

```

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<b>DAFTAR ISI</b>
<br />
<div style="text-align: left;">
<a href="#kondisi">1. Prosedur </a></div>
<div style="text-align: left;">
<a href="#gambar">2. Hardware dan Diagram Blok <br /></a></div>
<div style="text-align: left;">
<a href="#simulasi">3. Rangkaian Simulasi dan Prinsip Kerja </a></div>
<div style="text-align: left;">
<a href="#prinsip">4. Flowchart dan Listing Program </a>&nbsp;</div>
<div style="text-align: left;">
<a href="#analisa">5. Analisa </a>&nbsp;</div>
<div style="text-align: left;">
<a href="#video">6. Video Demo </a>&nbsp;</div>
<div style="text-align: left;">
<a href="#download">7. Download File </a>&nbsp;</div>
<div style="text-align: left;">

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<p style="text-align: center;"><span style="font-family: arial;"><b>Laporan Akhir 1 Modul
2</b></span></p><p style="text-align: center;"><span style="font-family:
arial;"><b>(Percobaan 8)</b></span></p><p style="text-align: justify;"></p><p><b
style="text-align: left;"><span style="font-family: Josefin Sans; font-size: medium;"><a
href="https://www.blogger.com/null" name="kondisi">1. Prosedur</a><a
href="#home">[Kembali]</a></span></b></p><p style="text-align: justify;"><span
style="background-color: white; text-align: start;"><span style="font-family: arial;">1. Rangkai
rangkai di proteus sesuai dengan kondisi percobaan.</span></span></p><p
style="text-align: justify;"><span style="background-color: white; text-align: start;"><span
style="font-family: arial;">2. Buat program untuk mikrokontroler STM32F103C8 di software
STM32 CubeIDE.</span></span></p><p style="text-align: justify;"><span
style="background-color: white; text-align: start;"><span style="font-family: arial;">3. Compile
program dalam format hex, lalu upload ke dalam mikrokontroler.</span></span></p><p
style="text-align: justify;"><span style="background-color: white; text-align: start;"><span
style="font-family: arial;">4. Jalankan simulasi rangkaian pada
proteus.</span></span></p><p style="text-align: justify;"><span style="background-color:
white; text-align: start;"><span style="font-family: arial;">5. Selesai.</span></span></p><div
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class="MsoListParagraph" style="text-align: justify; text-indent: -18.05pt;"><span

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style="font-family: arial; ">.</p></div></div><p style="text-align: justify; "></p><p><b style="text-align: left; ">2. Hardware dan Diagram Blok[Kembali]</p><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; ">1. Mikrokontroler STM32F103C8</p><div class="separator" style="background-color: white; clear: both; color: #7d7d7d; font-family: Arial, Tahoma, Helvetica, FreeSans, sans-serif; font-size: 13.2px; text-align: center; "></div><div class="separator" style="background-color: white; clear: both; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: center; "></div><div class="separator" style="background-color: white; clear: both; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: center; ">
</div><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; ">2. Touch Sensor</p><div class="separator" style="background-color: white; clear: both; color: #7d7d7d; font-family: times, "times new roman", serif; font-size: 13.2px; text-align: center; "></div><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; "></p><div class="separator" style="background-color: white; clear: both; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: center; "><img border="0" data-original-height="774" data-original

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9.png" style="border: 0px; height: inherit; max-width: 100%; width: 204"

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</div><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px;">5. Motor Stepper</p><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: center;"></p><div class="separator" style="background-color: white; clear: both; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: center;"></div><p>
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Potensiometer</p><div class="separator" style="background-color: white; clear:
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Roboto, sans-serif; font-size: 15px; text-align: center;">
</div><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px;"><b style="font-weight: bold;">Diagram Blok:</p><div class="separator" style="background-color: white; clear: both; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: center;"></div><div class="separator" style="clear: both; text-align: center;">
