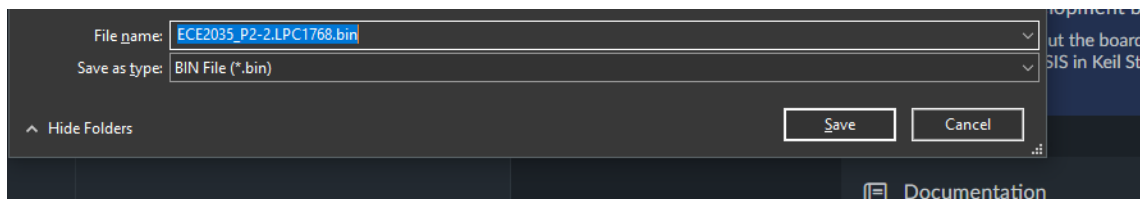
Building the Project

Set the **Active project**, as shown below. If the Target Hardware is not selected, select your **Target hardware.**


To compile and build a binary for your project, use the 'hammer' tool. You may also click on the dropdown menu of the **build** button and select **Clean build**.
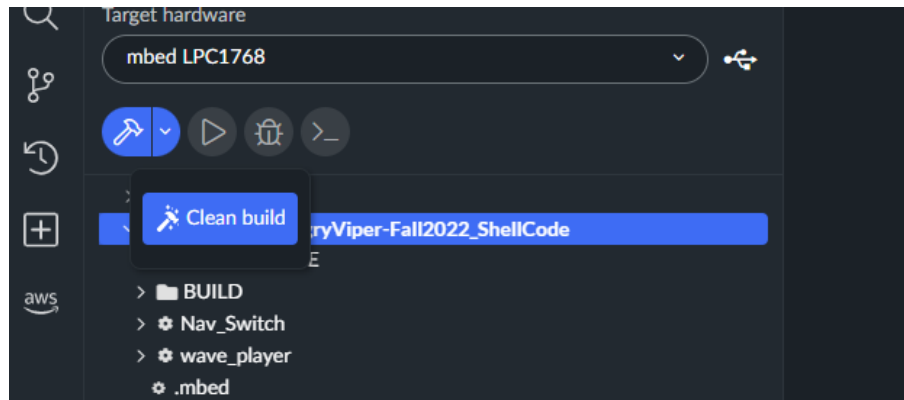
You should now be prompted to download the compiled binary file built.

During the build, if there are any compilation errors, you will be able to see some information about the compilation error in the Output pane, as shown below.
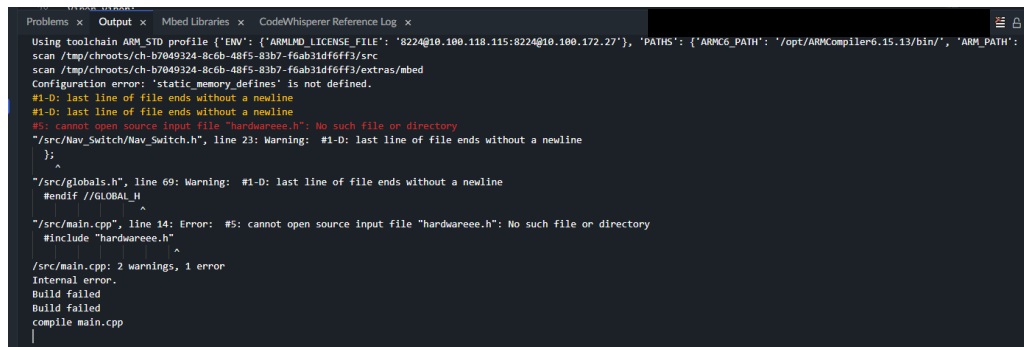

If you see the message: **Configuration error: 'static_memory_defines' is not defined.** You may ignore it. Output messages in **yellow** are warnings. These may be ignored too.

If you have any questions/concerns/queries, please post on Ed Discussions or stop by the Office Hours for one for the TAs to help.

Back-Up & Version Control

In accordance with the **_Back-Up policy_** as described on the course syllabus on Canvas, it is your responsibility to create back-ups of work performed on the Keil Studio Online IDE. It is advised to _frequently_ export your project to keep an offline backup copy of your project. To export your project, set your project as the active project. From the top menu, **File > Download Active Project** to download your project. This would prompt you to save your exported project as a tar-file. Give the generated tar-file a suitable and distinguishable name (e.g.: ECE2035_HW3_v20230220 or ECE2035_P2-2_v20230227) and save it to your directory of choice.
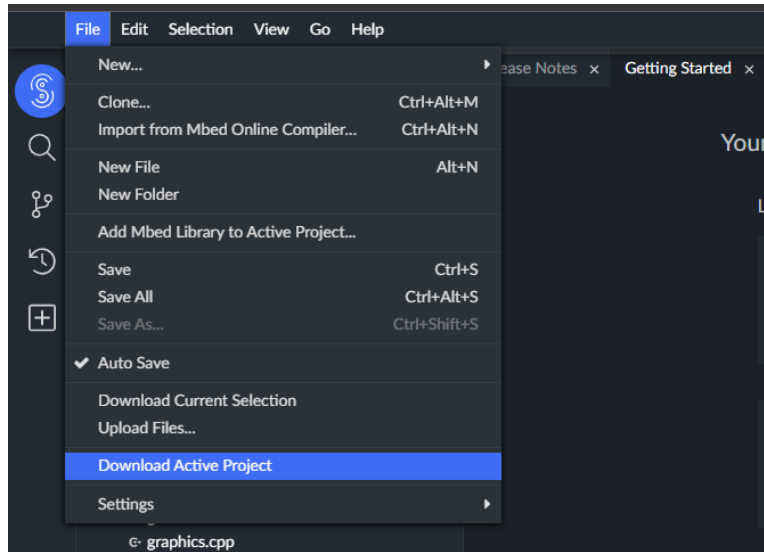
This is a manual way of maintaining backup and versions. If you want to explore using a version control tool, the Keil Studio Online IDE supports Github (github.com) integration. You can link your Github account to your Keil Studio Online IDE and push your project to a **private** repository. Please note, that Keil Studio Online IDE does NOT support the use of Enterprise Github (github.gatech.edu). If you use a version control tool like github, please note that you are still responsible for protecting your code/work as in compliance with the **_Academic Honesty poli_cy** as described on the course syllabus in Canvas. DO NOT use a publicly available repository to store your project.