

(A) REQUIREMENTS

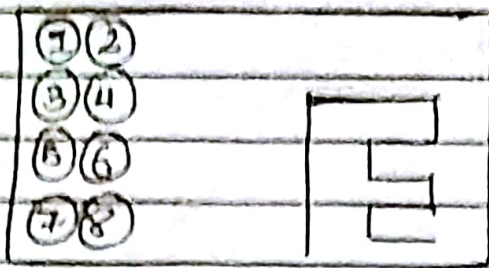
- (a) Arduino Uno
- (b) Arduino - Nano
- (c) nrf24L01+ module (sensor) $\times 2$ (trans + receiver)
- (d) Breadboard.
- (e) chassis, wheels, dc-motors.
- (f) caster wheel.

(B) THEORY

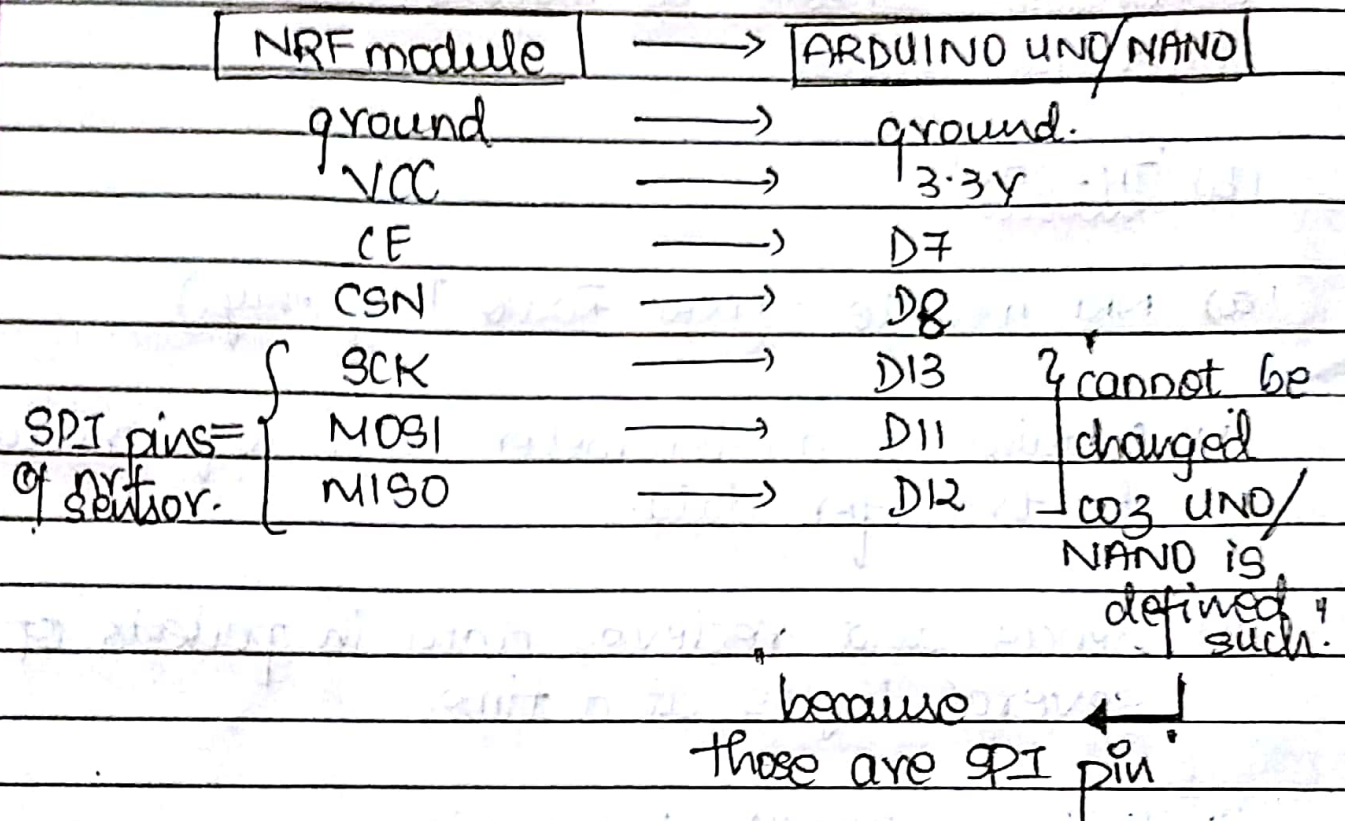
(a) NRF module \rightarrow (Near Radio Frequency.)

- (i) Contains an accelerometer and wifi module to transfer data.
- (ii) sends and receives data in packets of several bytes at a time.
- (iii) It is a 2.4GHz transreceiver
 \Rightarrow they send 2.4×10^6 data per seconds.
- (iv) runs on 1.9-3.6V \Rightarrow safe to use 3.3 Volts.
- (v) one NRF can communicate with another NRF only \Rightarrow one NRF as transmitter and one NRF as receiver.

(vi) Connection of NRF module



- ① = ground
- ② = VCC = 3.3V
- ③ = CE = chip enable
- ④ = CSN
- ⑤ = SCK
- ⑥ = MOSI
- ⑦ = MISO
- ⑧ = IRQ



- CE = chip enable
= used for setting the module in
standby or active mode.
- CSN = chip select
= allows us to select if we want
to transmit data or receive
data.

(vii) The nrf module on hand (transmitter) has accelerometer which senses the angle at which we bend our hand.

We store this values and then send them to nrf module on our robot. Using these values we tell our bot to move forward, backward, leftward and rightwards.

But first we need to check max and min angle. The code for this is.

```
void setup
```

```
{
```

```
  pinMode(A5, INPUT);
```

```
  pinMode(A7, INPUT);
```

```
  Serial.begin(9600);
```

```
}
```

```
void loop()
```

```
{
```

```
  z = analogRead(A5); // cause we attach nrf  
                        LE to nano A5
```

```
  y = analogRead(A7); // cause we attach nrf CSN  
                        to nano A7
```

```
  Serial.print("The x-value:");
```

```
  Serial.println(z);
```

```
  Serial.print("The y-value:");
```

```
  Serial.println(y);
```

```
  delay(2000);
```

```
}
```

