This is probably shorter than the previous training exercises. The objectives are to learn to use \texttt{emacs}'s features that support

1. **Building (compiling):** Emacs automates (1) calling a build command like \texttt{build.sh} or \texttt{make -k} and (2) scanning the error messages and pointing the editor to the erroneous line.

2. **Debugging:** Emacs has an interface to \texttt{gdb} (and other debuggers) which provides views almost as good as \texttt{ddd} but runs much faster so to be workable over slower \texttt{ssh} connections.

For credit, submit to project \texttt{Train3} two plain text files (use \texttt{emacs} to write them): \texttt{compile.txt} and \texttt{gdb.txt} which each explain, in mostly your own words, exactly what commands to give to \texttt{emacs} to use these features for CSI310 projects.

The \texttt{compile.txt} report should explain how to invoke \texttt{build.sh} with the \texttt{emacs compile} command, rapidly find and fix syntax errors and continue until an executable file is produced. Tips: Invoke “compile” by typing “\texttt{ESC x compile}” (use faster alternatives for \texttt{emacs “Meta-x”} instead of “\texttt{ESC x}” if you can.) When you see “\texttt{make -k}” on the bottom of the \texttt{emacs} window, use normal \texttt{emacs} operations to edit it into “\texttt{build.sh}”; then press enter. Future invocations of “\texttt{ESC x compile}” will then run \texttt{build.sh}.

The \texttt{gdb.txt} report should explain how to use the \texttt{emacs gdb} command to do debugging work like that assigned in Training Exercise 2.

Each report should be in outline form with 200 words or less. Keep copies handy so you can apply the technology to your project programming and debugging!

**Details**

It’s easier when using Emacs through an X-Window system (HU-25 or with XWin32 in LC-3/4), but very workable through a text-only connection. Here is how to read the online documentation of \texttt{emacs} to learn to use the features of this exercise.

Select “Read the Emacs Manual” from the “Help” pull-down menu. (Text-only users: \texttt{C-h i}, then \texttt{m emacs <enter>}).

Scroll down and put the cursor on **Building** under “Advanced Features”.

Do Middle-Button click\footnote{Unfortunately, in HU-25, you have to press the left and right buttons almost simultaneously to simulate middle click} on **Building** or just press enter, to select and go to the relevant info page.

The info page opened from the **Building** link is titled “Compiling and Testing Programs.” For Compiling, select and read some of the pages under the links **Compilation** and **Compilation Mode**.

For Debugging, select the **Debuggers** page and read the pages linked from **Starting GUD**, **Debugger Operation** and **Commands of GUD**. When you read the **Starting GUD** page, you can go to **Debugger Operation** by just typing \texttt{n} because it is the “next” page in the info document.

Within an info page, you can use normal \texttt{emacs} commands for scrolling. But certain single characters are handy commands as follows:

- \texttt{l} (letter lower case ell) brings you to the last page you visited.
- \texttt{n} brings you to the next page in a linked series—The name of the next page if any appears at the top of each page.
• u brings you up to the parent page of the current page.

• t brings you to the top of the hierarchy, so you can start again when you get lost.

If you need more basic emacs help in order to proceed, spend 15-30 minutes on the Emacs tutorial. Go to it by selecting “Emacs Tutorial” under the “Help” menu, or by typing C-h t.