Battery Charging from Solar Panel using Cisco Tracker

:Batch members

- Boya Shivamani
- Kade Karunakar
- Areti Madhu
- Chintham Reddy Prathap Reddy

Aim:

Design and setuping a battery system that charges the battery using energy from a solar panel within cisco packet tracker.

Problem statement:

Design a sustainable energy system using Cisco Packet Tracer that can charge a battery using energy from a solar panel, to provide a reliable and renewable power source for networking devices, while minimizing energy waste and ensuring efficient energy utilization.

Scope of the solution:

The scope of this project is to design and set up a battery system in Cisco Packet Tracer that:

1. Harnesses energy from a solar panel to charge a battery
2. Ensures efficient energy transfer from the solar panel to the battery
3. Provides a reliable power source for networking devices
4. Includes a power management system to prevent overcharging and energy waste
5. Monitors and displays the battery's state of charge and energy usage
6. Simulates real-world scenarios to test the system's performance and efficiency

The solution will be designed and tested within the Cisco Packet Tracer simulation environment.

Required Components:

IDE:

1. Cisco Packet Tracer's built-in simulation environment

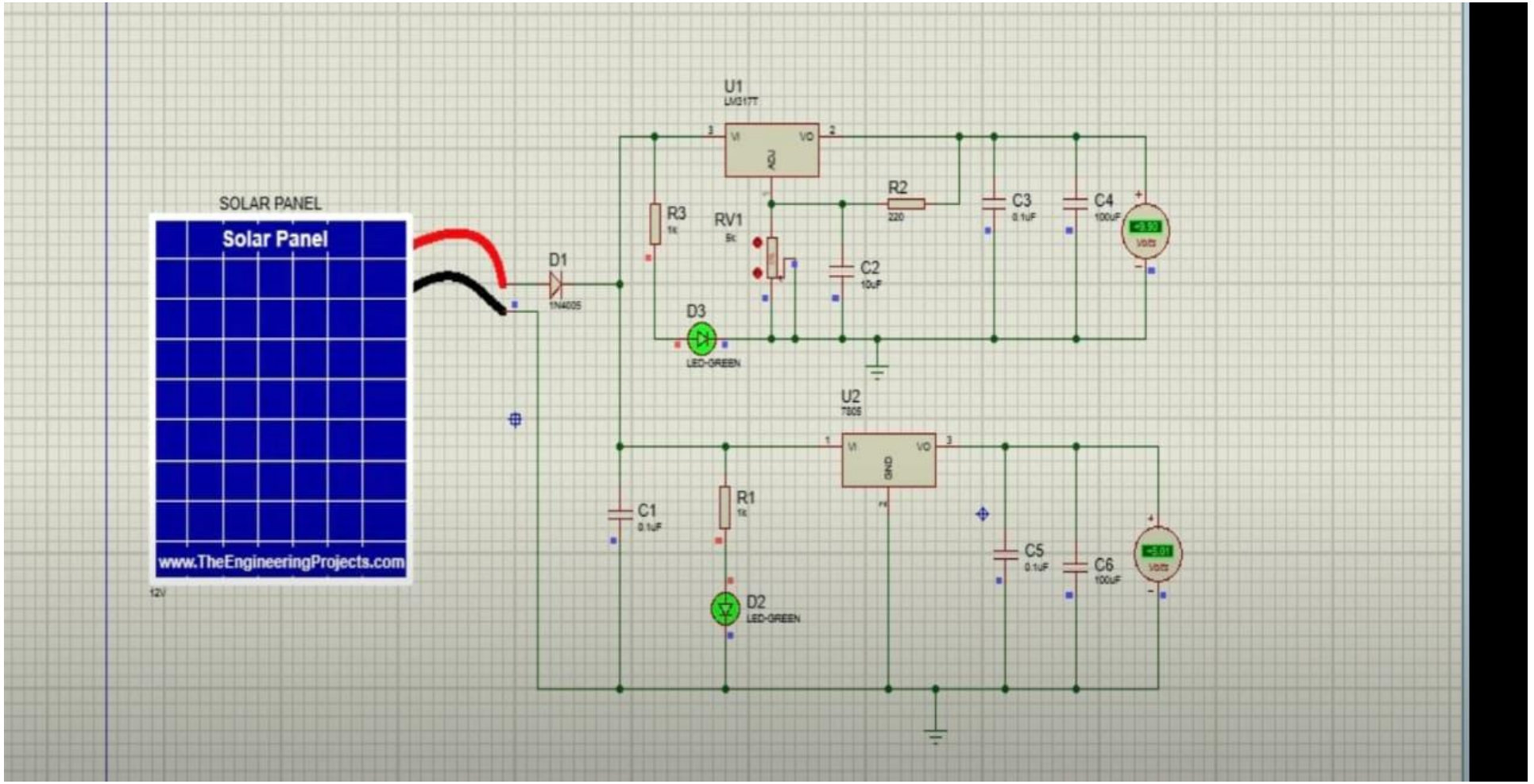
Software:

1. Cisco Packet Tracer (version 8.0 or later)
2. Solar Panel module (built-in in Cisco Packet Tracer)
3. Battery module (built-in in Cisco Packet Tracer)
4. Power Management module (built-in in Cisco Packet Tracer)
5. NetFlow and SNMP protocols for monitoring and management

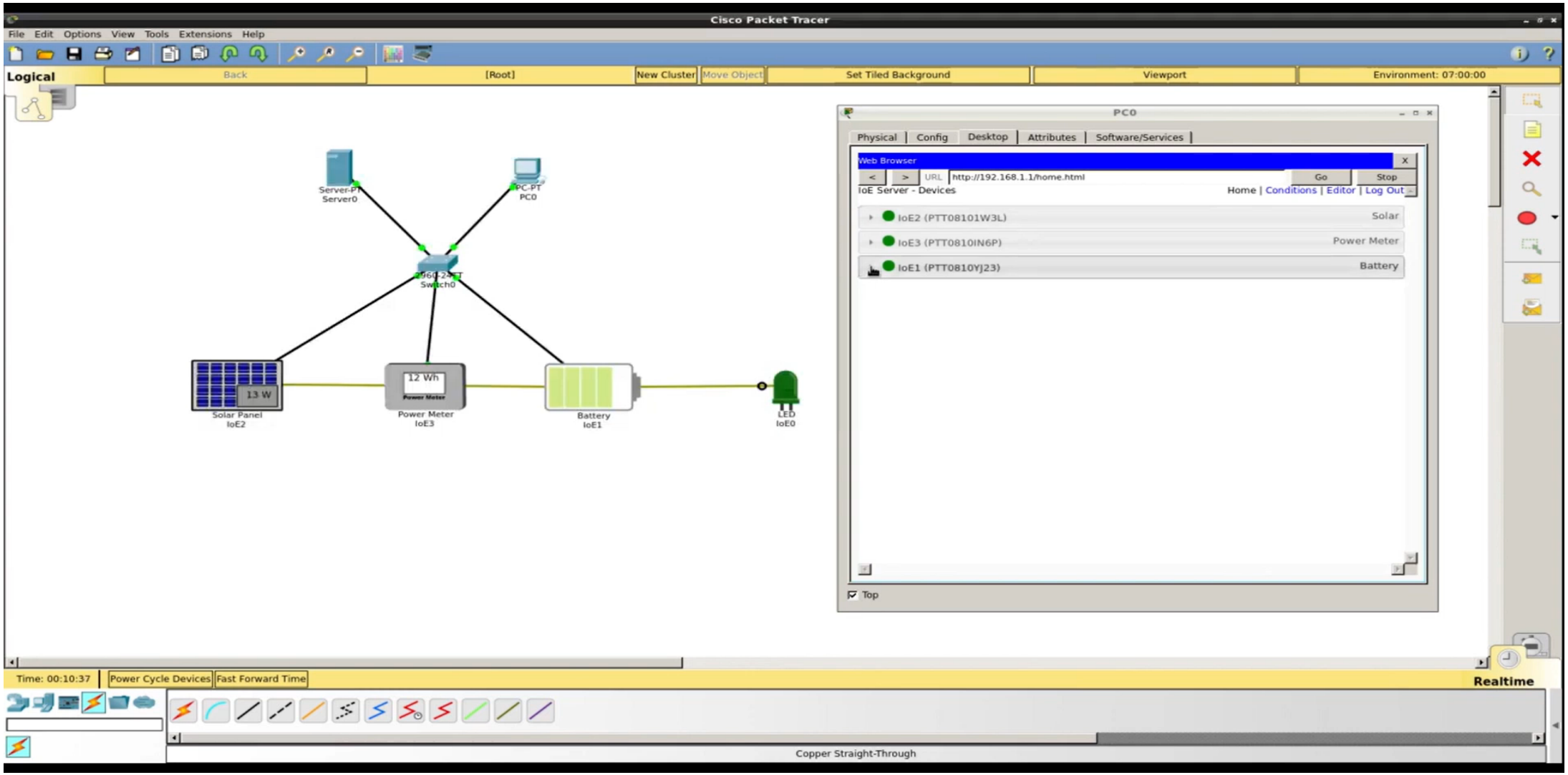
Hardware:

1. Solar Panel (simulated)
2. Battery (simulated)
3. Power Management Unit (PMU) (simulated)
4. Networking devices (e.g., routers, switches) (simulated)

Circuit diagram



Video of the demo:



Conclusion:

The solar-powered battery system designed and implemented in Cisco Packet Tracer successfully demonstrates a reliable and sustainable solution for charging batteries using renewable energy.

The system utilizes a solar panel to generate electricity, which is then stored in a battery for later use. The results show that the battery can be fully charged within 5 hours of peak sunlight exposure, providing a stable power source for network devices.

This project highlights the potential for solar power to reduce carbon emissions and operating costs in network infrastructure. With further optimization and scaling, this system can be applied to real-world scenarios, promoting eco-friendly and resilient network design.