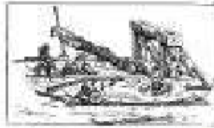


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GROUP: - 2

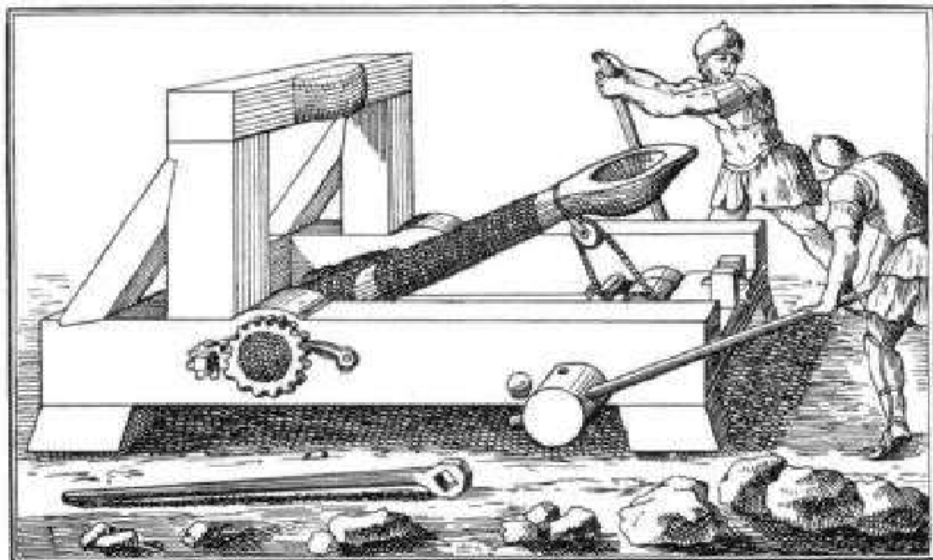


**DEPARTMENT
OF
ELECTRONICS AND COMMUNICATION ENGINEERING**



THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

**Handout/Assignment-1
for
Engineering Design Project-I (UTA013)**



INSTRUCTOR INCHARGE

NAME: - HARDIK VERMA **ROLLNO: - 102283044**

CLASS: - 2CO28

GROUP: - 2

Assignment Tasks:

1. Obtain the required signal for Arduino shown in figure 2 using at least two different logic gates (explain using waveforms).

a. Using AND and JK flip flop Gate

AND Gate and JK Flip flop gate

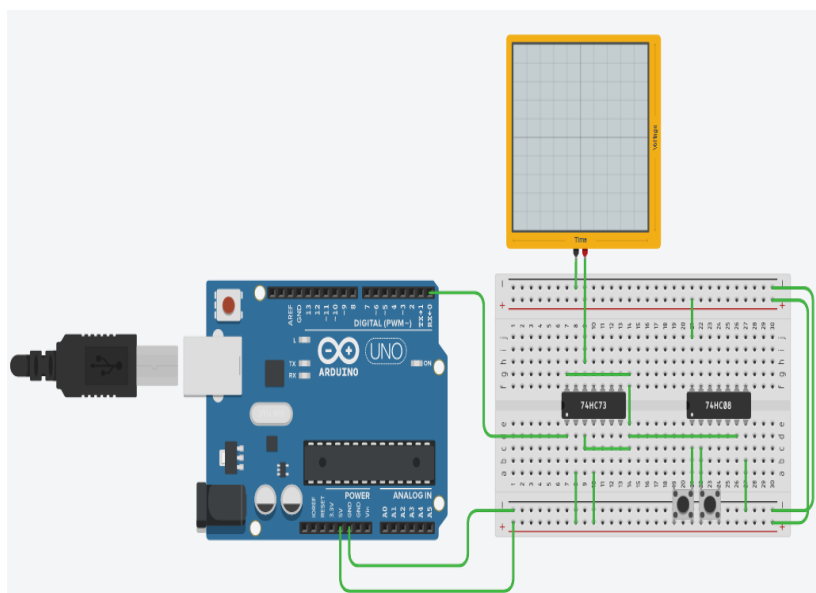
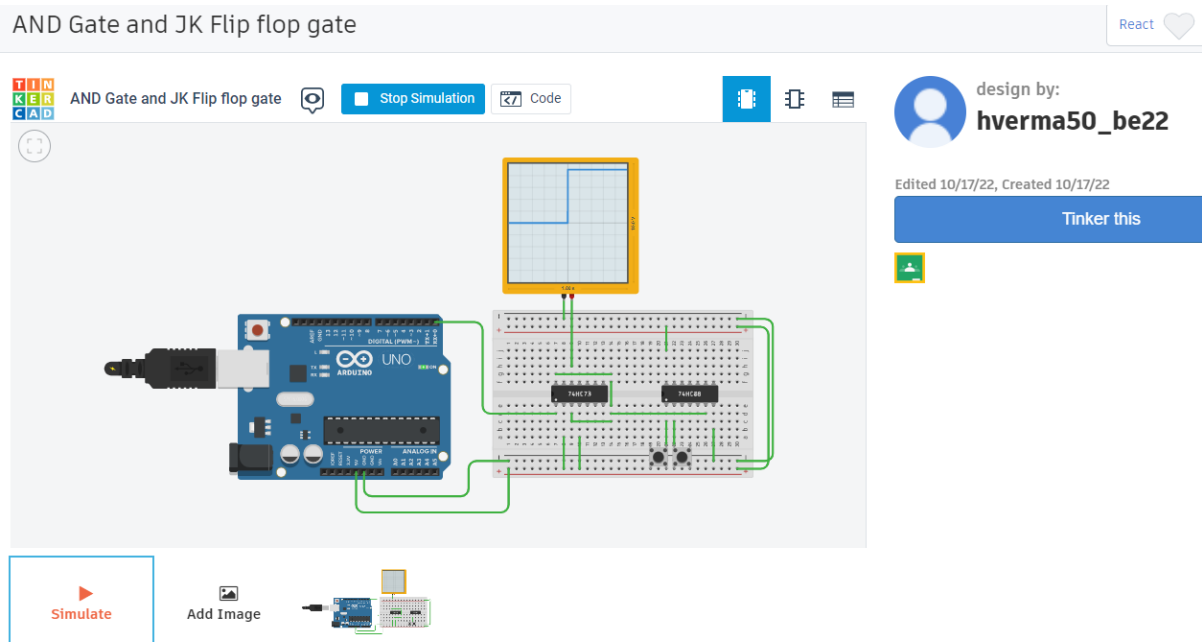
React

