ARTIFICIAL INTELLIGENCE

PROJECT NAME:

ARDUINO BASED TEXT TO SPEECH CONVERTER

PROJECT MEMBERS:

- SAAD AHMED KHAN   (909-2018)
- S.M.NAJAM   (945-2018)
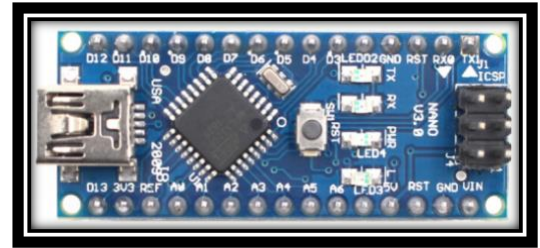- WALEED KIDWAI   (943-2018)

INSTRUCTOR:

- KOMAL KAPIL

COMPONENTS USED:

- IC LM386
- Arduino (NANO)
- Speaker 8ohm
- Capacitors- 220uF, 10uF (two), 0.1uF, 0.05uF
- Resistor- 10k (two)
- Potentiometer- 100k
- Battery 5-12v

DESCRIPTION:

- ### Arduino NANO:

The 8 – bit AT mega 164 microcontroller-based Arduino NANO is used in the project to convert the text in arduino to speech in speaker.


- ### SPEAKER:

It receives audio input from computer or audio receivers. Here, impedance tells you that how much current will flow through a speaker at a certain voltage. Like this speaker has 8 ohms of impedance and comes with a power handling capacity of 1W.

- ### LM – 386 IC:

The LM386 is a power amplifier designed for use in low volt- age consumer applications. The gain is internally set to 20 to keep external part count low, but the addition of an external resistor and capacitor between pins 1 and 8 will increase the gain to any value from 20 to 200.
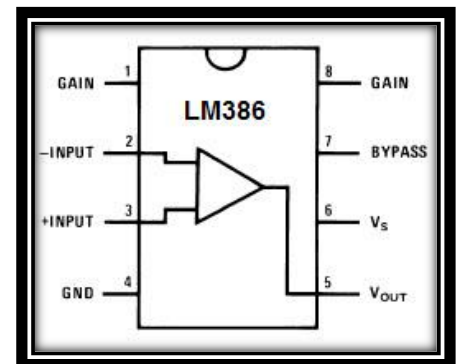

WORKING:

PIN 1 and 8: These are the gain control PINs, internally the gain is set to 20 but it can be increased up to 200 by using a capacitor between Pin 1 and 8. We have used 10uF capacitor C1 to get the highest gain i.e. 200. Gain can be adjusted to any value between 20 to 200 by using proper capacitor. **PIN 2 and 3**: These are the input PINs for sound signals. **Pin 2** is the negative input terminal, connected to the ground. **Pin 3** is the positive input terminal, in which sound signal is fed to be amplified. In our circuit it is connected to the positive terminal of the condenser mic with a 100k potentiometer RV1. Potentiometer acts as volume control knob. A capacitor C5 of 0.1uF has also been used along with potentiometer, to remove the DC component of input signal and only allow audio (AC component) to be fed into LM386. **PIN 7** is the bypass terminal. It can be left open or can be grounded using a capacitor for stability. **Pin 5**: This is the output PIN; from which we get the amplified sound signal.

The output signal has both AC and DC component, and DC component is undesirable and can't be fed to Speaker. So to remove this DC component, a capacitor C2 of 220uF has been used. This has the same function as Capacitor C5 (0.1uF) at input side. Along with this capacitor, a filter circuit of Capacitor C3 (.05uF) and resistor R1 (10k) has been used at the output PIN 5. Connect Vin of Nano to supply, ground to ground and digital pin 3 to 0.01uF capacitor and 10K resistor. Connect the positive of speaker to negative pin of 220Uf capacitor and negative to ground.

BLOCK DIAGRAM:
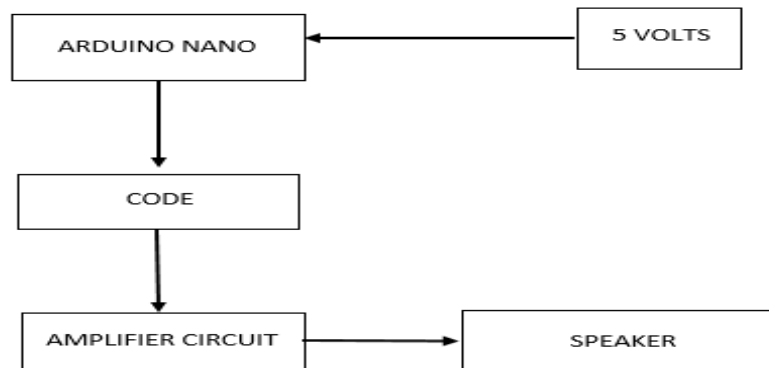
CIRCUIT DIAGRAM:
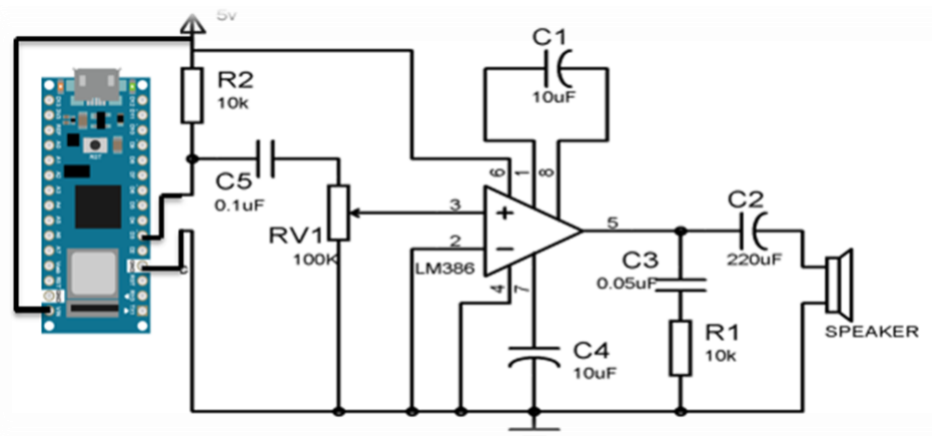
COST:

The total cost of making this project was Rs: 990/-

CODE:

```
#include <Talkie.h>

#include <Vocab_Special.h>

#include <Vocab_US_Large.h>

void setup() {
```

```
}
void loop() {
 voice.say(spPAUSE2);
 voice.say(spPAUSE2);
 voice.say(spPAUSE2);
 voice.say(spPAUSE2);
 voice.say(spWARNING);
 voice.say(spWARNING);
 voice.say(spRED);
 voice.say(spALERT);
 voice.say(spPAUSE2);
 voice.say(spPAUSE2);
 voice.say(spTHUNDERSTORM);

 voice.say(spNORTHWEST);
 voice.say(spAT);
 voice.say(spSPEED);
 voice.say(spSEVENTY);
 voice.say(spMILES);
 voice.say(spPER);
 voice.say(spHOUR);
 voice.say(spPAUSE2);
 voice.say(spPAUSE2);
 voice.say(spPAUSE2);
 voice.say(sp3_THE);
 voice.say(spTEMPERATURE);
 voice.say(spIS);
 voice.say(spBELOW);
 voice.say(spMINUS);
 voice.say(spNINETEEN);
 voice.say(spDEGREE);
 voice.say(spCELCIUS);
}

 voice.say(spGUSTING_TO);
```

REFRENCES:

- https://circuitdigest.com/microcontroller-projects/arduino-based-text-to-speech-converter