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CHAPTERS

Abstarct

The artificial intelligence is the major evolution of 21st century, which is rapidly transforming many human related tasks efficiently. An intelligent virtual assistant (IVA) or intelligent personal assistant (IPA) is a precise example of AI , it is a software agent that can perform tasks or services for an individual based on commands or questions.

The term "chatbot" is sometimes used to refer to virtual assistants generally accessed by online chat. Even virtual assistants are able to interpret human speech and respond via synthesized voices. Users can ask their assistants questions, control home automation devices and media playback via voice, and manage other basic tasks such as email, to-do lists, and calendars with verbal commands.

As these are software bots they can serve 24/7 if deployed any field . It can be corporate sector or banking ,even in health care sector.

The common problem in developing these bots is training them with huge data-sets , so that they can interact with humans precisely and accurate information is produced . This process is called as Machine learning. Another tedious job is the usage of proper algorithms for selecting required solution from huge data sets and understanding their workflow.

Objective

- This project intends to replace physical notice board with digital so that notices can be displayed instantly through wireless mode .

- The Bluetooth module receives the data sent by the user through application ,and interfaced LCD panel will display the data required to user.
- Digital notice board is much efficient in regular updating of information

Chapter-2

LITERATURE SURVEY

2.1 Tools and technologies used:

2.1.1 Arduino Board UNO Model

Arduino is a hardware and software company, project, and user community that designs and manufactures computer open-source hardware, open-source software, and microcontroller-based kits for building digital devices and interactive objects that can sense and control physical devices.

The project is based on microcontroller board designs. The board provides sets of digital and analog Input/output (I/O) pins that can interface to various expansion boards (termed shields) and other circuits Fig (2). The boards feature serial communication interfaces, including Universal Serial Bus (USB) on UNO model, for loading programs from personal computers.

For programming the microcontrollers, the Arduino project provides an integrated development environment (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software. This software can be used with any Arduino board Fig (3).

Fig.2 Arduino UNO board

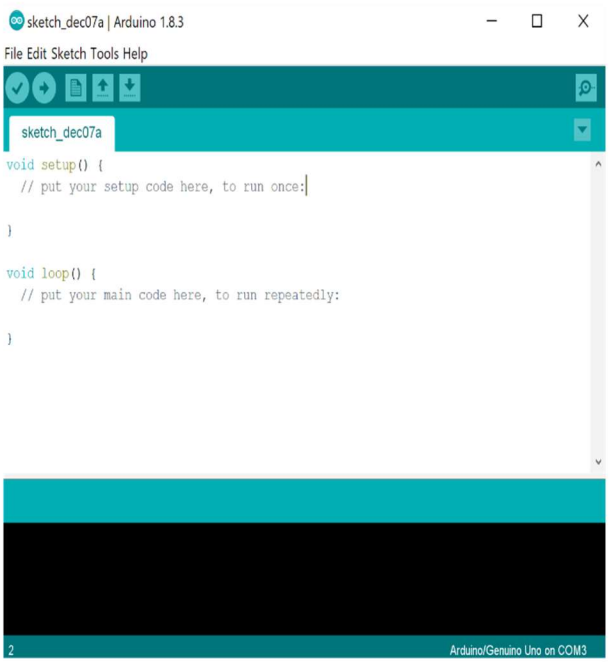


Fig.2 Arduino IDE Software

2.1.2 Arduino ide

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

2.1.3 Bluetooth module HC-05

- It is used for many applications like wireless headset, game controllers, wireless mouse, wireless keyboard and many more consumer applications.
- It has range up to <100m which depends upon transmitter and receiver, atmosphere, geographic & urban conditions.
- It is IEEE 802.15.1 standardized protocol, through which one can build wireless Personal Area Network (PAN). It uses frequency-hopping spread spectrum (FHSS) radio technology to send data over air.
- It uses serial communication to communicate with devices. It communicates with microcontroller using serial port (USART).

Fig.4 bluetooth module HC-05

2.1.4 16*2 LCD Display:

The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.

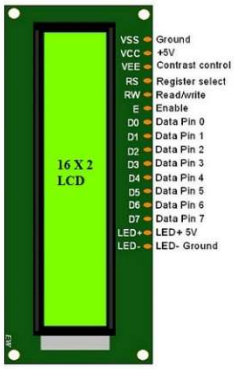


*Fig.5 16*2 LCD Display*

features

- The operating voltage of this LCD is 4.7V-5.3V
- It includes two rows where each row can produce 16-characters.
- The utilization of current is 1mA with no backlight
- Every character can be built with a 5×8 pixel box
- The alphanumeric LCDs alphabets & numbers
- Is display can work on two modes like 4-bit & 8-bit
- These are obtainable in Blue & Green Backlight
- It displays a few custom generated characters

2.1.5 1k ohm resistor

2.1.6Breadboard

A breadboard is a construction base for prototyping of electronics. Originally it was literally a bread board, a polished piece of wood used for slicing bread. In the 1970s the solderless breadboard (AKA plug board, a terminal array board) became available and nowadays the term "breadboard" is commonly used to refer to these. "Breadboard" is also a synonym for "prototype" Fig (8).

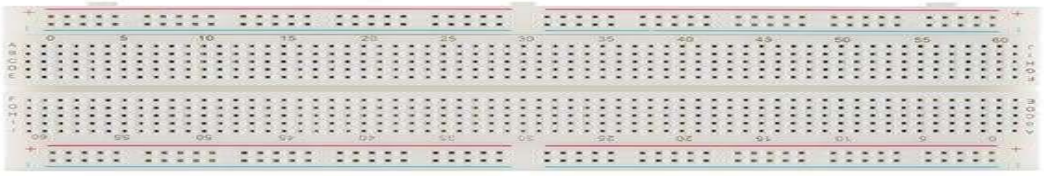
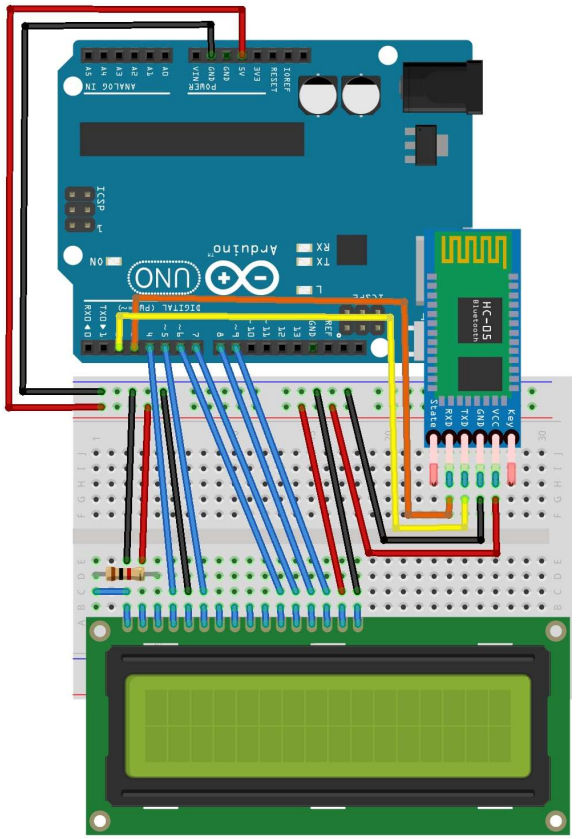


Fig.5.Breadboard

2.2 Working procedure

2.2.1. Components needed for this Project :

- Arduino Board UNO Model.
- Arduino IDE.
- Bluetooth module HC- 05.
- 16*2 LCD display
- Breadboard and Jumper Wires.
- 1k ohm resistor



2 Circuit Diagram

1. Step 1: Gather the Required Components and Understand the Circuit.
2. Connect all the components according to the circuit diagram
3. Download the Code From the Attachment.
4. Switch ON the Hardware.
5. Open "Arduino Automation" App
6. Display the Message on the LCD

2.2.2 procedure:

- To bring smart notice board idea into picture . All the components are interfaced according to the circuit diagram. [for demo we use 16*2 LCD .a larger and precise display can be implemented]

- Connect the Arduino uno to the computer through usb cable and upload the code. The Bluetooth module HC 05 & LCD panel are powered by arduino board .

