

TASK 9



Electronics Phase

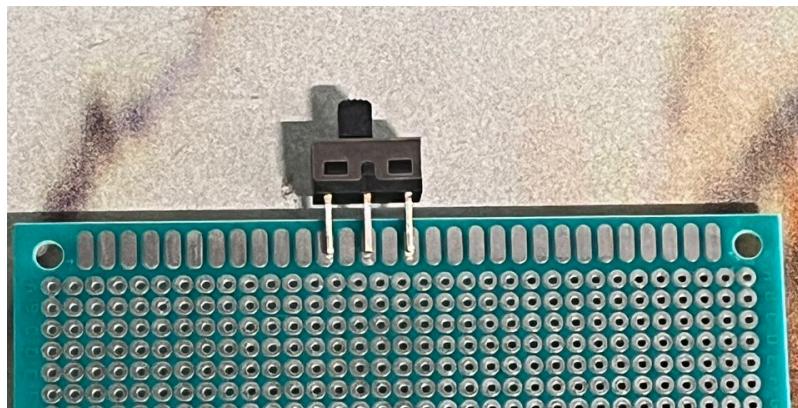
Objectives:

To transfer the schematic diagram of the Mainboard into a practical layout on graph paper, showing how each connection will be made on the donutboard. This step will help participants plan the soldering tracks, and component placement before building the physical circuit.

Main Task:

Redraw your Mainboard schematic on graph paper, this time as a donut board layout.:

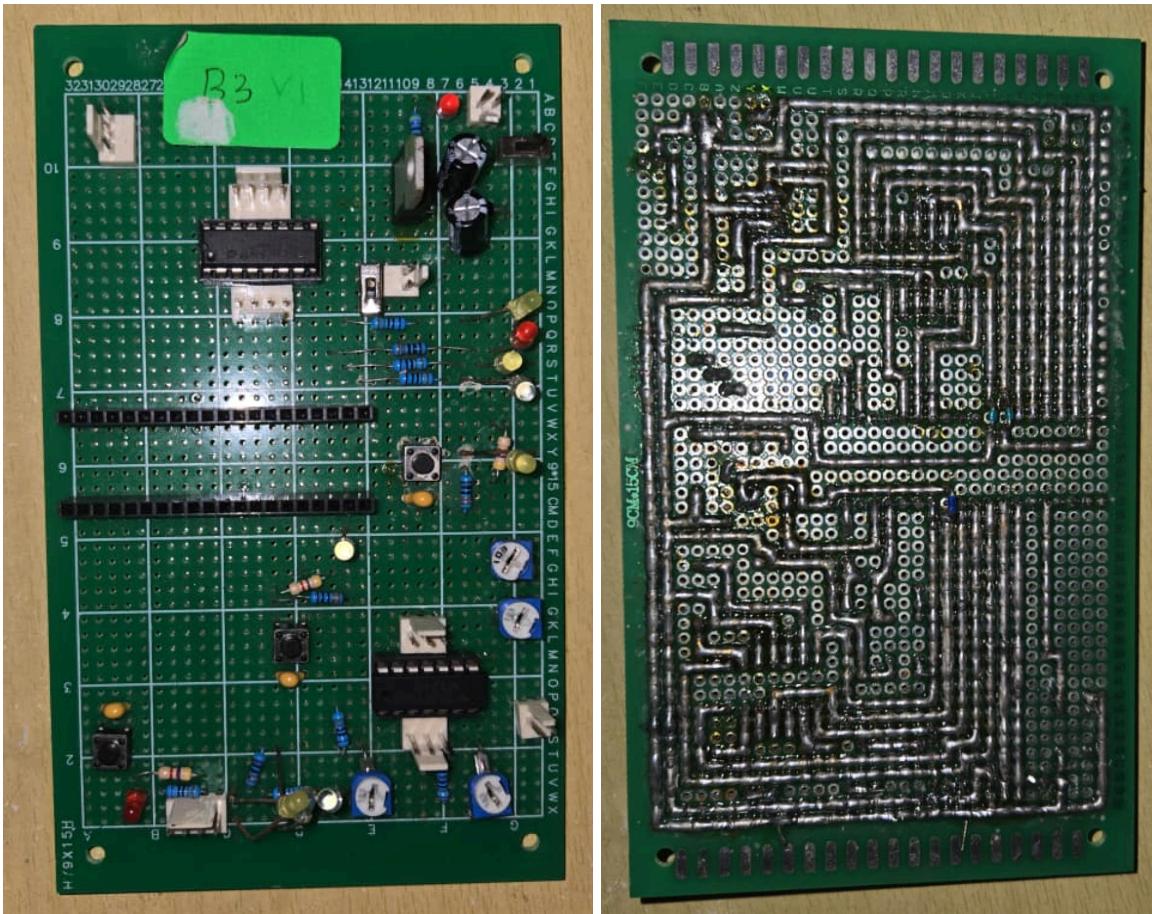
- Clearly mark the positions of the components within the size of the donut board.
- Draw the borders of the donut board based on the number of holes.
- Draw the soldering tracks using lines to represent solder connections with the following color code:
 - Red line for 5V tracks.
 - Orange line for 3.3V tracks.
 - Black line for the ground tracks.
 - Blue line for the signal tracks.
- The power supply slide switch must be soldered on the side. Make sure to account for this in your drawing.



