Here's a step-by-step Instructions to use the GNU 8085 Simulator effectively.

This simulator is used for learning and debugging 8085 assembly language programs.

Step 1: Install the GNU 8085 Simulator

1. **Download the Simulator**
    - Visit the official GNU website or a trusted source to download the simulator package.
    - Ensure the package is compatible with your operating system (Windows/Linux).
2. **Install the Software**
    - Follow the installation instructions provided in the downloaded package.

For Linux, you may need to use the terminal:

```
sudo apt install gsim85
```

    - For Windows, run the installer file and follow the on-screen instructions.

Step 2: Launch the Simulator

1. Open the GNU 8085 Simulator from your installed programs.
2. You will see the main interface, which includes an editor, memory view, and registers panel.

Step 3: Write Your Assembly Program

1. **Create a New Program**
    - Click on `File > New` to open a new editor window.
2. **Write the Code**
    - Type your assembly program in the editor.

For example, a simple program to add two numbers:
assembly
Copy code

```
MVI A, 05H    ; Load 05H into accumulator
MVI B, 03H    ; Load 03H into register B
ADD B         ; Add contents of register B to accumulator
HLT           ; Halt the program
```

    -
3. Save the file with a `.asm` extension by clicking `File > Save As`.

Step 4: Assemble the Code

1. Click on `Assemble` to convert your `.asm` file into machine code.
2. Check for any errors in the code. Errors will be displayed in the output or status panel.
3. If there are errors, correct them in the editor and reassemble.

Step 5: Load the Program into Memory

1. After successful assembly, load the program into memory.

   Click on `Load` or select `File > Load Program` and choose your assembled file.

2. The memory view panel will show the loaded machine code at the specified memory addresses.

Step 6: Set the Program Counter

1. Locate the program counter (PC) register in the registers panel.
2. Set the starting address of your program (usually 0000H) in the PC.

Step 7: Run or Step Through the Program

1. **Run the Entire Program**
   - Click on `Run` to execute the entire program at once.
   - The final state of the registers and memory will be updated.
2. **Step Through the Program**
   - Click `Step` to execute instructions one at a time.
   - Observe how each instruction affects the registers and memory.

Step 8: Debugging the Program

1. Use the memory view and registers panel to verify the results of each instruction.
2. If the program doesn't behave as expected, revisit the code, correct errors, and reassemble.

Step 9: Save Your Work

1. Save your `.asm` source file regularly.
2. Export the memory and register states if needed for reports or further analysis.