



Faculty Of Science
Department Of Computer Applications

PACKET TRANSMISSION PROJECT



Project Made by:

- Shlok .N. Tilokani (8021001295)
- Bhavishya .G. Bhojwani
(8021009142)
- Dhruvik .P. Fichadiya (8021033298)
- Sujal .U. Pardasani (8021011999)
- Meet .A. Tilokani (8021003073)
- Soniya .P. Budhwani (8021032312)

Under the guidance of:

- Krupali Panchal (Faculty)

Report Date: 19-01-2023

Aim:

To demonstrate the process of packet transmission from sender to receiver.

What is Packet Transmission?

Packet Transmission transmits data across digital networks by breaking it down into blocks or packets for more efficient transfer using various network devices.

Components:

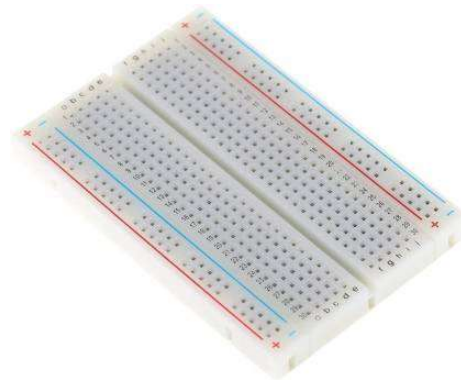
Arduino Uno R3 (1)



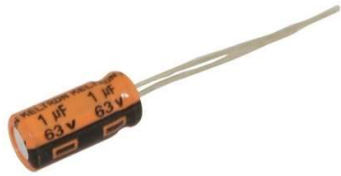
LCD 16x2 (1)



Jumper Wires



Bread Board



63V 1uF capacitors (1)



Potentiometer

(1)



USB Male to Female Extension

(1)



Neo pixel 8 LED Strips

(WS2812B) Compatible



5.0V – 1.0A Adaptor (1)