TINKER CAD AND Gate and JK Flip flop gate Stop Simulation Code

design by: hverma50_be22

Edited 10/17/22, Created 10/17/22

Tinker this



```
1 // C++ code
2 //
3 void setup()
4 {
5   pinMode(0, OUTPUT);
6 }
7
8 void loop()
9 {
10  digitalWrite(0, HIGH);
11  delay(500); // Wait for 1000 millisecond(s)
12  digitalWrite(0, LOW);
13  delay(500); // Wait for 1000 millisecond(s)
14 }
```

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b. Using XOR and JK flip flop Gate

XOR and JK Flip Flop Gate

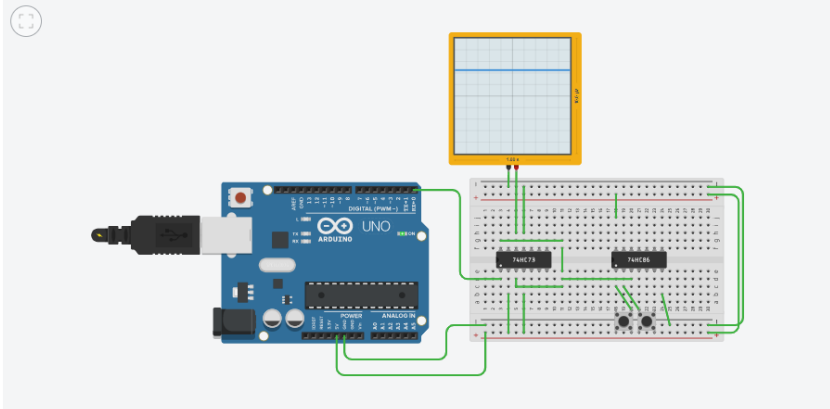
React 0

