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DEPARTMENT: ELECTRICAL AND ELECTRONICS ENGINEERING
OPTION: ELECTRICAL TECHNOLOGY
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SEMESTER I LEVEL: III
MODULE: PROGRAMABLE ICs WORK SHOP

Topic

Turn on a servo motor using Bluetooth module

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ABSTRACT

Remote control is necessary to control household appliances, office equipment companies' device from a distance by turning them on/off, or control them. This control is designed using Bluetooth connected to the circuit using a servo motor circuit for curtain control connected to the Arduino UNO microcontroller as a minimum system.[1]

The Arduino microcontroller is used to process command data from the input of the Android-based Bluetooth signal receiver used as the remote-control button and rotate servo motor. This hardware is designed using the Arduino UNO module servo motor. [1]

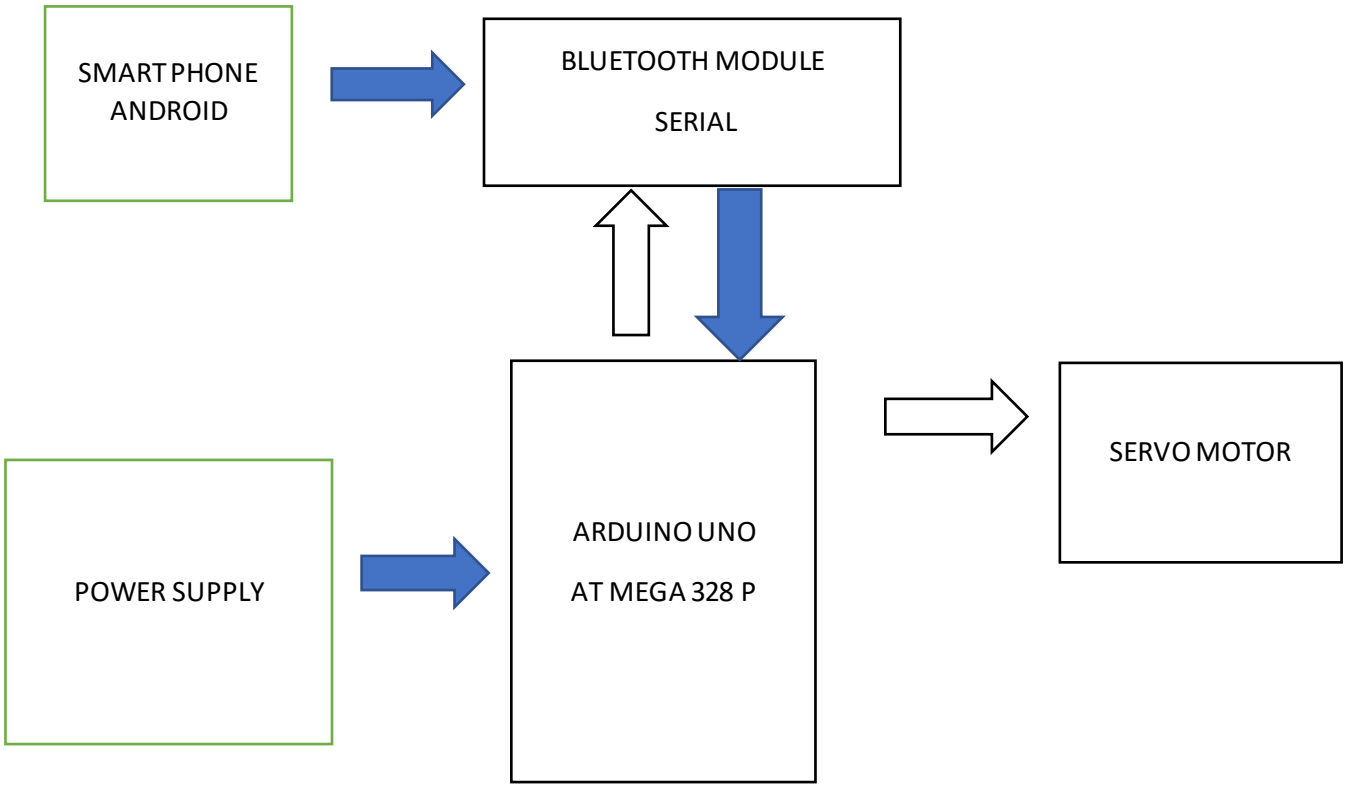
A serial Bluetooth module was used for communication between the hardware and Android smartphones. Having tested the entire tool system and the Android control application, it was found that the device and the application worked well. However, it is only able to receive the data sent from the Android application, but not able to transfer the data from the system to the Android handset.[2]

PROBLEM STATEMENT

Term servo motor is known as electronic device and rotary or linear actuator that rotate and push part of machine with precision. Most of companies that use servos are manufacturing companies that need it to position control surface and rotate object at precise angle and distance. this will be achieved by controlling those servo motor wire Lesly and reduce imprecise situation while control that servo manual. Also turning on and control servo motor wirelessly via Bluetooth module can help to position tv antenna that locate to high elevation of floor house where not possible to turn manual in order to provide require signal and music, video quality become satisfied

Also combination of multiple servo motor are controlled via Bluetooth module and application software as it is very tough for operator because it took much time to run one by one accordingly and operating cost become reduced due control them to gather fast and wirelessly[3]

BLOCK DIAGRAM



Block diagram description

Power Supply – The circuit is powered by supply between 5v and 9v which directly supplies to the Arduino board and the other modules. means supply is obtained from an adapter circuit with 9V DC output voltage connected to the Arduino module DC plug/connector. While the power supply used to supply Bluetooth and servo are obtained from the 5V Arduino module power pin.

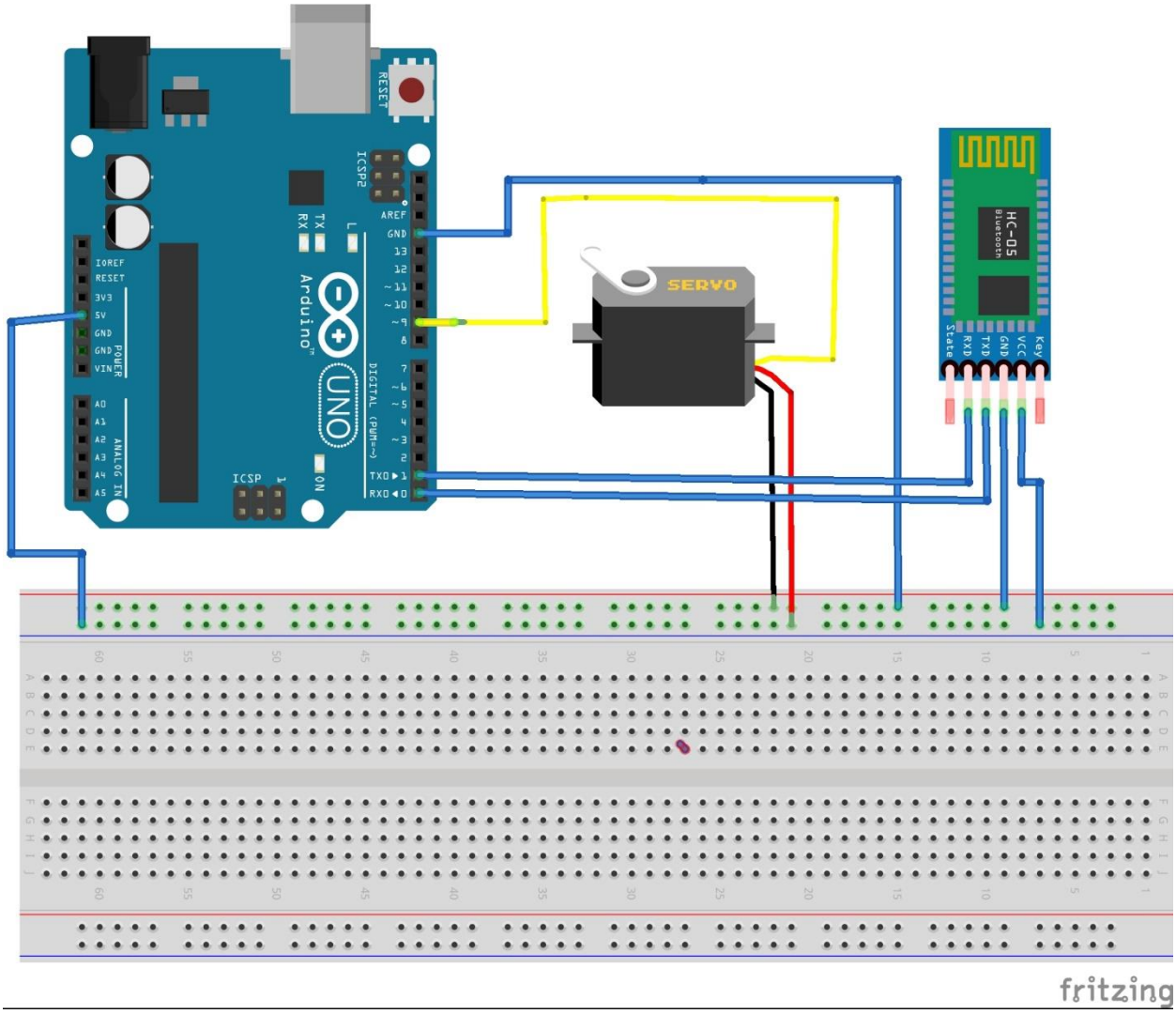
Arduino uno here Arduino uno as hard ware device is ready to get sketches from Arduino software and join to gather between Bluetooth module and Bluetooth software application also control the required task according to the designation of sketches.

Bluetooth module and Bluetooth software application The control application on the Android smartphone or inside pc sends the data to the Arduino module via

communication between the Bluetooth application and the serial Bluetooth module. The data received from the Android control application will then be processed in the microcontroller on the Arduino module to be executed into high/ON or low/OFF then servo motor start to run accordingly.

Servo Motor The design of the circuit for controlling a Servo Motor using Arduino and Bluetooth is very easy. Connect the Control Pin of the Servo Motor to Pin out of Arduino. It is important that you connect the control pin to a PWM enabled pin of Arduino.

Circuit diagram drawn in fritzing



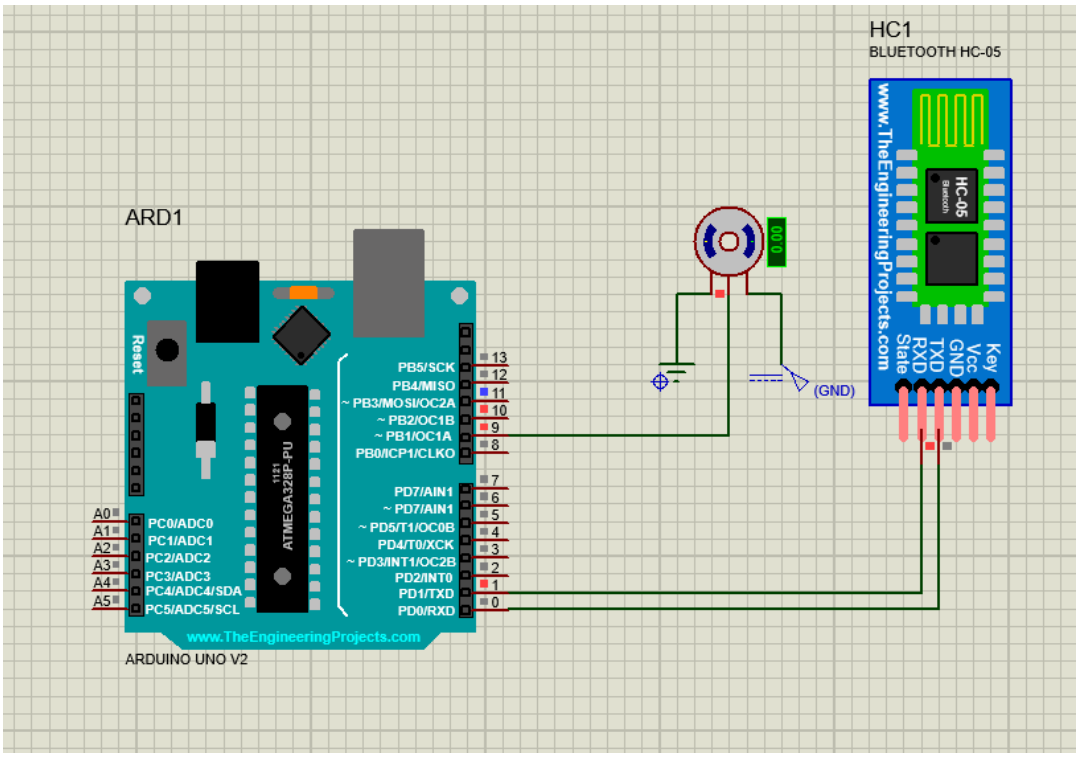
Simulation in proteus

Arduino code

```
#include <Servo.h>
Servo myservo;
const int Pin = 9; //
char Text;
String Spilt;
String angle;
int pos = 0;    // variable to store the servo position
int k1;
void setup() {
Serial.begin(9600);
pinMode (Pin, OUTPUT);
myservo.attach(Pin);
}
void loop() {
  if(Serial.available())
  {
  Text = Serial.read();
  Spilt = Spilt + Text;
if (Text == '*') {
   Serial.println(Spilt);

     Spilt = Spilt.substring(0, Spilt.length() - 1); // Delete last char *

     k1 = Spilt.indexOf('*');

     angle = Spilt.substring(0, k1);
```

```
    myservo.write(angle.toInt());


    delay(15);
  Spilt = "";
 }
}


}
```

After writing code in Arduino uno simulation will be look like that below



For more detail can visit this and watch video

REFERENCE

[1] J. Syaftriadi, A. Nur, N. Chamim, R. O. Wiyagi, and R. Syahputra, "LED and Servo Motor Control Via Bluetooth Based on Android Applications," no. 2, pp. 6227–6231, 2019, doi: 10.35940/ijrte.B3264.078219.

[2] Y. R. Solution, "HC-05 Bluetooth Module User's Manual V1 . 0".

[3] N. Kumar, T. Tomar, and R. Hassan, "5 DOF Robotic Arm," vol. 7, no. 9, pp. 22–27, 2021.