Bestoso Tech Code Like It's Magic

Compiling And Flashing The Palcom LoRa Phone Source Code

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Setting Up The Environment

First you must download and install the Arduino-IDE. To do this do the following:

1. Go to https://www.arduino.cc/en/software
2. There should be a blue box labeled "**Download options**". If you're on windows, click "**Windows Win 10 and newer, 64bits**"
3. You will be directed to a donate page. Click "**just download**". Or if you're feeling wealthy, "Contribute & Download"
4. This should download an arduino .exe file. Go to your downloads and open the file.
5. Click through the installer, everything can be set to their default values. While it installs get a cup of coffee because we're not Redcoats.
6. Once Arduino IDE is installed, run it.
7. The software may ask to be let through the firewall so that it can install updates and required software. Click Allow Access. Updates will also install, so wait for those to finish downloading.
8. You may also be asked to install multiple usb drivers. When asked, simply click "install"

Once Arduino-IDE has been installed, you will need to install the drivers for the ESP boards. This can all be done directly in the IDE by using the following instructions:

1. File > preferences
2. Scroll down to where it says "Additional boards manage URLs" and paste in the following url : **https://espressif.github.io/arduino-esp32/package_esp32_index.json** and then click OK
3. Go to Tools > Boards > Boards Manager
4. In the search bar type in "esp32".
5. Scroll until you see "esp32 by Espressif Systems" and click "install"
6. Go to tools > boards and confirm that there's now an option for esp32.

After the board drivers are installed. You need to install several code libraries that the messenger relies on to function. Here are the instructions on installing them:

1. Go to Tools > Manage Libraries
2. Search for "TFT_eSPI" and install TFT_eSPI by Bodmer
3. Search for "RadioLib" and install RadioLib by Jan Gromes
4. Open a web browser and downloads the remaining libraries from : https://bestosotech.com/storage/ESP_Libraries.zip
5. Once downloaded, go to your downloads folder, right click ESP_Libraries.zip, click extract all, and then click the Extract button.
6. Once unzipped go into the ESP_Libraries folder.
7. Select all of the files inside the folder. Right click, and then click copy.
8. Then go to the Arduino libraries folder, which is located here; Documents > Arduino > libraries

9. Right click and paste the files into this folder.

Once this is done you should have everything you need to compile and flash the code. To get the code go to https://github.com/AlexBestoso/PalcomLoRaPhone Click the green code button, and then click “Download Zip” Once downloaded extract the file, go into the Palcom folder and then double click “PalcomWorking”

When you open the project the Arduino-IDE may ask you if you want to move the files into a sketch folder. If this happens, click yes.

Flashing The Device

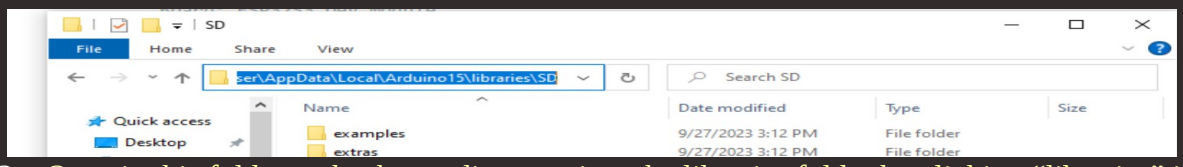
Now that we have the requirements installed and the code displayed in the Arduino-ide All we have to do is configure the project and flash it. Which is a fairly straight forward process.

1. Go to tools > boards > esp32 > ESP32S3 Dev Module
2. tools > USB CDC On Boot > Enabled
3. tools > USB DFU On Boot > Disabled
4. tools > Flash Size > 16MB (128mb)
5. tools > Flash Mode > QIO 80MHz
6. tools > Partition Scheme > 16Mb Flash (3MB APP/9.9MB FATFS)
7. tools > PSRAM > OPI PSRAM
8. tools > Upload Mode > UART0 / Hardware CDC
9. tools > Hardware Mode > Hardware CDC and JTAG

Once you do this click the check mark at the top of the screen to test compile the software.

You may get an error that says “Multiple libraries where found for “SD.h”. If you get this error do the following to fix it:

1. In the error message you will see two folder paths. One labeled “Used” and another labeled “Not Used”. Using your mouse highlight the not used file path and copy it . This path will look something like this: C:\Users\My User Name\AppData\Local\Arduino15\libraries\SD
2. Open file explorer and copy the file path into the path bar at the top. The following picture shows where to past this.



3. Once in this folder go back one directory into the libraries folder by clicking “libraries” in the path bar.

4. Now right click on the SD folder, hover over “send to”, and then click “Compressed (Zipped) Folder”
5. Now right click on the original SD folder again and delete it.
6. Click on the check mark button again and you should now have a successful compile.

If you get an error regarding “Utilities.h” then that means that arduino moved your files around. To fix it go to the folder that has the source code in it. The file the you extracted from github. Inside the folder you will see all the source code files plus a folder called “PalcomWorking”. Cut and paste all of the source code files into the PalcomWorking folder. This should fix the issue.

Once the Compile works you’re ready to actually flash the phone. To flash the phone do the following:

1. plug the phone into your computer using a usb plug.
2. Go to tools > port and select the usb port, there should only be one option.
3. Now in the top bar of the IDE, to the right of the check mark, click the arrow. This will both compile and flash the device.

This Documentation is still a work in progress. If you have any issues with flashing or the setup reach out to Alex.