</div><p></p><p style="text-align: left;"></p><p style="text-align: justify;"><b style="text-align: left;">3. Rangkaian Simulasi dan Prinsip Kerja[Kembali]</p><p style="text-align: justify;"></p>
<p></p><p></p><p style="text-align: justify;"><b style="font-family: arial; text-align: left;">Prinsip Kerja:</p><p style="text-align: justify;"><b style="font-family: arial; text-align: left;"></p><p style="background-color: white; color: #757575; font-family: Roboto, sans-serif; font-size: 15px; text-align: justify;"></p><div class="separator" style="clear: both; text-align: center;"></div><div class="separator" style="clear: both; text-align: center;">
</div><div style="text-align: justify;">Pada rangkaian ini, mikrokontroler STM32F103C8 berfungsi sebagai pusat pengendali utama yang menerima input dari touch sensor dan potensiometer, serta mengontrol keluaran untuk motor stepper melalui driver ULN2003A.</div><div style="text-align: justify;">
</div><div style="text-align: justify;">Saat touch sensor tidak mendeteksi adanya sentuhan, mikrokontroler akan mengaktifkan motor stepper sehingga motor stepper berputar, sedangkan motor DC tidak digunakan dalam sistem ini. Pada kondisi ini, mikrokontroler membaca nilai analog dari potensiometer melalui pin ADC (PA0) dan menentukan arah gerak motor stepper. Jika nilai potensiometer rendah (< 2048), maka motor stepper akan berputar searah jarum jam (CW). Sebaliknya, jika nilai potensiometer tinggi (≥ 2048), maka motor stepper akan

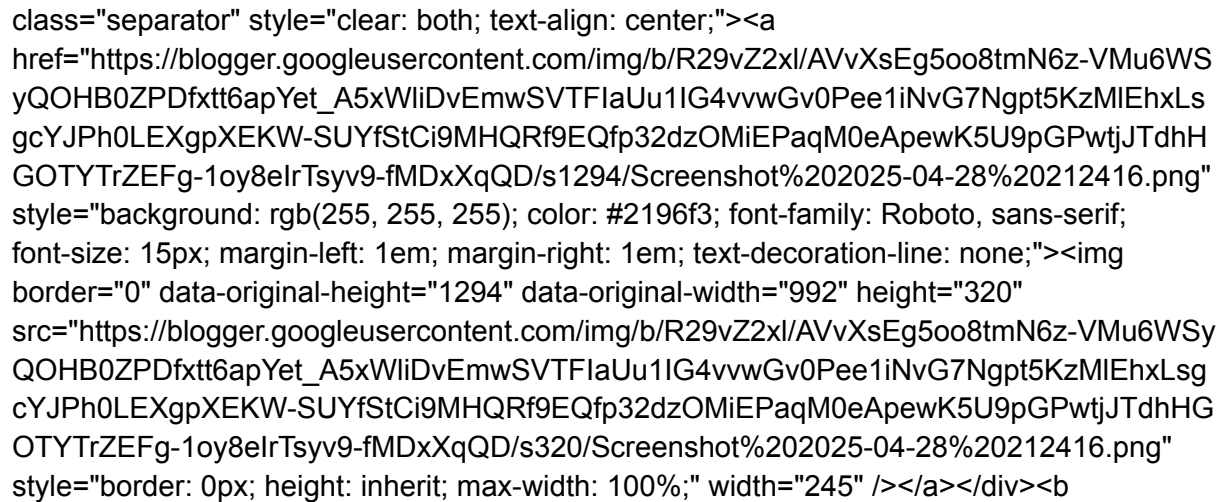
berputar berlawanan arah jarum jam (CCW).

Sebaliknya, jika terdapat sentuhan yang terdeteksi oleh touch sensor, maka motor stepper tidak akan bergerak. Dalam kondisi ini, semua output yang mengontrol motor stepper akan diset ke keadaan LOW sehingga motor stepper diam.

Pergerakan motor stepper diatur menggunakan pola aktivasi langkah (step sequence) yang telah ditentukan sebelumnya untuk arah searah dan berlawanan jarum jam. Keseluruhan sistem ini bekerja secara real-time di mana pembacaan sensor dan pengontrolan motor dilakukan secara terus-menerus dalam loop utama program. Dengan demikian, sistem memastikan bahwa motor stepper hanya aktif saat tidak ada sentuhan, serta perubahan kondisi pada sensor atau potensiometer langsung tercermin pada gerakan motor dengan respons cepat dan stabil.

<div style="text-align: justify;">4. Flowchart dan Listing Program</div>

<div style="text-align: justify;"><b style="font-family: arial; text-align: left;">Flowchart:</div>

The image is a flowchart diagram. It starts with a rectangular box containing the text "Flowchart". Below this box, there is a large rectangular area that is mostly blank, suggesting the flowchart steps were not rendered or are obscured. The diagram is enclosed in a thin black border.

<div style="text-align: justify;"><b style="font-family: arial; text-align: left;">Listing Program:</div>

<div style="text-align: justify;"><b style="font-family: "Times New Roman"; text-align: left;"><div style="margin-left: 1em; margin-right: 1em; text-align: center;"></div></div>

both; text-align: center;"><a
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New Roman"; text-align: left;"><span style="font-family: Josefin Sans; font-size:
medium;">6. Video Demo[Kembali]</p><p style="text-align:
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Roman"; text-align: left;"></p><div class="separator" style="clear: both;
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</div><p></p><p></p><p>
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Sans; font-size: medium;">7.
Download File[Kembali]</p><div><span
style="font-family: inherit;">Download HTML
[Download]</div><div>Download

Video Demo [[Download](https://drive.google.com/uc?export=download&id=1T0BG4cNx1B0pK7Vaopg219girJHg3EjD)]

[Download](https://docs.google.com/document/d/1-Fj3Z7TNBGU4RiNewZC6uaEycrHOKYFejsUCg1zOM1Y/edit?usp=sharing) Listing Program [[Download](https://drive.google.com/uc?export=download&id=1z0x3weKi29zr2cm2GOQcalhKXxSb5PKT)]

[Download](https://drive.google.com/uc?export=download&id=1z0x3weKi29zr2cm2GOQcalhKXxSb5PKT) Datasheet STM32F103C8

[Download](https://drive.google.com/uc?export=download&id=1XBLvcPIrPmjp6AySFt4UMqDviNcm6tx6) Datasheet Motor Stepper

[Download](https://drive.google.com/uc?export=download&id=1eK2zm9EOfcXg9XSOJUVcZsYpLIrmrgPu) Datasheet Sensor Touch

[Download](https://drive.google.com/uc?export=download&id=1OuvCQvGPRTB5ST_yG6wcfFIYbWg9s_x) Datasheet Motor DC

[Download](https://drive.google.com/uc?export=download&id=1-trG9BIHEPw1jem3ZxqyG5dKxIANdJFW) ULN2003A

[Download](https://drive.google.com/uc?export=download&id=1-trG9BIHEPw1jem3ZxqyG5dKxIANdJFW)

ULN2003A