

ECE 375: Computer Organization and Assembly Language Programming

Universal GUI User Guide

OVERVIEW

The Universal Programmer GUI is a Windows application, provided by TekBots, that is used to upload compiled programs to the flash memory of an AVR microcontroller, such as the ATmega128. This user guide explains how to use the Universal GUI, and assumes that you are either using a lab computer which has the Universal GUI pre-installed, or that you have already downloaded the Universal GUI (from the lab webpage) onto your personal Windows computer.

This guide also assumes that you are using the **usbasp** USB programmer (and, if you are using your own Windows computer, that you have downloaded the **usbasp** driver from the lab webpage and installed it by running **InstallDriver.exe**).

INSTRUCTIONS

1. To begin, launch the Universal GUI application by opening **Universal_GUI.exe**. You will be presented with a window like the one shown below in Figure 1:

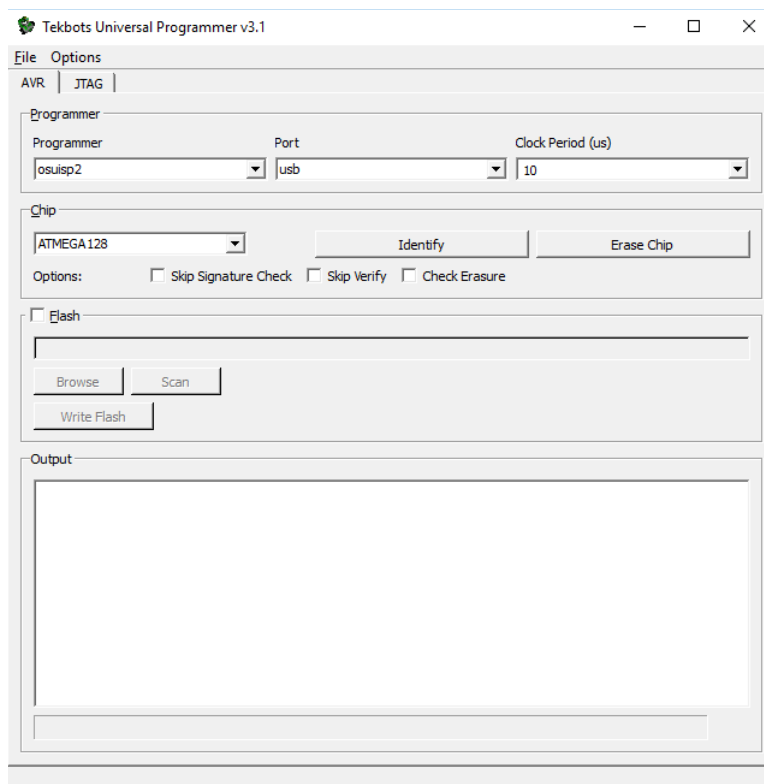


Figure 1: Default Appearance of Universal GUI

2. Next, select the drop-down list labeled “Programmer” and select **usbasp** as the programmer type. Do not change the selection of any of the other drop-down lists.
3. If you have not already connected your USB programmer to both your **mega128** board and a USB port on your computer, make these connections before continuing.
4. (*Optional*) To confirm that your USB programmer is able to successfully communicate with the ATmega128 microcontroller included on your **mega128** board, click on the “Identify” button. In the “Output” text field, you should see a message (such as the one shown in Figure 2) indicating that the operation was successful (you can ignore the warning message).

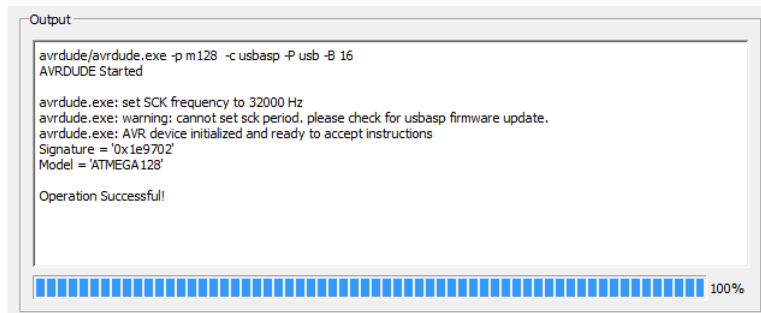


Figure 2: Example Output of “Identify”

5. Click on the checkbox labeled “Flash”. This indicates that you intend to upload a compiled program to the flash memory of the connected microcontroller.
6. Click on the no-longer grayed out “Browse” button, which will open a File Explorer window. Within this new window, navigate to the `.hex` file of the program that you want to upload, select it, and then press the “Open” button. This will return you to the original Universal GUI window, where you should now see the full path to the `.hex` file displayed directly above the “Browse” button.
7. For the last step, click on the no-longer grayed out “Write Flash” button, and the Universal GUI will commence flashing your program to the microcontroller. Once the upload is complete, the “Output” text field will display a message similar to the one shown below in Figure 3, and your program will begin running on your `mega128` board.

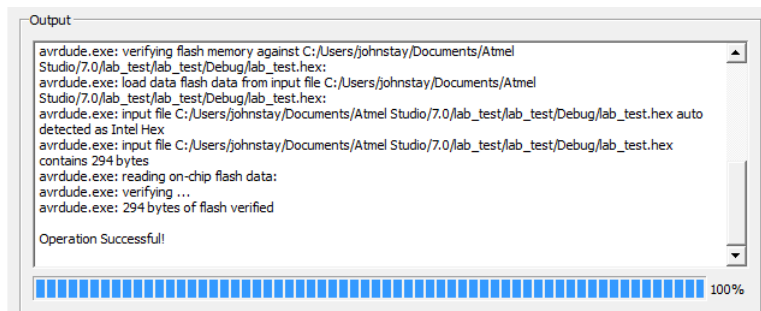


Figure 3: Example Output of “Write Flash”