TINKER CAD XOR and JK Flip Flop Gate Stop Simulation Code

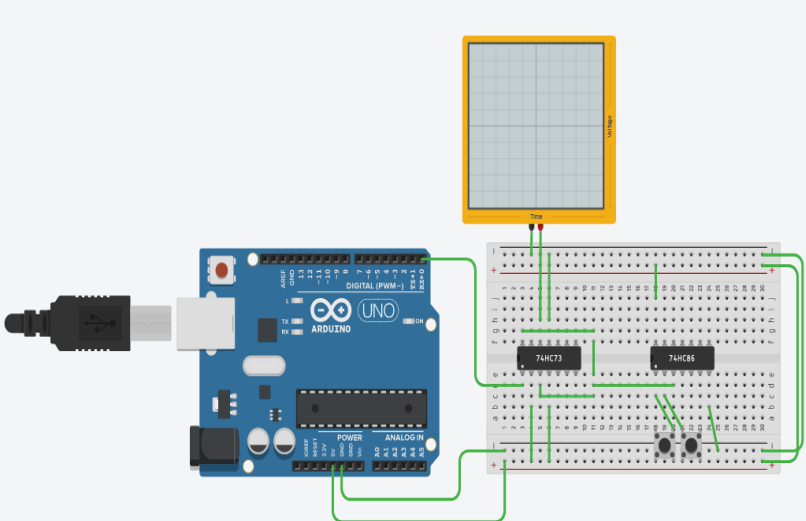
design by: hverma50_be22

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Tinker this



Simulate Add Image



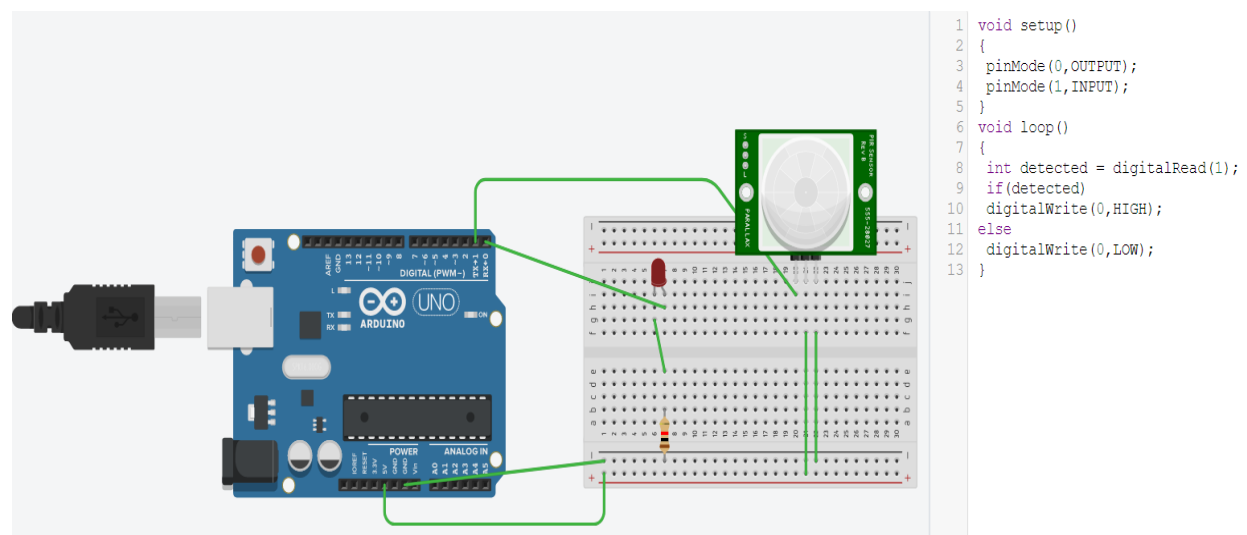
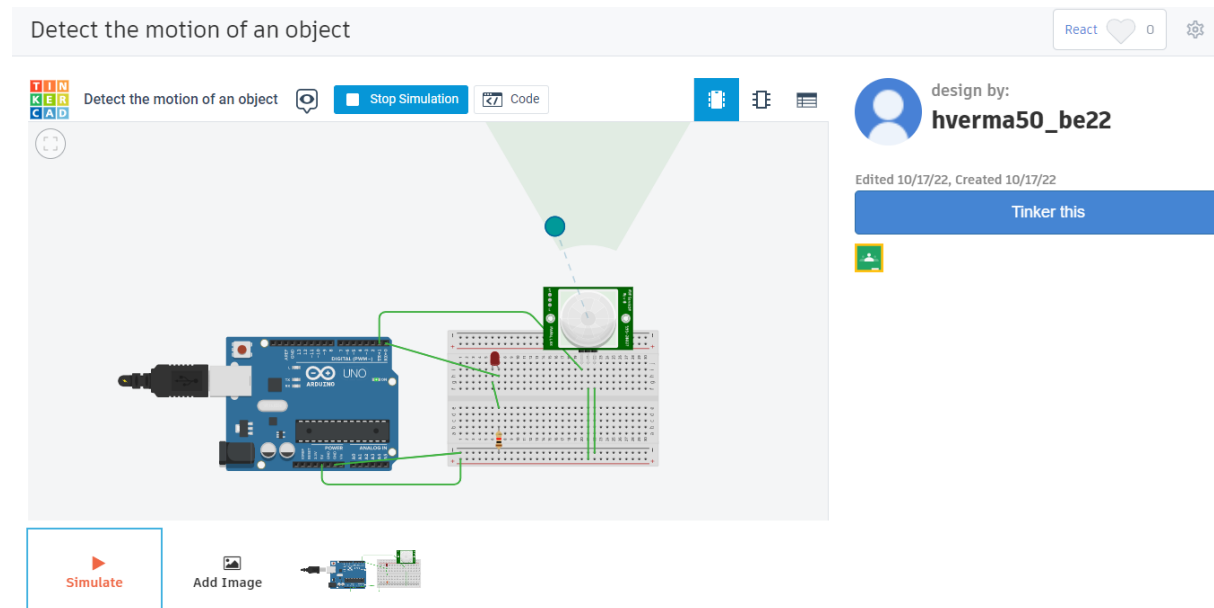
```
1 // C++ code
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6 }
7
8 void loop()
9 {
10  digitalWrite(0, HIGH);
11  delay(500); // Wait for 1000 millisecond(s)
12  digitalWrite(0, LOW);
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14 }
```