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- Each box on the graph paper represents a hole in the donut board.
- Physically measure how many holes each component needs on the donut board, then match that with the number of squares on the graph paper.
- The lines should be drawn along the boxes to represent the soldering tracks.
- You may draw your circuit either by printing the graph paper and working on it physically, or by creating it digitally using any of your devices.
- The images below show an example of the final result of your donut board.

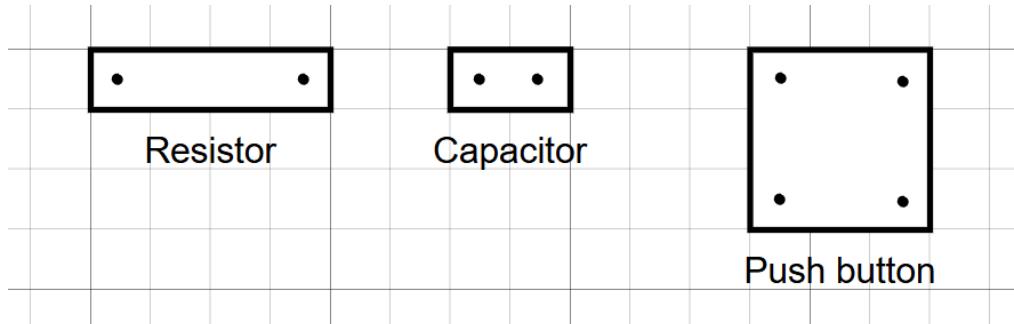


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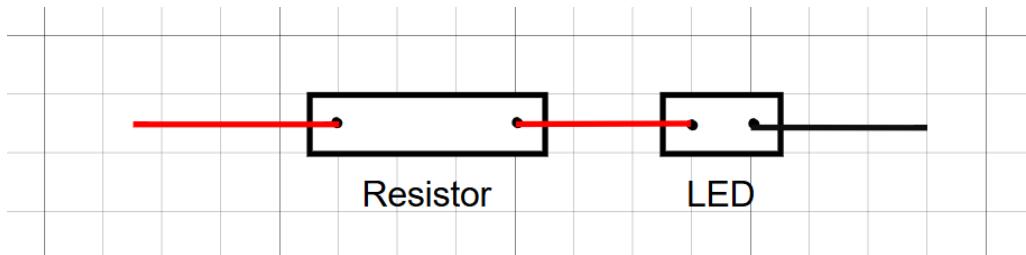


Hints:

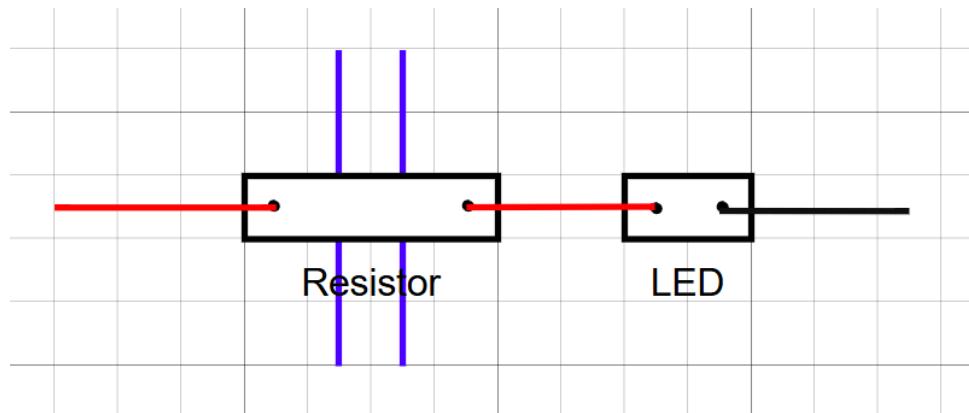
- The image below shows an example of how to represent some components on the graph paper based on their actual size and the number of holes they occupy.



