Electronics Phase

Objectives:

You are expected to be knowledgeable about all the components below before getting to use them. How to use them individually, how to connect them, and the safety precautions related to them.

Main Task:

Create a technical documentation that focuses on the components you'll use in your robotic arm controller system. This document is for you and only you to use, but you must submit it for approval. Make sure to include pictures with pinouts, resources of the information and signal diagrams.

Topics to Cover:

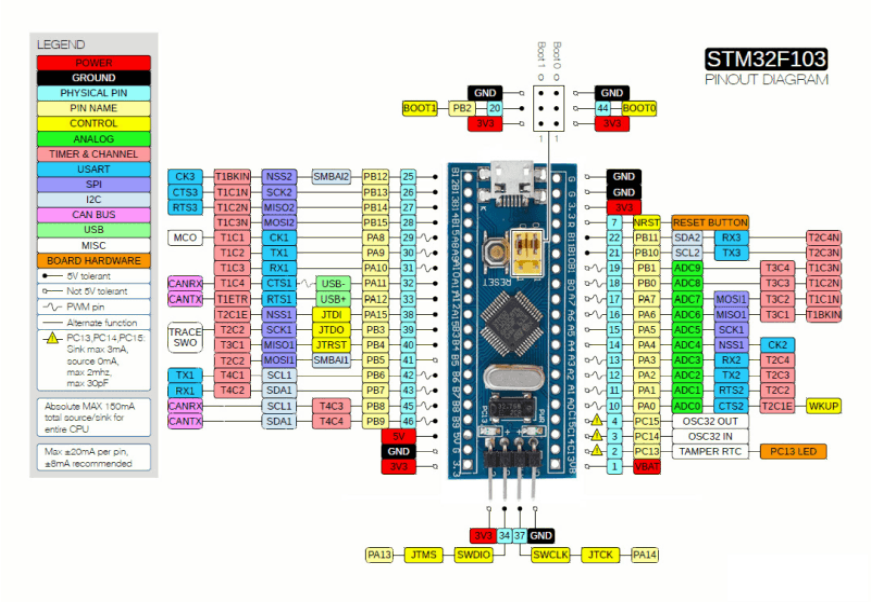
- **Blue Pill STM32 (Pinout and Features)**
  - Pinout and pins description
  - UART (TX/RX), power pins
  - GPIO and PWM pins
- **Electrical Components (Schematic and Functionality)**
  - Pushbuttons
  - Potential resistors
  - Joystick modules
- **Servo Motor – Working Principle and Pinout**
  - Servo motor pinout
  - PWM control basics and angle mapping
  - PWM Signal diagram
- **UART Communication (with Bluetooth Module)**
  - UART fundamentals, types and example of signal diagram
  - HC-06 module pinout
  - How to connect a Bluebee/HC-06 module to STM32

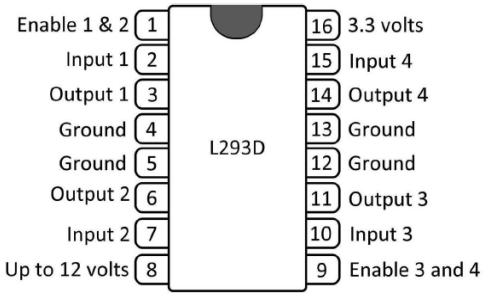
Optional Task:

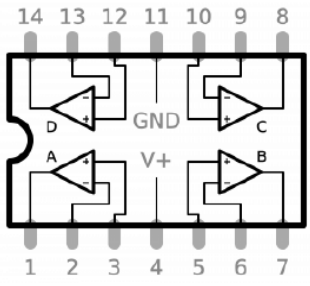
Write a technical documentation about robotic arm technologies, how robotic arms are defined and described, what are joints and DOF in robotic arms, and some examples of robotic arms exist in the market.

Hints:

1. How pinout diagram looks like, and some examples of electrical components pinout diagrams:







Submission:

- Complete and submit this task in one PDF file for both main and optional tasks.
- Name the PDF files with task1_groupx_your_name, (replace x with your group number).
- This task should be submitted before 10th Aug 10:00pm (Malaysia time), 05:00pm (Saudi time).
- Your mentor must approve your task answer file before submission.
- Submit the PDF file to the google form will be announced later.