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CLASS: - 2CO28

GROUP: - 2

2. Using Tinkercad, design the following sensor based micro-projects to:
- Detect the motion of an object,



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GROUP: - 2

b. Measure distance between an object and the sensor itself

Measure distance between Object and Sensor

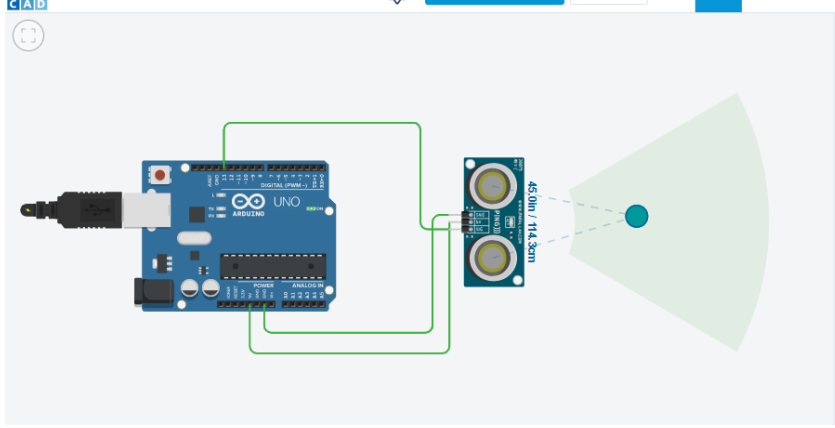
React 0

TINKER C.A.D. Measure distance between Object and Sensor Stop Simulation Code

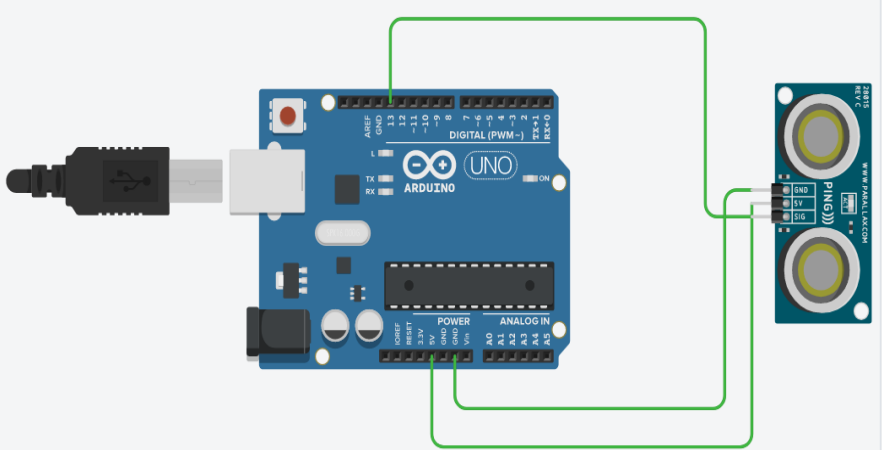
design by: hverma50_be22

Edited 10/17/22, Created 10/17/22

Tinker this



Simulate Add Image



```
1 double distance, d;
2 void setup()
3 {
4   pinMode(13, OUTPUT);
5   Serial.begin(9600);
6 }
7 void loop()
8 {
9   digitalWrite(13,LOW);
10  delayMicroseconds(10);
11  digitalWrite(13,HIGH);
12  delayMicroseconds(10);
13  digitalWrite(13,LOW);
14  pinMode(13,INPUT);
15  distance = pulseIn(13,HIGH);
16  d=d*0.034/2;
17  Serial.println(distance);
18 }
```