- The image below also shows an example of connecting components using lines to represent soldering tracks.



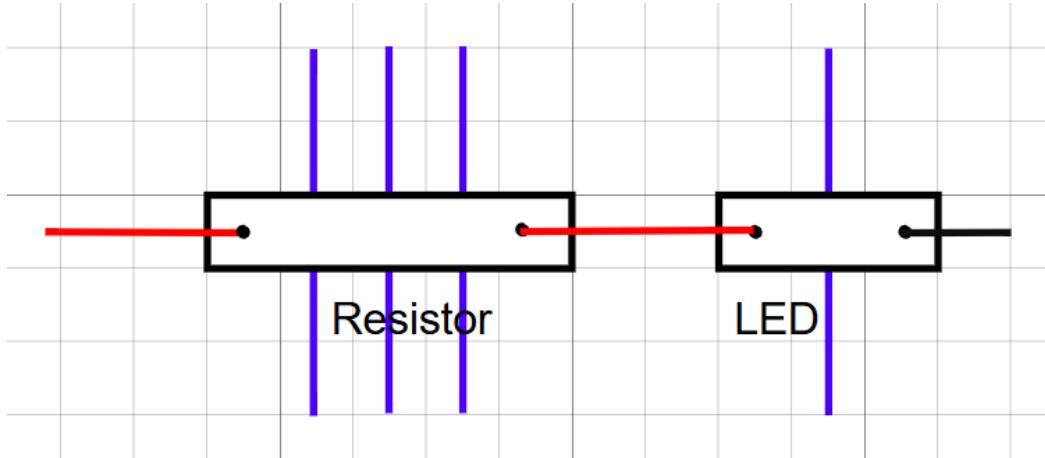
- You may use components as a bridge to allow tracks to pass under them to avoid intersections.



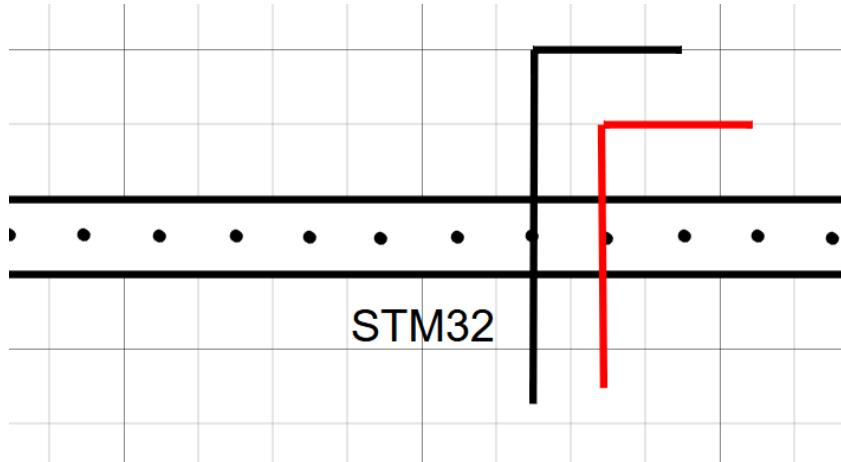
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- Flexible components such as resistors and LEDs can be stretched to allow more tracks to pass under them.



- Power supply or ground tracks can be routed through unused STM32 pins. However, if passing a 5V track, make sure the pin is 5V tolerant.



- If you are blocked by the tracks, you may use a jumper wire as a bridge above the soldering tracks. However, this will cost you the 2 extra tokens for the optional task.

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Optional Task:

Complete the main task without the need of using jumper wires (no tracks intersection).

