

[TP Percobaan 1 Modul 3](#)

<br style="box-sizing: border-box;" />

[\[KEMBALI KE MENU SEBELUMNYA\]](https://putrib213024.blogspot.com/p/modul-3.html)

<b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">DAFTAR ISI<br style="box-sizing: border-box;" /><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">1. Foto Hardware dan Diagram Blok</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">2. Prosedur Percobaan</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">3. Rangkaian Simulasi dan Prinsip Kerja</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">4. Flowchart dan Listing Program</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">5. Kondisi</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">6. Video Simulasi</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"><a href="#L"

style="border: 0px; box-sizing: border-box; color: #597e00; margin: 0px; padding: 0px; text-decoration-line: none; transition: all 0.3s ease 0s;">7. Link Download</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"></div></div><h1 style="border: 0px; box-sizing: border-box; color: #757575; font-size: 21px; letter-spacing: 0px; line-height: 30px; margin: 0px 0px 7px; padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important; padding: 4px 0px 0px; position: relative; text-indent: -1px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">Percobaan I</h1><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"> Komunikasi UART Menggunakan Arduino</div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">
</div><h3 style="border: 0px; box-sizing: border-box; color: #757575; font-size: 19px; letter-spacing: 0px; line-height: 29px; margin: 0px 0px 7px; padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important; padding: 4px 0px 0px; position: relative; text-align: justify; text-indent: -1px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">1. Foto Hardware dan Diagram Blok [Kembali]</h3><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px; text-align: justify;"><div class="separator" style="clear: both; text-align: left;"> 1. Arduino Uno
</div><div class="separator" style="clear: both; text-align: center;"></div><div class="separator" style="clear: both; text-align: center;">
</div><div class="separator" style="clear: both; text-align: center;">
</div><div class="separator" style="clear: both; text-align: left;"> 2. LED</div>
<div class="separator" style="clear: both; text-align: center;"><a

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Opx; padding: 0px; text-align: left;"><div class="separator" style="clear: both; text-align: left;"> 4. Resistor
</div><div class="separator" style="clear: both; text-align: center;"></div><div class="separator" style="clear: both; text-align: center;">
</div><div class="separator" style="clear: both; text-align: left;"> 5. Power Supply
</div><div class="separator" style="clear: both; text-align: left;"><div class="separator" style="clear: both; text-align: center;"></div>

</div><div class="separator" style="clear: both; text-align: left;"> 6. Ground
</div><div class="separator" style="clear: both; text-align: left;"><div class="separator" style="clear: both; text-align: center;"></div>

</div>
<br style="box-sizing: border-box;" /></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px; text-align: justify;">Diagram

15px; margin: 0px; padding: 0px; text-align: justify;"><br style="box-sizing: border-box;" /><div class="separator" style="clear: both; text-align: center;"></div>
<div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: center;">
</div><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: center;">
</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><h3 style="border: 0px; box-sizing: border-box; color: #757575; font-size: 19px; letter-spacing: 0px; line-height: 29px; margin: 0px 0px 7px; padding-bottom: 0px; padding-left: 0px; padding-right: 0px; padding-top: 4px !important; padding: 4px 0px 0px; position: relative; text-align: justify; text-indent: -1px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">2. Prosedur Percobaan [Kembali]</h3><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">+ Rangkaian semua komponen </div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;">+ buat program di aplikasi arduino IDE</div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;">+ setelah selesai masukkan program ke arduino </div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;">+ jalankan program pada simulasi dan cobakan dengan modul</div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><br style="box-sizing: border-box;" /></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><a name="R"

style="border: 0px; box-sizing: border-box; color: #597e00; margin: 0px; padding: 0px; transition: all 0.3s ease 0s;">3. Rangkaian Simulasi dan Prinsip Kerja

[Kembali](#)

Prinsip Kerja

Pada rangkaian ini terdapat 2 arduino yaitu master dan slave. Master bertindak sebagai pengirim data, sementara slave sebagai penerima data dan pengendali LED. Keduanya berkomunikasi melalui UART (Universal Asynchronous Receiver Transmitter), antarmuka komunikasi serial yang memungkinkan dua perangkat untuk berkomunikasi satu sama lain.

Di pihak master, data yang dikirim adalah representasi digital dari keadaan switch. Jika 7 switch aktif, data yang dikirim adalah karakter 'A', sedangkan jika 4 switch aktif, data yang dikirim adalah karakter 'B'. Data ini dikirim melalui pin TX (transmit) pada master menuju pin RX (receive) pada slave lewat jalur komunikasi serial.

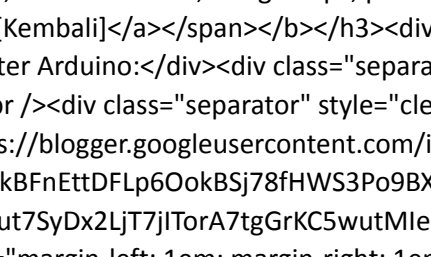
Di pihak slave, data yang diterima dari master melalui pin RX diubah menjadi nilai digital 1 atau 0. Nilai inilah yang kemudian menentukan LED mana yang akan menyala. Pada program diatur bahwa jika pesan yang diterima adalah 'A', maka 1 LED menyala yaitu LED 6 yang terhubung pada pin 2.

Dengan menggunakan `<span style="color: #444444;">` jika pesan yang diterima adalah 'B', maka 2 LED menyala yaitu LED 7 dan 8 yang terhubung pada pin 8 dan pin 9.

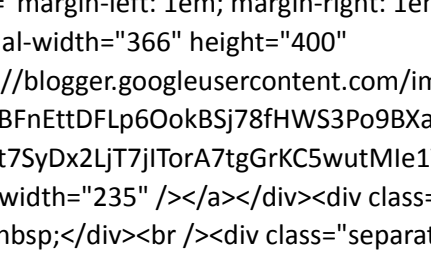
Dengan demikian, rangkaian ini memungkinkan master untuk mengontrol LED pada slave dari jarak jauh. Master mengirimkan instruksi digital melalui UART, dan slave menerjemahkan instruksi tersebut untuk menyalakan LED sesuai dengan pola yang telah ditentukan.

Flowchart dan Listing Program

Master Arduino:



Slave Arduino:



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-h400/1.2.png" width="229" /></a></div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><span style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;">Listing Program:</div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><br style="box-sizing: border-box;" /></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><b>Master</b></div><div style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px;"><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">//MASTER</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS1 2 // didefinisikan sebagai pin 2</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS2 3</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS3 4</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS4 5</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS5 6</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS6 7</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS7 8</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">#define DS8 9</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">void setup()&nbsp;</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<Serial.begin(9600); // Mulai komunikasi serial dengan baud rate 9600.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS1, INPUT); // Atur pin DS1 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS2, INPUT); // Atur pin DS2 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS3, INPUT); // Atur pin DS3 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS4, INPUT); // Atur pin DS4 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS5, INPUT); // Atur pin DS5 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS6, INPUT); // Atur pin DS6 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS7, INPUT); // Atur pin DS7 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<pinMode(DS8, INPUT); // Atur pin DS8 sebagai input.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"></div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">void loop()</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"></div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<int count = 0; // Inisialisasi variabel count dengan nilai 0.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<for (int pin = DS1; pin &lt;= DS8; pin++) {</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<&nbsp;&nbsp;<count += digitalRead(pin); // Tambahkan nilai pembacaan digital dari setiap pin ke variabel count.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<&nbsp;</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<if (count == 7) // Jika jumlah pembacaan digital adalah 7,</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;<Serial.write('A'); // Kirim karakter 'A' melalui komunikasi serial.</div><div style="border:

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Jika pesan yang diterima adalah 'B'</div><div style="border: 0px; box-sizing: border-box; margin: 0px;
padding: 0px;">&nbsp;&nbsp;&nbsp;</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[6], 1); // Nyalakan LED keempat (pin 8).</div><div style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[7], 1); // Nyalakan LED
kedelapan (pin 9).</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;">&nbsp;&nbsp;&nbsp;</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;"></div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;">delay(20); //
Tunda selama 20 milidetik.</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[0], 0); // Matikan LED pertama (pin 2).</div><div style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[1], 0); // Matikan LED kedua
(pin 3).</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[2], 0); // Matikan LED ketiga (pin 4).</div><div style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[3], 0); // Matikan LED
keempat (pin 5).</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[4], 0); // Matikan LED kelima (pin 6).</div><div style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[5], 0); // Matikan LED
keenam (pin 7).</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[6], 0); // Matikan LED ketujuh (pin 8).</div><div style="border: 0px;
box-sizing: border-box; margin: 0px; padding: 0px;">&nbsp;&nbsp;&nbsp;digitalWrite(led[7], 0); // Matikan LED
kedelapan (pin 9).</div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;"></div><div style="border: 0px; box-sizing: border-box; margin: 0px; padding:
0px;"></div></div><p style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px;
margin: 0px 0px 15px; padding: 0px; text-align: justify;"><b style="border: 0px; box-sizing: border-box;
margin: 0px; padding: 0px; text-align: left;"><span style="border: 0px; box-sizing: border-box; font-size:
medium; margin: 0px; padding: 0px;"><span style="border: 0px; box-sizing: border-box; margin: 0px;
padding: 0px;"><a name="K" style="border: 0px; box-sizing: border-box; color: #597e00; margin: 0px;
padding: 0px; transition: all 0.3s ease 0s;"><br /></a></span></span></b></p><p style="border: 0px;
box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px 0px 15px; padding: 0px; text-align:
justify;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;"><span
style="border: 0px; box-sizing: border-box; font-size: medium; margin: 0px; padding: 0px;"><span
style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><a name="K" style="border: 0px;
box-sizing: border-box; color: #597e00; margin: 0px; padding: 0px; transition: all 0.3s ease 0s;">5.
Kondisi</a></span>&nbsp;&nbsp;&nbsp;<a href="#home" style="border: 0px; box-sizing: border-box; color: #597e00;
margin: 0px; padding: 0px; text-decoration-line: none; transition: all 0.3s ease
0s;">[Kembali]</a></span></b></p><p style="border: 0px; box-sizing: border-box; margin: 0px 0px 15px;
padding: 0px; text-align: justify;"><span style="border: 0px; box-sizing: border-box; color: #444444;
font-size: 15px; margin: 0px; padding: 0px; text-align: left;">&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;</span><span
style="color: #444444;"><span style="font-size: 15px;">Pada kondisi 2 dari percobaan
1,&nbsp;&nbsp;&nbsp;</span></span><span style="color: #444444;"><span style="font-size: 15px;">Semua Switch
dalam kondisi Pull-down, 7 switch mengaktifkan 1 led sementara 4 switch mengaktifkan 2
led.</span></span></p><div style="text-align: justify;"><br /></div><div style="border: 0px; box-sizing:
border-box; color: #444444; font-size: 15px; margin: 0px; padding: 0px; text-align:
-webkit-center;"><span style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align:
left;"><span style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><span

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<p style="border: 0px; box-sizing: border-box; margin: 0px 0px 15px; padding: 0px; text-align: justify;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">6. Video Simulasi [Kembali]</p><div class="separator" style="clear: both; text-align: center;"><object class="BLOG_video_class" contentid="d54321772dfa49e1" height="266" id="BLOG_video-d54321772dfa49e1" width="320"></object></div><div class="separator" style="border: 0px; box-sizing: border-box; clear: both; margin: 0px; padding: 0px; text-align: center;"><br style="box-sizing: border-box;" /></div><p style="border: 0px; box-sizing: border-box; margin: 0px 0px 15px; padding: 0px;"></p><div style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px;"><div style="border: 0px; box-sizing: border-box; font-weight: 400; margin: 0px; padding: 0px; text-align: -webkit-center;"><p style="border: 0px; box-sizing: border-box; margin: 0px 0px 1px; padding: 0px; text-align: justify;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: left;">7. Link Download [Kembali]</p></div></div></div></div><p style="border: 0px; box-sizing: border-box; color: #444444; font-size: 15px; margin: 0px 0px 15px; padding: 0px; text-align: left;"></p><ul style="text-align: left;"><b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;">HTML→ klik disiniRangkaian<b style="border: 0px; box-sizing: border-box; margin: 0px; padding: 0px; text-align: justify;"> → klik disiniVideo Percobaan→ <a

[>klik disiniDatasheet Arduino→ klik disiniDatasheet LED→ klik disiniDatasheet Push Button→ <a href="https://drive.google.com/file/d/1jn3Q-YhN3uoPhua9KtTU-gOzoqye5WBC/view?usp=sharing" style="border: 0px; box-sizing: border-box; color: #597e00; font-family: verdana; font-feature-settings: inherit; font-kerning: inherit; font-optical-sizing: inherit; font-size: inherit; font-stretch: inherit; font-style: inherit; font-variant: inherit; font-variation-settings: inherit; font-weight: inherit; line-height: inherit; margin: 0px; outline: none; padding: 0px; text-align: justify; text-decoration-line: none; transition: all 0.3s](https://drive.google.com/file/d/1ydCXzcPPC3G0jU0JGTI0UXtu96T941to/view?usp=sharing)

[klik disini](#)

Datasheet Resistor

<https://drive.google.com/file/d/1TyEtNwJVBg8KMRLGyJ9g8E26GUDXf3vf/view?usp=sharing>

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