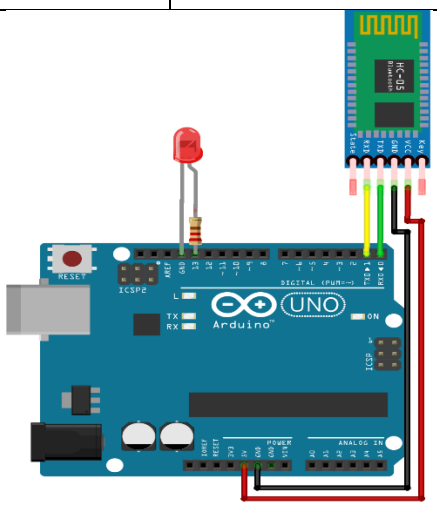
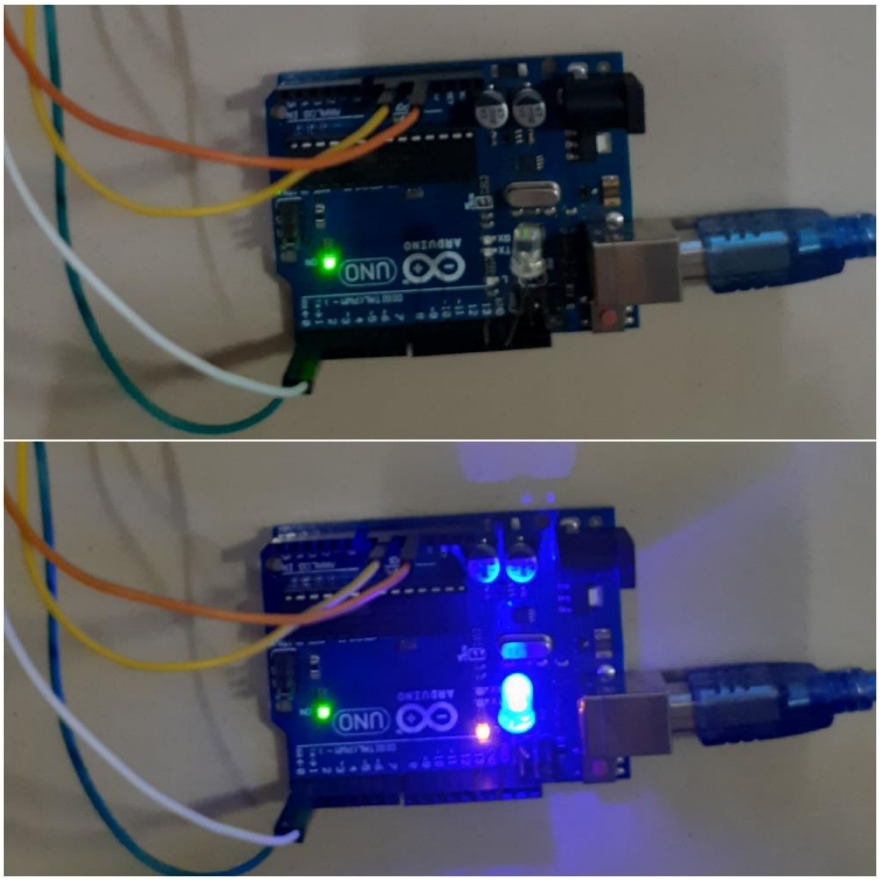
Department of Electronics Engineering
Digital Communication Micro Project Report