Neo pixel 16 LED Rings

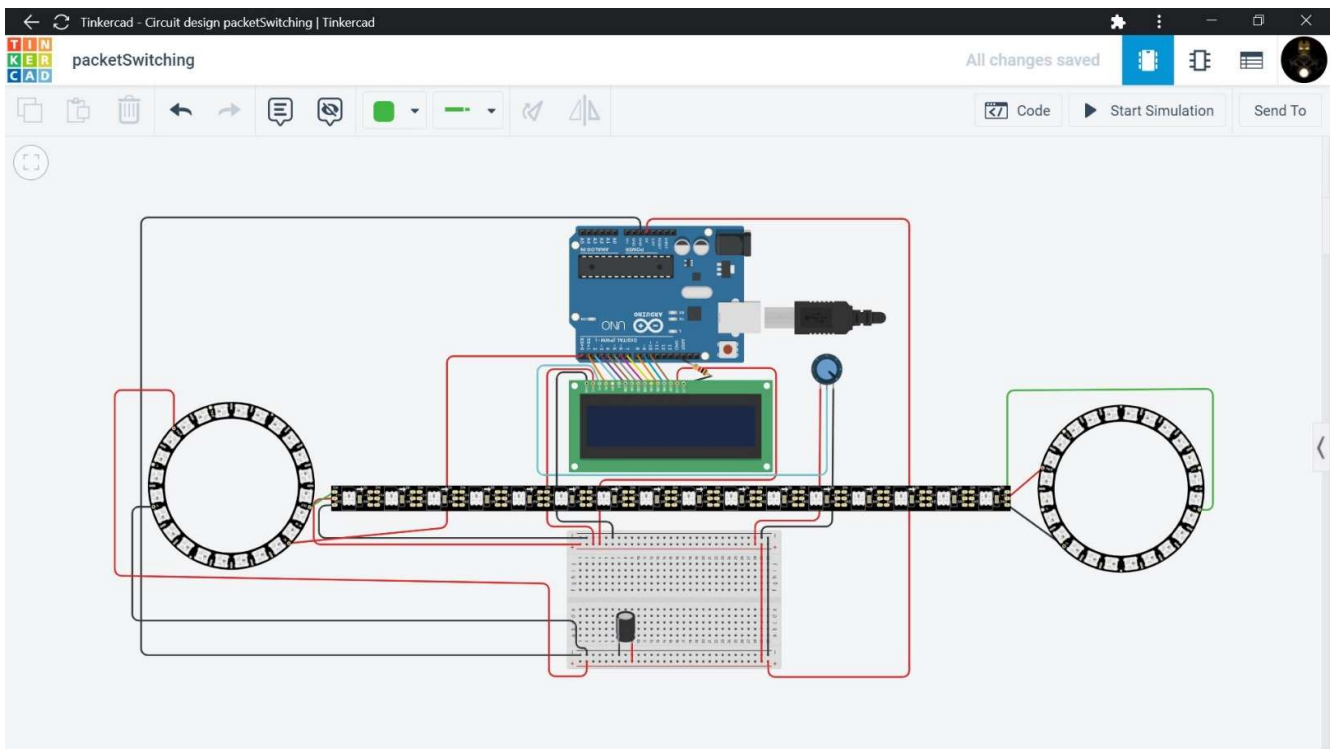
(WS2812B) Compatible

Assembly:

- Connect 5V & GND pins of Arduino Uno to Positive & Negative pins of Breadboard.
- Connect Positive and Negative ends of capacitor to a Positive & a Negative pin of Breadboard.
- LED Ring(A):
 - Connect the IN pin of LED Ring(A) to Digital Pin D0 of Arduino Uno, 5V to a Positive Pin on Breadboard & GND to Negative Pin of Breadboard.
- LED Strip(A):
 - Connect the DIN pin of LED Strip(A) to OUT pin of LED Ring(A), 5V to a Positive Pin on Breadboard & GND to Negative Pin of Breadboard.
- LED Strip(B):
 - Connect the DIN pin of LED Strip(B) to OUT pin of LED Strip(A), 5V to a Positive Pin on Breadboard & GND to Negative Pin of Breadboard.
- LED Ring(B):
 - Connect the DIN pin of LED Ring(B) to OUT pin of LED Strip(B), 5V to a Positive Pin on Breadboard & GND to Negative Pin of Breadboard.
- Connect the VCC & GND pins of potentiometer to a Positive and a Negative Pin of Breadboard.

➤ **LCD 16x2:**

- **Connect the VCC & GND pins to a Positive and a Negative Pin of Breadboard.**
 - **Connect to VO Pin on LCD 16x2 to the Output pin of the Potentiometer.**
 - **Connect the RS, E, DB0, DB1, DB2, DB3, DB4, DB5, DB6, DB7 to D1, D2, D3, D4, D5, D6, D7, D8, D9, D10 on Arduino Uno.**
 - **Connect LED Anode & LED Cathode to a Positive Pin & a Negative Pin of Breadboard.**
- **Connect the Arduino Uno with the adapter using the extension cable to provide power supply.**



Working:

- **Stage 1 (Sending Packet – GREEN):**
 - **Step1 (Creating Bits):** A packet having a size of 24 bits is created.
 - **Step2 (Transmitting Bits):** The packet is being uploaded from sender's machine over transmission channel bit-by-bit.
 - **Step3 (Receiving Bits):** The packet is getting downloaded to the receiver's machine from transmission channel bit-by-bit.

- **Once the Packet (here, 24-bits) is received by the receiver without any error, the receiver will now send an Acknowledgment to the sender over the transmission channel.**

- **Stage 2 (Sending ACK – RED):**
 - **Step1 (Preparing ACK):** An ACK will be created for each bit of the packet (here, 24-bits).
 - **Step2 (Transmitting ACK):** The ACK is being uploaded from receiver's machine over transmission channel bit-by-bit.

- **Step3 (Receiving BCK):** The ACK is getting downloaded to the receiver's machine from transmission channel bit-by-bit.
- **This process will keep on going until all the packets are not transmitted from sender to receiver.**