Configuration Manual

MSc Research Project
MSCCYBE_JANO23_O

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MSc Project Submission Sheet

School of Computing

Student Name:	Kamal Bassiouny Kamal Tawfik
Student ID:	X22189661
Programme:	MSCCYBE_JANO23_O	**Year:** 2023
Module:	MSc Research Project
Lecturer:	Ross Spelman
Submission Due Date:	12/08/2024
Project Title:	Lightweight Cryptography in Embedded IOT Systems
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I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

ALL internet material must be referenced in the bibliography section. Students are required to use the Referencing Standard specified in the report template. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action.

Signature:	Kamal Tawfik
Date:	12/08/2024

PLEASE READ THE FOLLOWING INSTRUCTIONS AND CHECKLIST

Attach a completed copy of this sheet to each project (including multiple copies)	☐
Attach a Moodle submission receipt of the online project submission, to each project (including multiple copies).	☐
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Assignments that are submitted to the Programme Coordinator Office must be placed into the assignment box located outside the office.

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1   Software tools

The following software tools are used in the study:
- Visual studio code: it is a known code editor and with suitable extension can be a good choice aside for the test.
- Build tools - CMake and Ninja to build a full Application for ESP32
- ESP-IDF that essentially contains API (software libraries and source code) for ESP32 and scripts to operate the Toolchain
- Tera Term serial monitor
- The study conducted on Windows 10 environments

2   Hardware

- ESP32 Dev Kit NodeMCU Wroom-32 has been used which is microcontroller used in IOT applications and it comes with following features:
    - 2.4 GHz dual-mode WI-FI
    - TSMC Bluetooth chip
    - 40nm low-power technology
    - Dual high performance Xtensa 32-bit LX6 CPU cores
    - Digital input and output pins
    - Peripherals pins
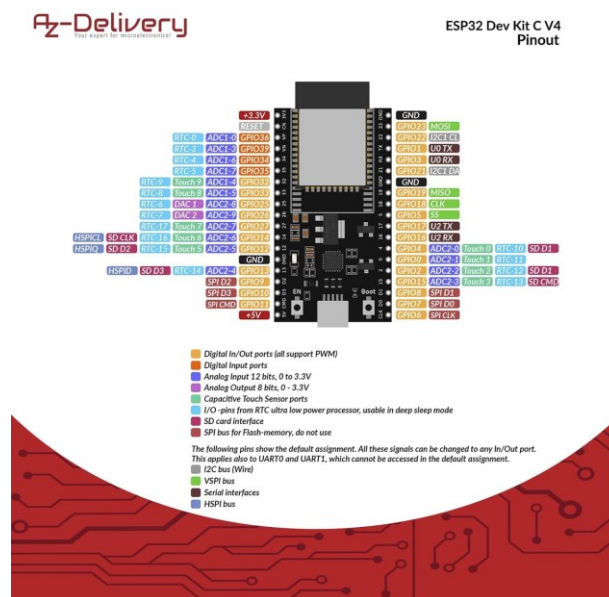
ESP32 Dev kit Cv4 Pinout

- USB cable - USB A / micro–USB B to connect the board to the computer

3 Installation

1- Download and install VS code
2- Install ESP-IDF Extension
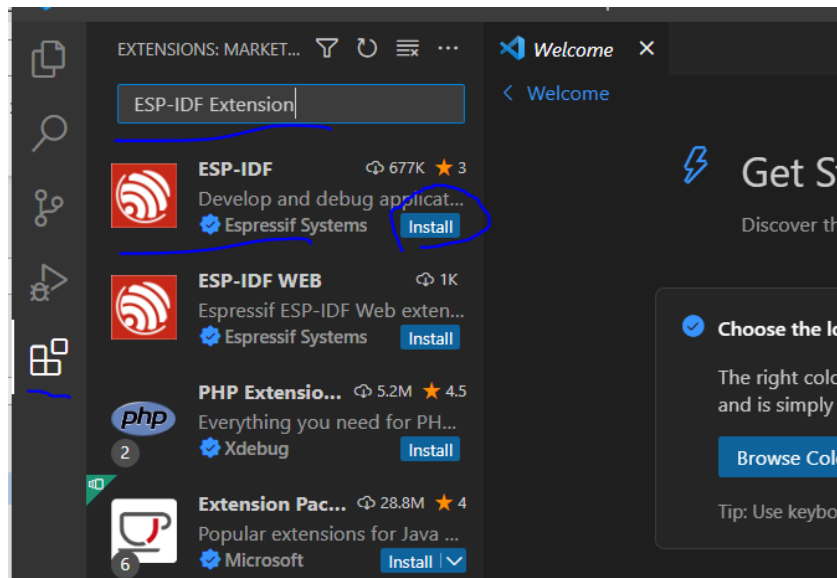
3- In Visual Studio Code, select menu "View" and "Command Palette" and type [configure esp-idf extension]. After, choose the ESP-IDF: Configure ESP-IDF Extension option.I chose USE EXISTING SETUP.
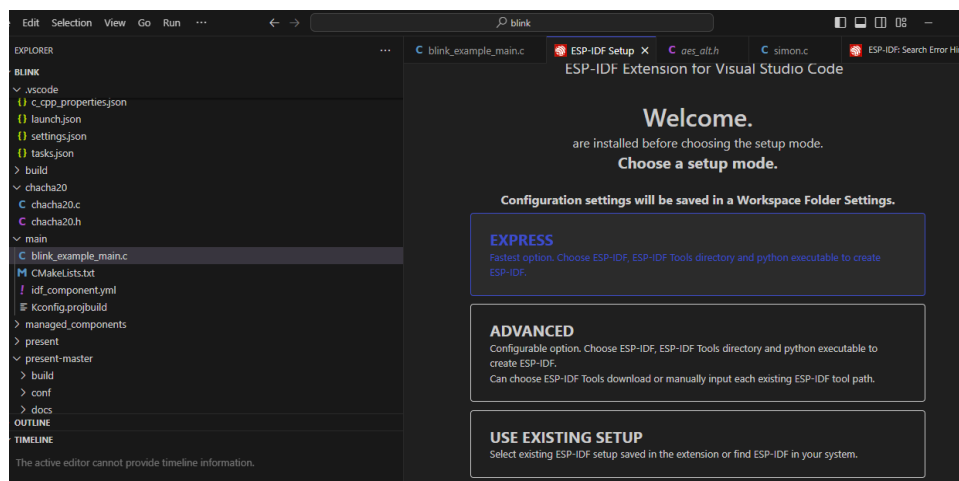

