VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Internet of Things

(CSE3009)

DIGITAL ASSIGNMENT– 1

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Q1) Suppose you need to design and develop an IoT system for a city which will make the city a sustainable Smart City.

a) Define any four features that you want to have in your Smart City.

b) Find out the advance technologies, protocols, devices, etc. you would need to implement all four features in your smart city.

c) Draw self-explanatory diagrams for each of the features.

Ans1)

The following 4 **IoT systems** for a city which will make the city a sustainable Smart City:

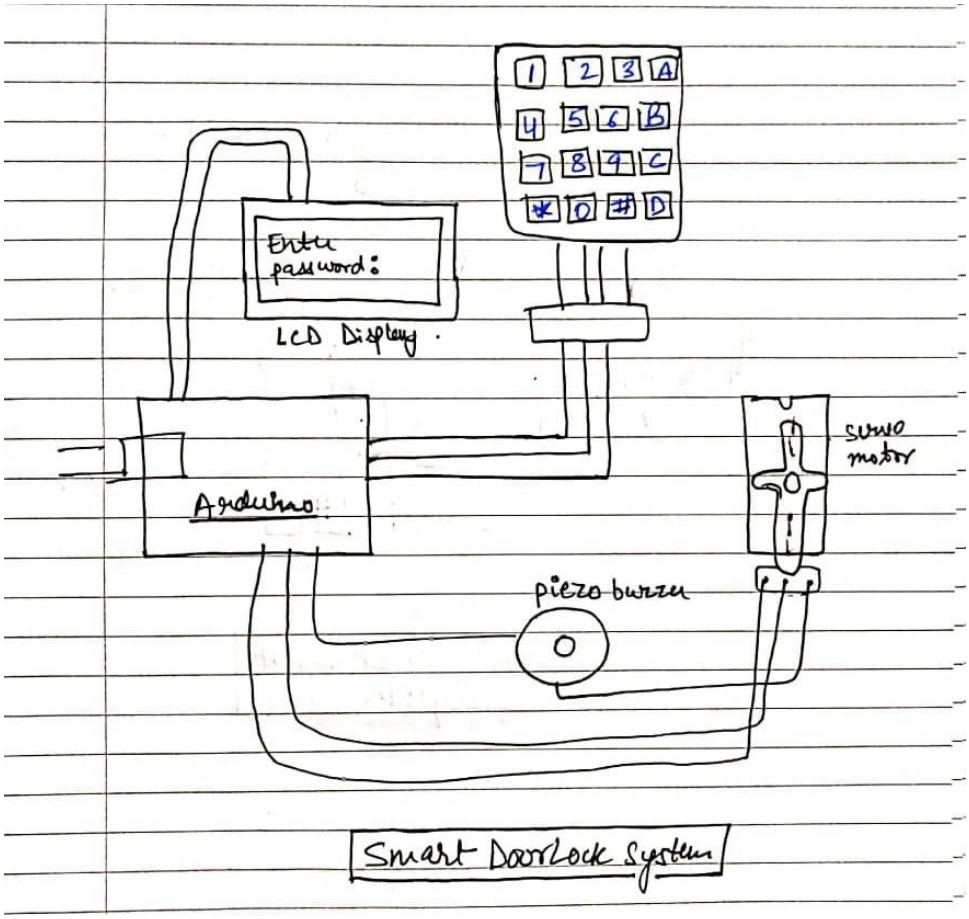
1. **<u>Smart Door-lock System</u>**

   Since the number of thefts are always increasing in smart cities, it is necessary that an unbreakable door-lock system be designed. The Smart Door-lock can be designed using the following devices and sensors:

Quantity	Component
1	Arduino Uno R3
1	LCD 16 x 2
1	Keypad 4x4
1	Piezo
1	Positional Micro Servo
1	1 kΩ Resistor

   The LCD Display along with the Keypad allows the person to set up a password (initially). After the setup, the user needs to enter the password to get through. If the password is entered incorrectly, the Piezo buzzer goes off and the door is not opened as expected. But when the correct password is entered, the door is opened!

