**Long Range Transmission Project**

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**Before we start this project, make sure to set up the STM32 Black Pill V3.0 By WeAct. Do the following steps stated in the tables below.**

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| **SETTING UP THE ArduinoIDE** | |
| **STEP 1** | Download ArduinoIDE from “<https://www.arduino.cc/en/software>” |
| **STEP 2** | Open up your ArduinoIDE and Click on “File” and click on “Preferences” |
| **STEP 3** | After you have done the following task in STEP 2, it will open up the Preferences window. In the Preferences window look for “Additional Boards Manager URLs: ”    Copy and paste the link below in the text box and click on “OK”.  “https://github.com/stm32duino/BoardManagerFiles/raw/main/package\_stmicroelectronics\_index.json” |
| **STEP 4** | Click on “Tools” then mouse over to “Board: ” then click on “Boards Manager…” |
| **STEP 5** | A Boards Manager window should appear after you have done the instructions in STEP 4.  In the Boards Manager window, search for STM32. Download the latest version of the board and wait for the download to finish before moving on to the next step. |
| **STEP 6** | Change your ArduinoIDE setting to be the same as the screenshot below. |

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| **Installation of required Software & Drivers** | |
| **STEP 1** | Install “STM32 ST-LINK utility” from “[https://www.st.com/en/development-tools/stsw-link004.html#get-software](https://www.st.com/en/development-tools/stsw-link004.html%23get-software)” |
| **STEP 2** | Install “STM32CubeProgrammer” from “<https://www.st.com/en/development-tools/stm32cubeprog.html>” |

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| **CONNECTION BETWEEN ST-LINK V2 AND STM32 BLACK PILL** | |
| **STM32 Black Pill V3.0** | **ST-LINK V2** |
| **GND** | **GND** |
| **SWSCK** | **SWCLK** |
| **SWDIO** | **SWDIO** |
| **3V3** | **3V3** |
| **DOUBLE CHECK YOUR CONNECTIONS BEFORE YOU PLUG IN.** | |

**After you are done with all the following steps above, plug the ST-LINK V2 Dongle into your computer and go to ArduinoIDE and upload a “Blink” example.**

**You are most likely to encounter with an error message “error: old st-link firmware version. upgrade st-link firmware”.  
Simply fix the error by downloading “**ST-LINK, ST-LINK/V2, ST-LINK/V2-1, STLINK-V3 boards firmware upgrade**” from link below. “**[**https://www.st.com/en/development-tools/stsw-link007.html**](https://www.st.com/en/development-tools/stsw-link007.html)**”**

**Unzip the folder and follow this path “en.stsw-link007-v3-9-3\_v3.9.3\stsw-link007\Windows”.   
Inside there is an .exe file named “ST-LinkUpgrade.exe” which looks like “****”. Double click the .exe file and there will be a ST-Link Upgrade window popping up.**Graphical user interface, text, application

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**Inside the ST-Link Upgrade window, click on “Device Connect”, make sure the STM32 is connected to your computer.**

Graphical user interface, text, application

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Graphical user interface, text, application

Description automatically generated **When the installation is successful, there will be a pop up message to tell you that the installation was successful.**

**AFTER EVERYTHING IS DONE, UPLOAD THE BLINK PROGRAM TO YOUR STM32 AGAIN AND YOU SHOULD SEE YOUR STM32 BUILTIN LED BLINKING.**

Text

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| **Error compiler** |
| **Sketch uses 11944 bytes (2%) of program storage space. Maximum is 524288 bytes.**  **Global variables use 844 bytes (0%) of dynamic memory, leaving 130228 bytes for local variables. Maximum is 131072 bytes.**  **-------------------------------------------------------------------**  **STM32CubeProgrammer v2.10.0**  **-------------------------------------------------------------------**  **ST-LINK SN : 1702021E7215303030303032**  **ST-LINK FW : V2J39S7**  **Board : --**  **Voltage : 3.16V**  **SWD freq : 4000 KHz**  **Connect mode: Under Reset**  **Reset mode : Hardware reset**  **Device ID : 0x431**  **Revision ID : Rev A**  **Device name : STM32F411xC/E**  **Flash size : 512 KBytes**  **Device type : MCU**  **Device CPU : Cortex-M4**  **BL Version : --**  **Memory Programming ...**  **Opening and parsing file: blink.ino.bin**  **File : blink.ino.bin**  **Size : 12.09 KB**  **Address : 0x08000000**  **Erasing memory corresponding to segment 0:**  **Erasing internal memory sector 0**  **Download in Progress:**  **File download complete**  **Time elapsed during download operation: 00:00:00.432**  **RUNNING Program ...**  **Address: : 0x8000000**  **Application is running, Please Hold on...**  **Start operation achieved successfully** |