4- Install bar should appear with the progress status
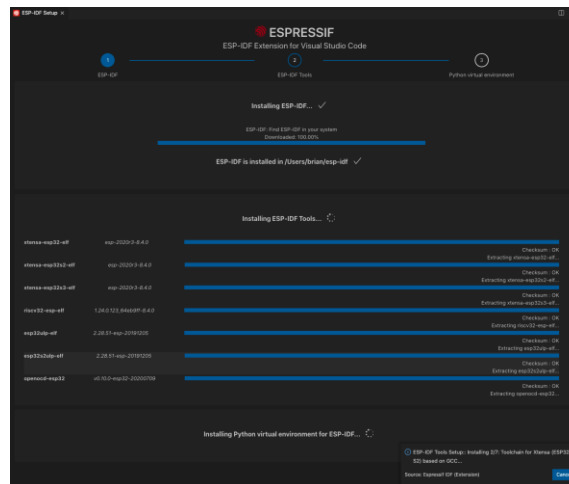
4 Setup, build and flash

1- I have used Blink example as my base then add libraries, but with the artefact attached, we can just open project and open the attached project , then you can skip to go directly to build and flash the binary.
2- The user must add library to inclusion by adding include directory in CMakeList.txt file as shown in following figure
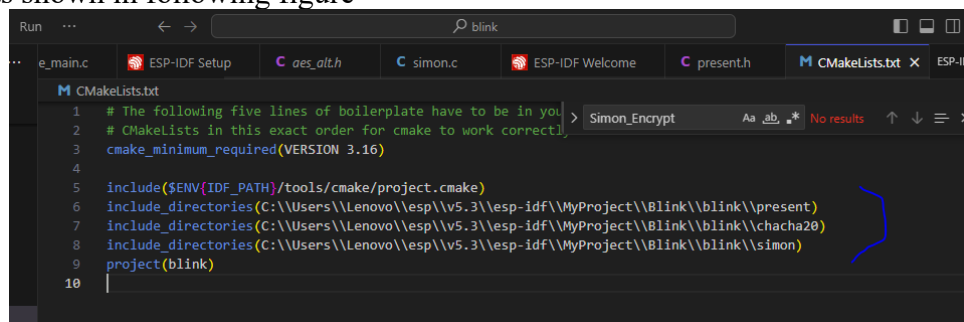
3- To build the project use press CTRl+E and then b in visual studio terminal
4- To flash connect the ESP32 board visa cable and press CTRL+E and then f in visual studio terminal

5 Test

1- Install TERA Term, open-source serial monitor.
2- Open after installation and select the correct Com port
3- Choose setup-> serial and choose the correct baud rate
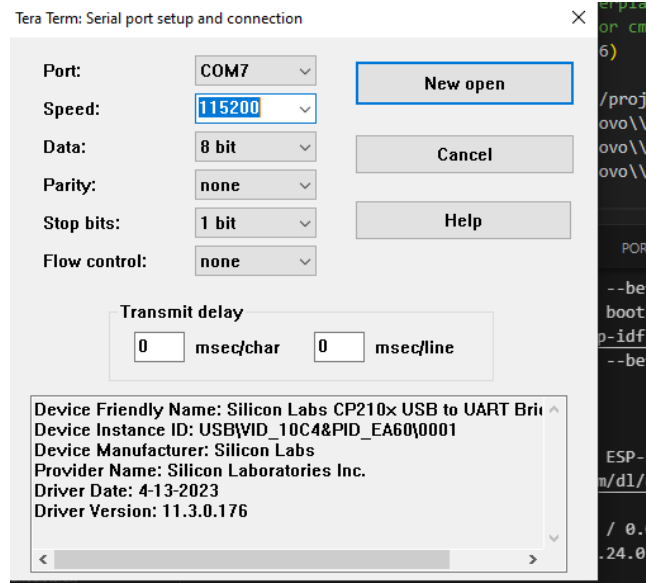
4- Click file->log and select log file where data will be logged
5- Reset the board by pressing in Reset (or EN) button on the board
6- You should see data shown in Tera term serial and also saved in log file

References

[1] https://docs.espressif.com/projects/esp-idf/en/stable/esp32/get-started/index.htmlFeng, G. and Buyya, R. (2016). Maximum revenue-oriented resource allocation in cloud, *IJGUC* 7(1): 12–21.

[2] https://github.com/espressif/vscode-esp-idf-extension/blob/master/docs/tutorial/install.md

[3] https://teratermproject.github.io/index-en.html

[4] ESP-IDF - Visual Studio Marketplace

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