   Diagram Explaining Architecture:

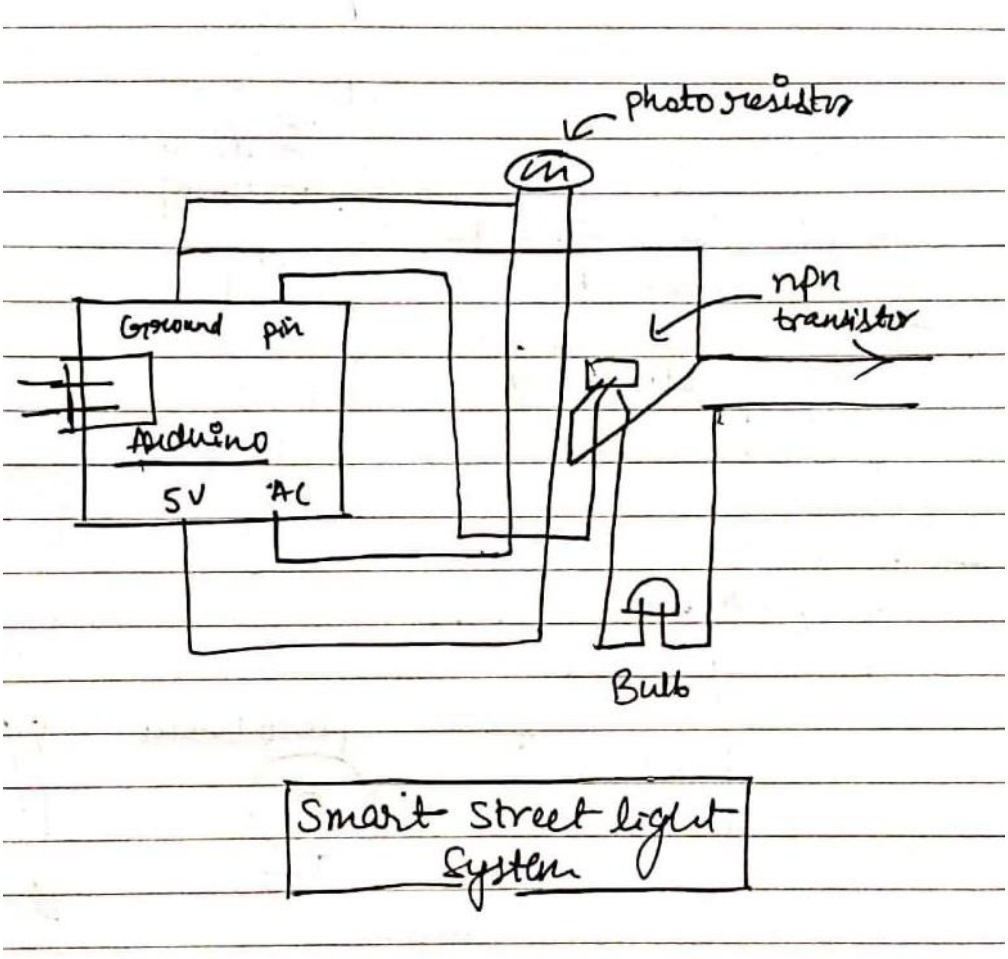


2. **Smart Streetlight System**

Since the number of thefts are always increasing in smart cities, it is necessary that an unbreakable door-lock system be designed. The Smart Door-lock can be designed using the following devices and sensors:

Quantity	Component
1	Arduino Uno R3
1	Photosensor
1	NPN Transistor
1	Bulb

Diagram Explaining Architecture:

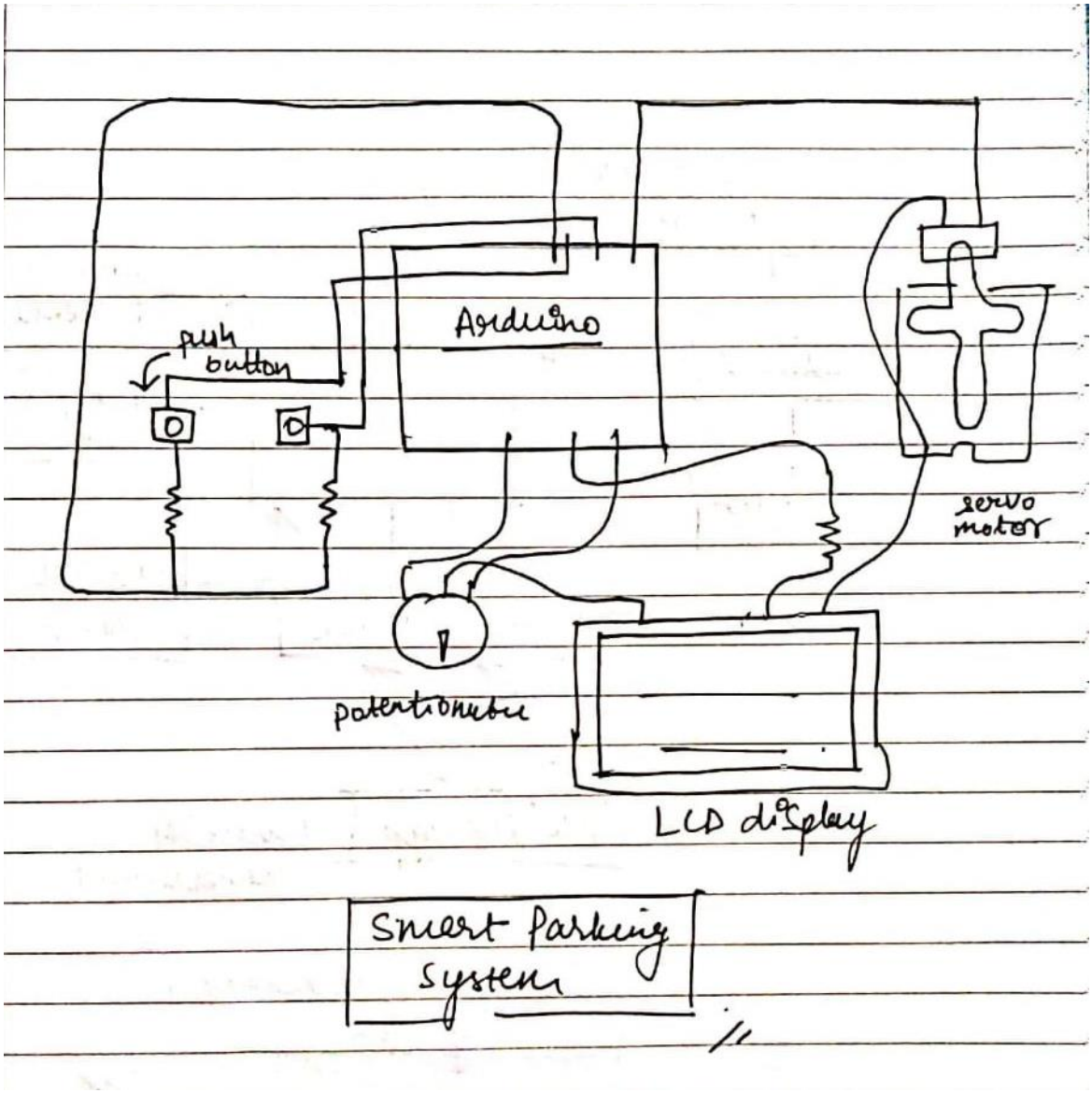


3. Smart Parking System

In order to make the parking experience of the citizens much better, we can setup a Smart Parking System using IoT. The Smart Parking System can be designed using the following devices and sensors:

Quantity	Component
1	Arduino Uno R3
1	LCD 16 x 2
2	Push Button
1	Potentiometer
1	Positional Micro Servo

Diagram Explaining Architecture:



4. Smart Gardening System

To sustain a city, we need fresh air, greenery. The Smart Gardening System can be designed using the following devices and sensors:

Quantity	Component
1	Arduino Uno R3
1	Moisture sensor
1	Temperature Sensor
1	Humidity Sensor
1	Wireless Module
1	Ultrasonic Sensor

Diagram Explaining Architecture: