Name of the Students:	Roll No.	Date:

Experiment No. – 06

Title: Interfacing Arduino to Bluetooth Module

Hardware Requirements:

- Bluetooth module (HC-05 or HC-06)
- Arduino Uno (or compatible board)
- Jumper wires
- Breadboard (optional)
- Smartphone with Bluetooth capability
- Arduino IDE installed on your computer

Theory:

Arduino:

An Arduino board consists of an Atmel 8-bit AVR microcontroller with complementary components that facilitate programming and incorporation into other circuits. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board.

Fig.1 Arduino UNO

Specification of Arduino Uno:

- Microcontroller :ATmega328P
- Operating Voltage :5V
- Input Voltage (recommended) :7-12V
- Input Voltage (limit) :6-20V
- Digital I/O Pins :14 (of which 6 provide PWM output)
- Analog Input Pins 6
- DC Current per I/O Pin :20 mA
- DC Current for 3.3V Pin :50 mA
- Flash Memory :32 KB (ATmega328P) of which 0.5 KB used by bootloader

- SRAM :2 KB (ATmega328P)
- EEPROM :1 KB (ATmega328P)
- Clock Speed :16 MHz
- LED_BUILTIN 13

Procedure

1. Circuit Connections

Connect the Bluetooth Module to the Arduino:

Bluetooth Module	Arduino Pin
VCC	5V
GND	GND
TX	RX (Pin 0)
RX	TX (Pin 1)

Use jumper wires to connect the Bluetooth module to the Arduino as indicated.

2. Install Bluetooth Terminal App

Download a Bluetooth terminal app on your smartphone (e.g., Bluetooth Terminal, Serial Bluetooth Terminal).

3. Code Upload

Open the Arduino IDE and write the following code to establish communication:

4. Upload the Code

Connect your Arduino to the computer using a USB cable.

Select the correct board and port in the Arduino IDE.

Upload the code.

5. Pair the Bluetooth Module

On your smartphone, enable Bluetooth and search for available devices.

Select the Bluetooth module (usually named “HC-05” or “HC-06”) and pair it using the default PIN (`1234` or `0000`).

6. Connect the Bluetooth Terminal App

Open the Bluetooth terminal app on your smartphone.

Connect to the paired Bluetooth module.

Testing

1. **Sending Data:**
   - In the Bluetooth terminal app, type a message or a character and send it.
   - Observe the Serial Monitor in the Arduino IDE for the received message.
2. **Receiving Data:**
   - Type a message in the Serial Monitor and send it.
   - Check the Bluetooth terminal app for the message.

Conclusion: