TFB2093 Internet-of-Things

Practical 06 — Assignment (TinkerCAD-Only, 3 Tasks)

> **Goal:** Practice analog sensing/actuation in **TinkerCAD Circuits (Arduino Uno)**.
> **Submit:** One short PDF + TinkerCAD share links.

Task 1 — Potentiometer Read & Plot

Build: Pot (10 kΩ) → A0 (5V, GND, A0).
Code: Print **raw (0–1023)** and **percent (0–100%)**.
Plot: Show live signal in **Serial Plotter**.
Deliverables: - TinkerCAD link
- 1 Serial Monitor screenshot (min/mid/max) + 1 Serial Plotter screenshot
- **Reflection (2–3 lines):** What does mapping do and why is it useful?

Task 2 — LDR Voltage Divider with Thresholds

Build: 5V — LDR — **A1** — 10 kΩ — GND (A1 is the mid-node).
Code: Print raw light level and classify **Bright / Normal / Dark** with simple thresholds.
Deliverables: - TinkerCAD link
- 3 screenshots (bright, normal, dark)
- **Reflection (2–3 lines):** One limitation of LDRs and when you'd use a different sensor.

Task 3 — Servo from Potentiometer (Smooth Motion)

Build: Servo signal → **D9**, +5V, GND; Pot on A0.
Code: Map A0 to **0–180°** and add simple **rate-limit/deadband** to reduce jitter.
Deliverables: - TinkerCAD link
- 1 screenshot (servo wiring + running)
- **Reflection (2–3 lines):** Trade-off between smoothness and responsiveness.

Submission Checklist

- [ ] PDF named `TFB2093_P06_<ID>_<Name>.pdf`
- [ ] TinkerCAD **share links** (viewable without login)
- [ ] Short reflections included under each task
- [ ] Key code snippets pasted (or appendix)

Due: 12 Nov 2025, 23:59 (Asia/Kuala_Lumpur). **Integrity:** Work individually; links must be your own circuits.

Tip: If plots look noisy, try a small moving average (N≈10) or add a 20–50 ms delay in `loop()`.