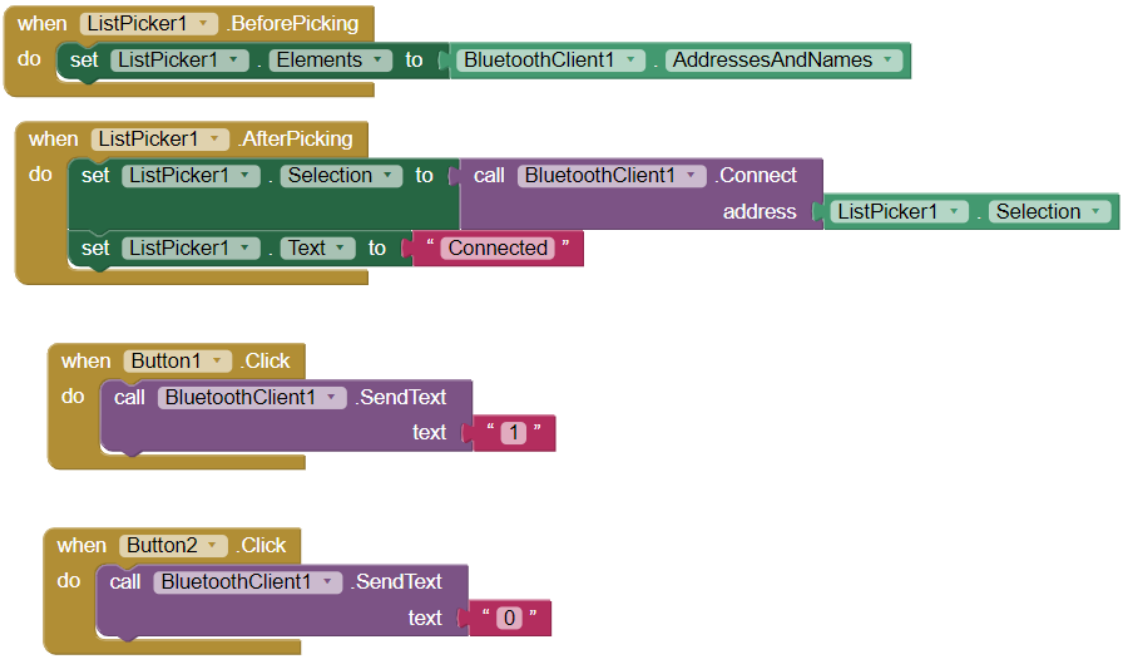
Semester	S.E. Semester IV– Electronics Engineering
Subject	Digital Communication Laboratory
Laboratory Professor	Prof. Rakshak Sood

Title	Wireless LED Control using Bluetooth Module and Mobile App.	
Requirements	1. Arduino Uno 2. HC-05 Bluetooth Module 3. LED 4. Jumper Wires	1. MIT App Inventor
Circuit		
Purpose	The purpose of this project is to create a wireless LED control system that utilizes the HC-05 Bluetooth module and a mobile app built with MIT App Inventor. By developing this system, the project aims to showcase the potential of wireless communication technology in enabling remote control of devices. The system allows users to turn the LED on and off using the mobile app, providing a practical example of how Bluetooth technology	

	can be harnessed to enhance convenience and connectivity in various applications. This project not only demonstrates the integration of hardware and software components but also serves as an educational tool for learning about wireless communication, Bluetooth protocols, and mobile app development
Applications	Home Lighting Control: The project can be integrated into a larger home automation system where users can control various lighting fixtures, including LEDs, throughout their home using the mobile app. This offers several benefits: 1. Convenience: Users can turn lights on or off from anywhere in the house, eliminating the need to physically walk to switches. 2. Energy Efficiency: Lights can be turned off remotely when not needed, reducing energy consumption and utility bills. 3. Security: Users can remotely turn on lights to give the appearance that someone is home, enhancing security and deterring potential intruders. 4. Customization: Users can create lighting schedules or scenes for different occasions, such as movie nights, dinner parties, or bedtime routines. 5. Integration: The project could be expanded to integrate with other home automation devices, such as smart thermostats, smart locks, and smart speakers, providing a comprehensive smart home experience. 6. Remote Monitoring: The system could include status indicators, showing users whether lights are currently on or off in different rooms, even when they're away from home. 7. Guest Control: Guests can use the mobile app to control the lights without needing to familiarize themselves with the physical switches. Overall, integrating the wireless LED control project into a home automation system can significantly enhance the convenience, energy efficiency, security, and customization options of the home's lighting environment.

Screenshots





Conclusion	In summary, the wireless LED control system, utilizing HC-05 Bluetooth module and MIT App Inventor, showcases the potential of wireless communication for practical applications. With remote LED control as its foundation, the project highlights seamless hardware-software integration, offering convenience and energy efficiency. Its adaptability to home automation underscores its educational and innovative value, paving the way for broader smart home applications.
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