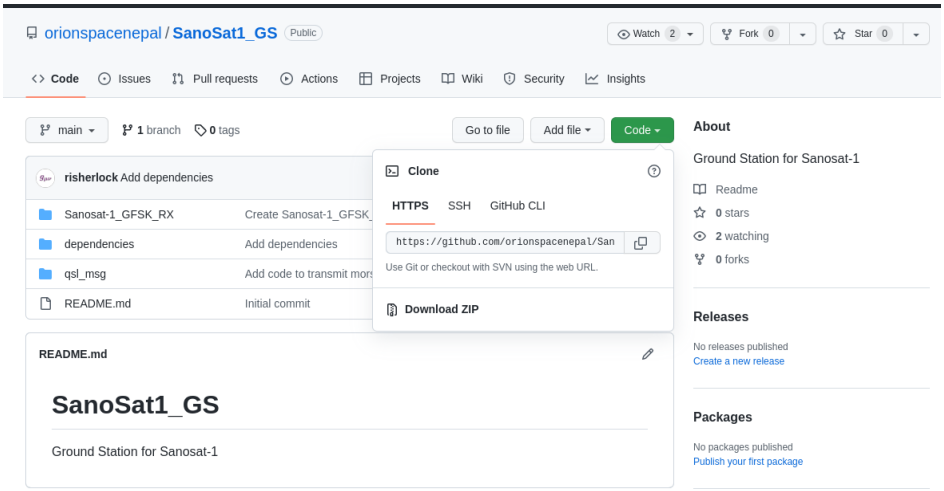
Setting up Arduino IDE Environment

1. Make sure the Arduino IDE is installed in your computer. You can install Arduino IDE from here: https://www.arduino.cc/en/software

2. Goto https://github.com/orionspacenepal/SanoSat1_GS and download the repository on your computer by clicking Code and then Download ZIP.



3. UnZIP the directory.

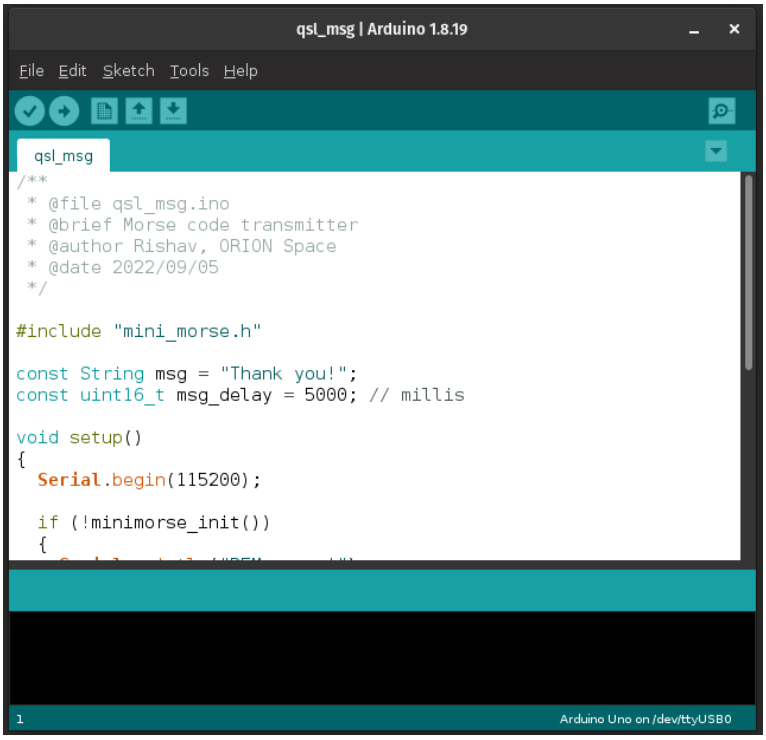
4. You will find a directory named dependencies. Copy the contents of dependencies (not the directory dependencies itself) and paste it to the directory Documents/Arduino/libraries.