Submission:

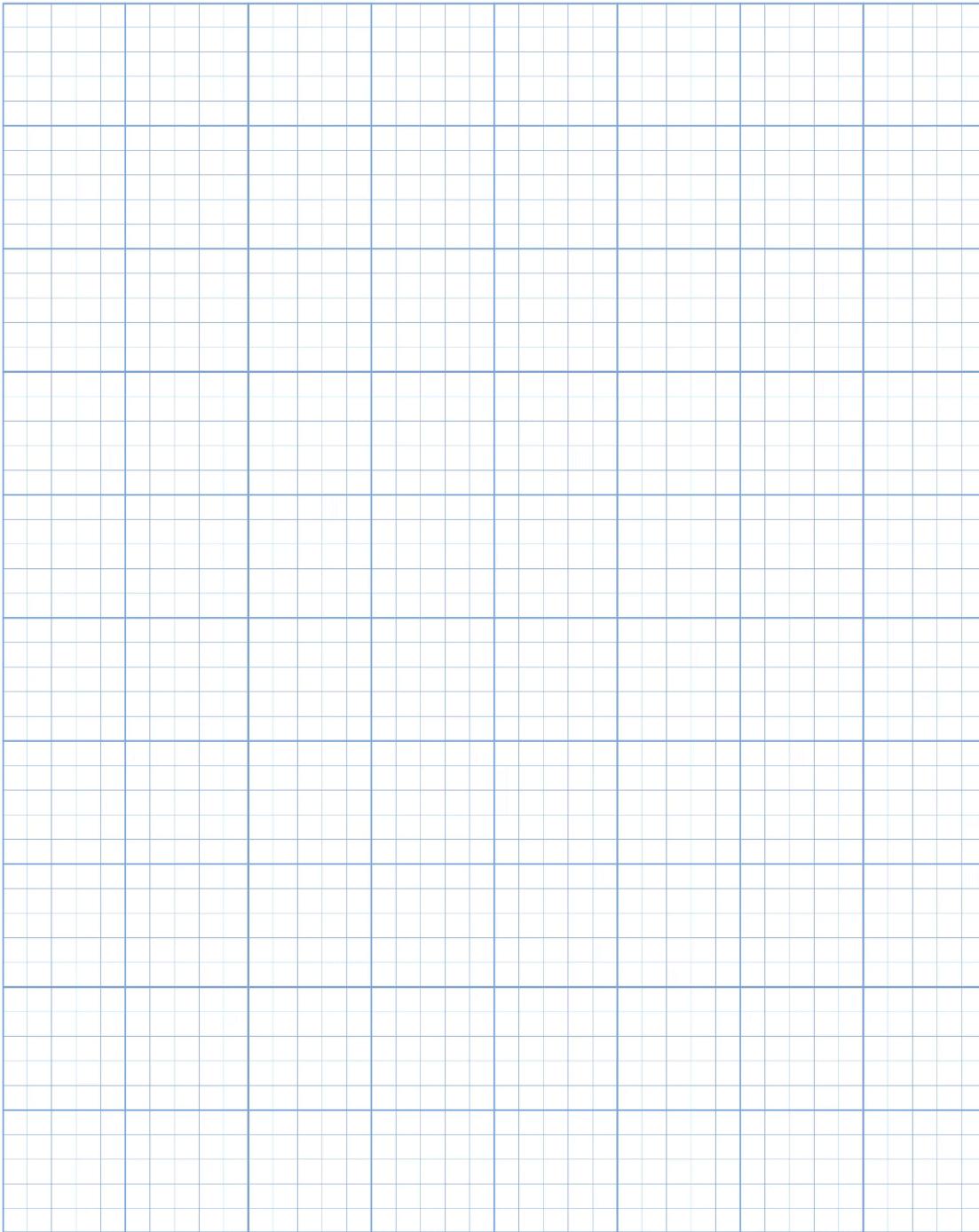
- Add a picture of your schematic to the PDF file.
- Name the PDF file with **task9_groupx_your_name**, (replace x with your group number).
- This task should be submitted before **8th Sept 10:00pm (Malaysia time), 05:00pm (Makkah time)**.

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ElectronicsTutorials

5mm Grid Printable
Graph Paper



ROBOTIC ARM WORKSHOP