

Atmel Studio7 project for SAMD21G18A: Create a C or C++ project with the following functionality:

We're looking for someone that has experience creating embedded projects using Atmel Studio 7

Deliverable: an Atmel studio 7 project that will build without errors or warnings with the following functionality, we will provide a header file with the pin assignments. Any questions just ask.

1. Blinking LED on PB08, 1Hz or so
2. 8 Analog inputs
 - a. PA02-07, PB02-03
 - b. 12bit mode
 - c. Either polled in main loop or measured via IRQ, every 30ms (or faster)
 - d. Measured values available in array
3. Integrate SPI based driver for 240x320 TFT display, two possible sources for this driver are:
 - i. There is a proven Arduino based open source driver for this display that we have used in the past and that works very well available here: https://github.com/adafruit/Adafruit_ILI9341
 - ii. Microchip (Atmel) has an example ILI9341 example and ASF implementation available here: http://asf.atmel.com/docs/latest/common.components.display_controller.ili9341.example1.sam4s_xplained/html/index.html
 - a. This is the display: <https://www.aliexpress.com/item/2-8-SPI-ILI9341-TFT-LCD-Display-240x320-Touch-Panel-Serial-Port-Module-5V-3-3V/32666535328.html?spm=a2g0s.9042311.0.0.8UicH9>
 - b. Project must include various calls from the main loop to demonstrate that the display driver is functional, in the past we have used the following function calls from the example above:
 - i. `tft.setTextColor()`
 - ii. `tft.fillRect()`
 - iii. `tft.setCursor()`
 - iv. `tft.setTextSize()`
 - v. `tft.println()`
 - vi. `tft.print()`
 - vii. `tft.fillScreen()`
 - viii. `tft.drawLine()`
 - ix. `tft.drawRoundRect()`
 - x. `tft.fillTriangle()`
 - xi. `tft.drawCircle`
 - xii. `tft.setRotation`
 - xiii. `tft.drawFastVLine()`
 - xiv. `tftdrawPixel()`
4. Integrate 1 wire temperature sensor driver:
 - a. An Arduino example is available here: <https://randomnerdtutorials.com/guide-for-ds18b20-temperature-sensor-with-arduino/>
 - b. Must be scalable up to 12 sensors and store results in an array, can be slow update once a second or whatever is convenient.