

5. HTML + JavaScript Client

```
<!DOCTYPE html>

<html lang="en">

  <head>

    <meta charset="UTF-8" />

    <title>Robotic Arm Web Control</title>

    <style>
body { font-family: sans-serif; margin: 2rem; }
label { display: block; margin-top: 1rem; }
input, button { margin-left: .5rem; }
.telemetry { margin-top: 2rem; }
    </style>

  </head>

  <body>

    <h1>Hydraulic Arm Web Interface</h1>

    <div id="controls">

      <label>

        Shoulder (°):

        <input type="number" id="shoulder" min="0" max="180"
          value="90" />

      </label>

    </div>

  </body>

</html>
```

<label>

Elbow (°):

<input type="number" id="elbow" min="0" max="180"
value="90" />

</label>

<label>

Gripper (°):

<input type="number" id="grripper" min="0" max="180"
value="90" />

</label>

<label>

Valve PWM:

<input type="number" id="valve" min="0" max="255"
value="0" />

</label>

<button id="sendBtn">Send Command</button>

</div>

<div class="telemetry">

<h2>Sensor Readings</h2>

<p>Distance: --- cm</p>

<p>Pressure: --- kPa</p>

<p>Temperature: --- °C</p>

</div>

<script>

```
    async function fetchTelemetry() {  
        try {  
            const res = await fetch('/api/telemetry');  
            const data = await res.json();  
            document.getElementById('dist').textContent =  
                data.dist.toFixed(1);  
            document.getElementById('press').textContent =  
                data.press.toFixed(1);  
            document.getElementById('temp').textContent =  
                data.temp.toFixed(1);  
        } catch { /* ignore network errors */ }  
    }  
  
    async function sendCommand() {  
        const cmd = {  
            shoulder: +document.getElementById('shoulder').value,  
            elbow:   +document.getElementById('elbow').value,  
            gripper: +document.getElementById('gripper').value,  
            valve:   +document.getElementById('valve').value  
        };  
    }  
}
```

```
        await fetch('/api/command', {  
            method: 'POST',  
headers: { 'Content-Type': 'application/json' },  
            body: JSON.stringify(cmd)  
        });  
    }  
}
```

```
document.getElementById('sendBtn')  
    .addEventListener('click', sendCommand);
```

```
// Poll telemetry every 500 ms  
setInterval(fetchTelemetry, 500);  
fetchTelemetry();
```

```
</script>
```

```
</body>
```

```
</html>
```