Digital and Embedded Systems
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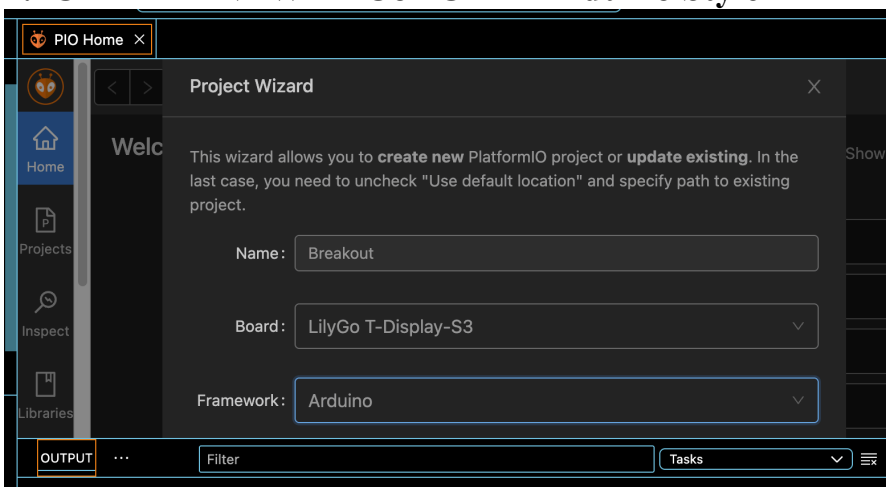
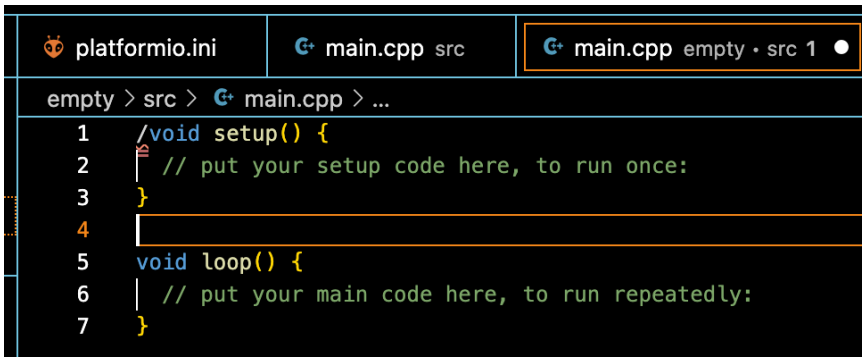
Tutorial 5 – TTGO Programming and Debugging

1. INSTALL Platform IO and the ESP32 Extension

0. Download and install official Microsoft Visual Studio Code. PlatformIO IDE is built on top of it
1. **Open** VSCode Package Manager
2. **Search** for the official `platformio ide` extension
3. **Install** PlatformIO IDE.

2. CREATE NEW PROJECT in Arduino Style



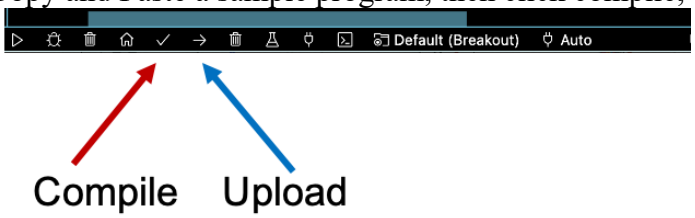


Copy TFT Library

```
cp TFT_eSPI ~/.platformio/lib/
```

3. COMPILE and UPLOAD sample program

Copy and Paste a sample program, then click compile, then upload.




```
In file included from src/main.cpp:4:
lib/TFT_eSPI/TFT_eSPI.h:953:8: warning: #warning >>>>------>> TOUCH_CS pin not def
ined, TFT_eSPI touch functions will not be available! [-Wcpp]
       #warning >>>>------>> TOUCH_CS pin not defined, TFT_eSPI touch functions wi
ll not be available!
        ^~~~~~~
Retrieving maximum program size .pio/build/lilygo-t-display-s3/firmware.elf
Checking size .pio/build/lilygo-t-display-s3/firmware.elf
Advanced Memory Usage is available via "PlatformIO Home > Project Inspect"
RAM:   [=         ]   6.1% (used 19832 bytes from 327680 bytes)
Flash: [          ]   4.5% (used 293485 bytes from 6553600 bytes)
========================= [SUCCESS] Took 1.49 seconds =========================
*  Terminal will be reused by tasks, press any key to close it.
```

Default (Breakout) Auto UTF-8 LF

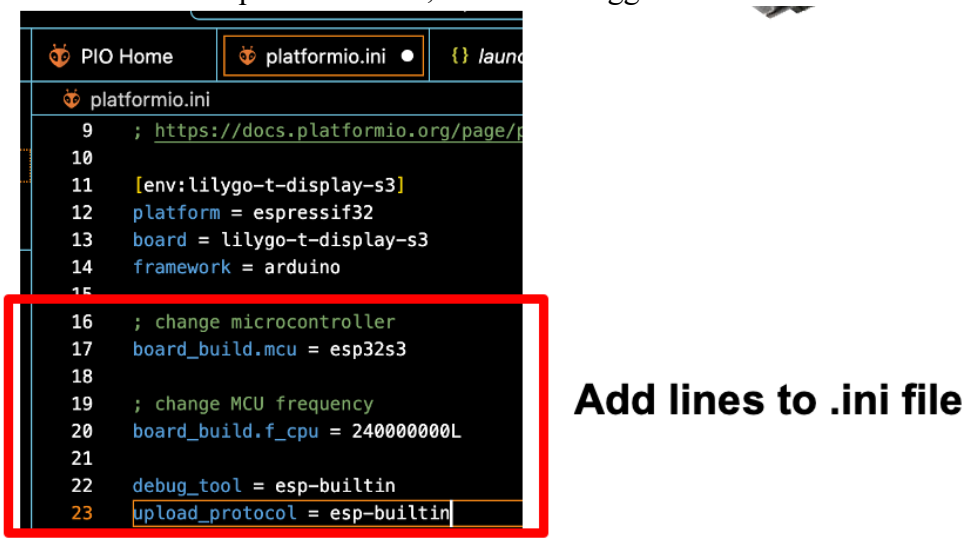
```
Writing at 0x00031c55... (50 %)
Writing at 0x00037539... (60 %)
Writing at 0x0003cb63... (70 %)
Writing at 0x00041f31... (80 %)
Writing at 0x0004790a... (90 %)
Writing at 0x00050cea... (100 %)
Wrote 293856 bytes (162329 compressed) at 0x00010000 in 2.8 secon
ds (effective 849.9 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...
================== [SUCCESS] Took 6.97 seconds ==================
*  Terminal will be reused by tasks, press any key to close it.
```

python... ✓
python... ✓

PIO Debug (Breakout) Default (Breakout)

4. DEBUGGER

Add extra lines to ‘platformio.ini’, to start Debugger



Debugger buttons

Explore:

- Single Step
- Breakpoints
- Examine variable values