5. In the repository you will see two other directories:
   a. qsl_msg - contains a code to transmit morse code of your choice using the RFM26 radio module.
   b. Sanosat-1_GFSK_RX - contains a code to use the board as a ground station to the SanoSat-1 satellite.

NOTE: Now that we have Arduino IDE and dependencies on the place where they are supposed to be, we are ready to upload code to the board. This document will take an example of qsl_msg, but the same applies for other codes too.

Flashing Firmware to the Ground Station

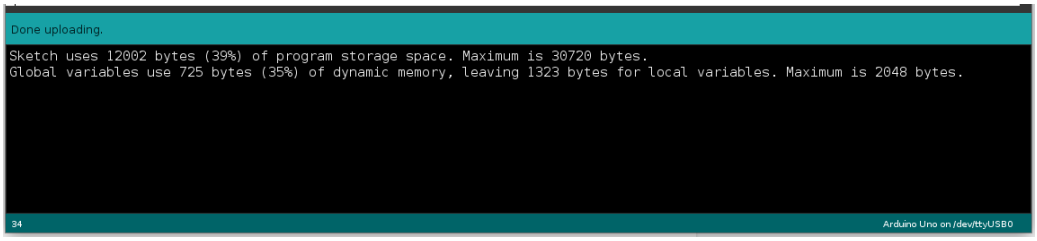
1. Open the .ino file of the software you want to upload. For our example, we will consider qsl_msg.ino inside the qsl_msg directory. The interface looks like the one shown in figure below.



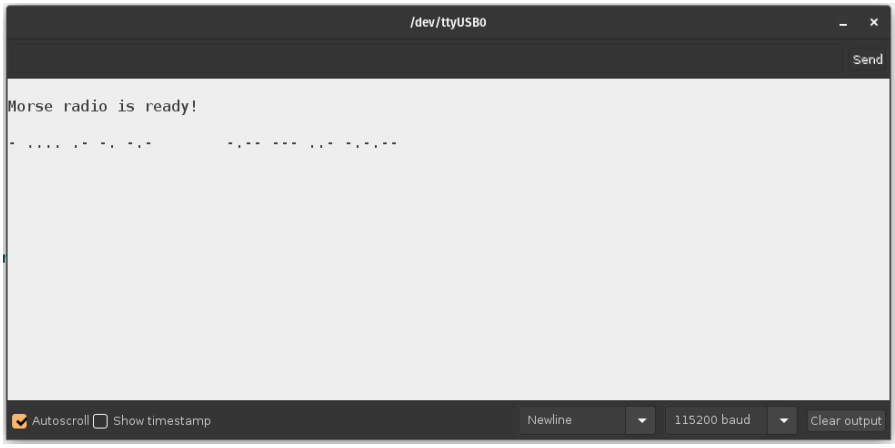
2. Follow the following steps to configure the microcontroller and port to upload code on the Ground Station board.
   a. To configure microcontroller, goto:
      Tools -> Board -> Arduino Pro or Pro Mini, and
      Tools -> Processor -> ATmega328P (3V3, 8MHz)
   b. To configure port, connect the Ground Station to a USB port goto:
      Tools -> Port -> Serial ports -> COM5

NOTE: COM5 above is just for example, it could be COM17 or any other number. If there are multiple ports on option, you can find the one corresponding to the Ground Station by plugging it off and noting the COM port that disappears from the list. Now you can reconnect the board and follow step 2b.

3. Now, all is good, goto Sketch -> Upload to flash the code to the Ground Station. Following message shows that the uploading is successful.



4. Hook up the CW receiver and enjoy the morse message. If you don't have a radio receiver laying around, you can enjoy the same morse code in the Serial Monitor. Output will be something like the image below.



You can copy this message and paste it to https://morsedecoder.com/ to view the message.

GOOD DAY !

Rishav
ORION Space
September, 2022