- Now pair your device with Bluetooth module . After successful pairing send a message from your device , the message sent is displayed on LCD display.

The process is explained below:

- LiquidCrystal library helps in communicating aplphanumerical Lcds.
- SoftwareSerial library has been developed to allow serial communication on Other digital pins of the Arduino.(2,3-rx,tx)
- Bluetooth module receives the data serially through RX(receiver) pin . The TX (transmitter) pin transmit received data serially.

- The arduino program is designed in such a way that ,string read from Tx pin is assigned as a string variable ' val ' .
- Using trim function val.trim() , the garbage value is removed. The string in 'val' is compared with another string 'oldval' ,if condition is false 'val' is assigned to'newval'.
- The function setcursor() is used to point the cursor on the LCD display. Setcursor(a,b). The parameter a is column of the LCD panel and parameter b is row of the LCD panel. The condition is designed such that the cursor will move from 0 to 15 and again back to 0.
- The 'newval' is displayed on the LCD display with the help of lcd.print (newval) Method.

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Code implementation

3.1 Arduino Code

```
#include <LiquidCrystal.h>
#include <SoftwareSerial.h>

LiquidCrystal lcd (4, 5, 6, 7, 8, 9);
SoftwareSerial mySerial (2, 3);   //(RX, TX);

String val = "No Data";
String oldval;
String newval = "No Data";
int i = 0;

void setup()
{
  // put your setup code here, to run once:
  lcd.begin(16,2);
  mySerial.begin(9600);
  Serial.begin(9600);
  lcd.setCursor(0, 0);
  lcd.print("Wireless Notice");
  lcd.setCursor(0, 1);
  lcd.print("     Board     ");
  delay(3000);
  lcd.clear();
  lcd.print("Welcome!");
}

void loop()
{
  val = mySerial.readString();
  val.trim();
  Serial.println(val);
  if(val != oldval)
  {
    newval = val;
  }
  lcd.clear();
  lcd.setCursor(i, 0);
  lcd.print(newval);
  i++;
  if(i >= 15)
  {
    i = 0;
  }
  val = oldval;
```

Chapter-4

Advantages and applications

4.1 Advantages

- Boost student engagement. Today's K-12 students are digital natives, and researchers say they learn better because of it.
- Accommodate different learning styles.
- Save, share and send lessons.
- Bring the classroom to everyone.
- Help students succeed.
- The electronic notice board is wireless and no need for wires for displaying the information on the LCD display.
- It is very easy to operate and consumes less power.
- The circuit of the wireless notice board is portable.

4.2 Applications

This system can be implemented for commercial purpose as well as for individual use. Further modification in the system can also led to reminder system, in which an event can be scheduled using the date and time and accordingly the system will alert you with appropriate information about the event. Generally it can be can be used in classrooms, schools, seminar halls to updates.

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1. Conclusion

- The system has been successfully tested with troubleshooting to the best of our knowledge. Each block present in it has been reasoned and justified. The project is very cost efficient and marketable and the components used are very simple and easily available in the market. We believe that this system can become commercial and can be used in places such as colleges, banks railway station etc.

- To increase the range of connectivity Bluetooth module HC -12 can be used which provide up to 1km range .

- Further using this concept wi-fi module esp8266 can be utilized , for internet connectivity to the interfaced components .

2. REFERENCES

1. **Github**
   https://github.com/himanshus2847/Wireless-Notice-Board