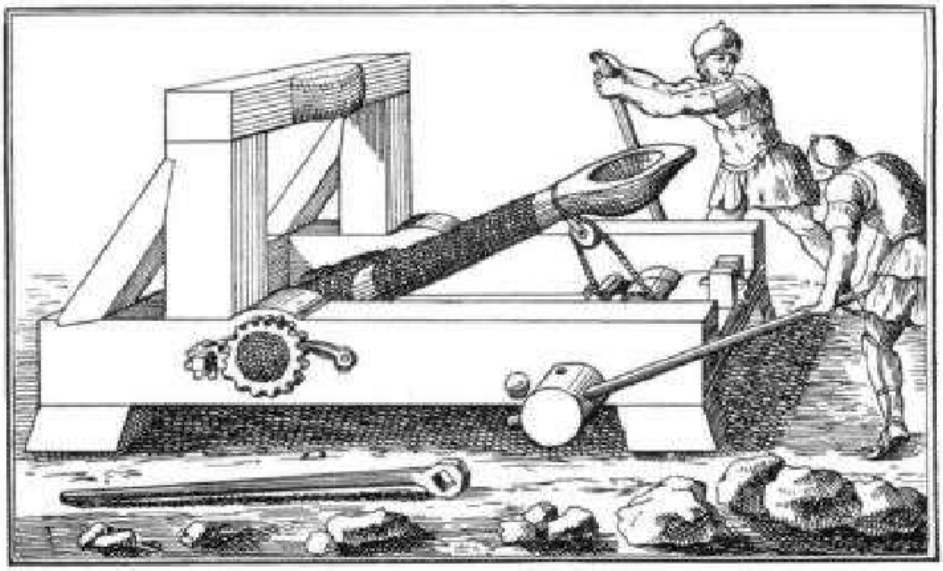
NAME: - **HARDIK VERMA** **ROLLNO:** - **102283044**
CLASS: - **2CO28** **GROUP:** - **2**

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

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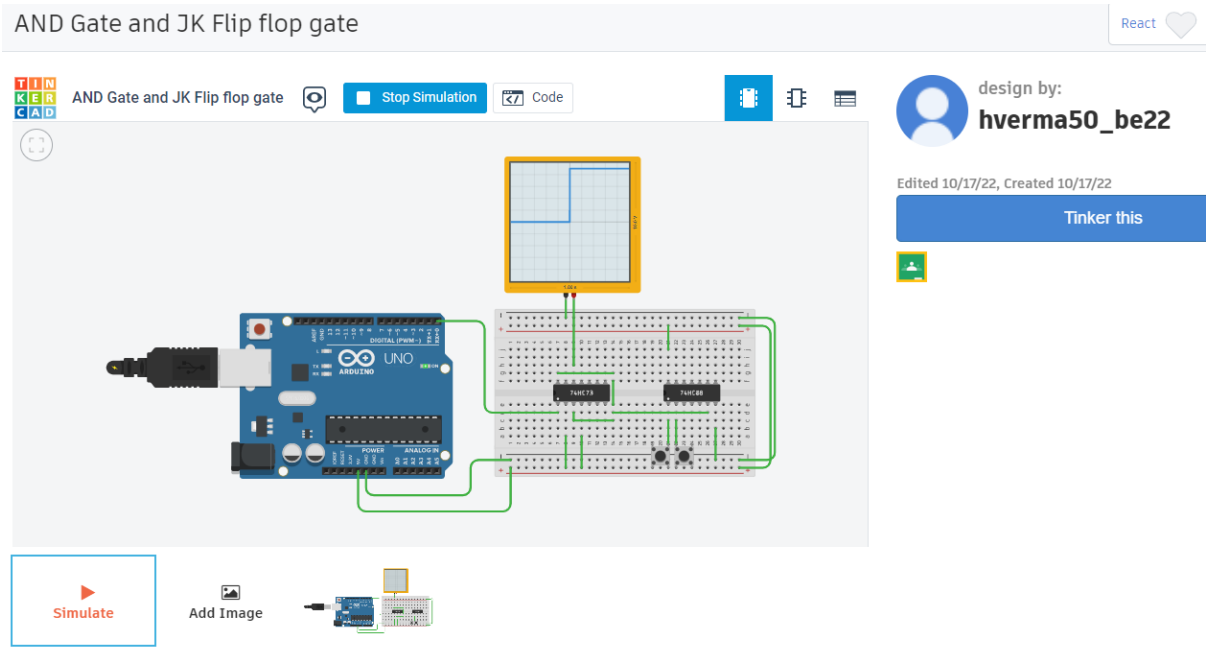
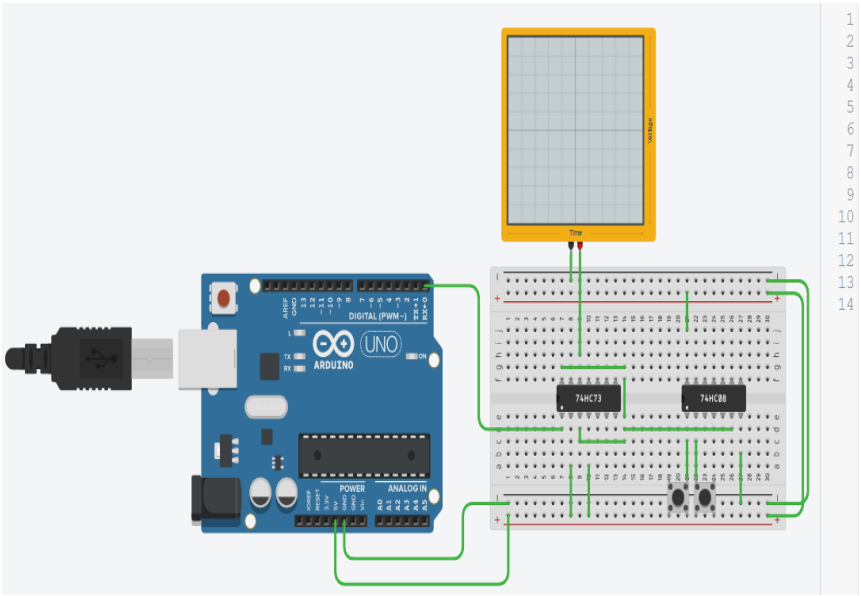
Assignment Tasks:

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






```
// C++ code
//
void setup()
{
  pinMode(0, OUTPUT);
}

void loop()
{
  digitalWrite(0, HIGH);
  delay(500); // Wait for 1000 millisecond(s)
  digitalWrite(0, LOW);
  delay(500); // Wait for 1000 millisecond(s)
}
```

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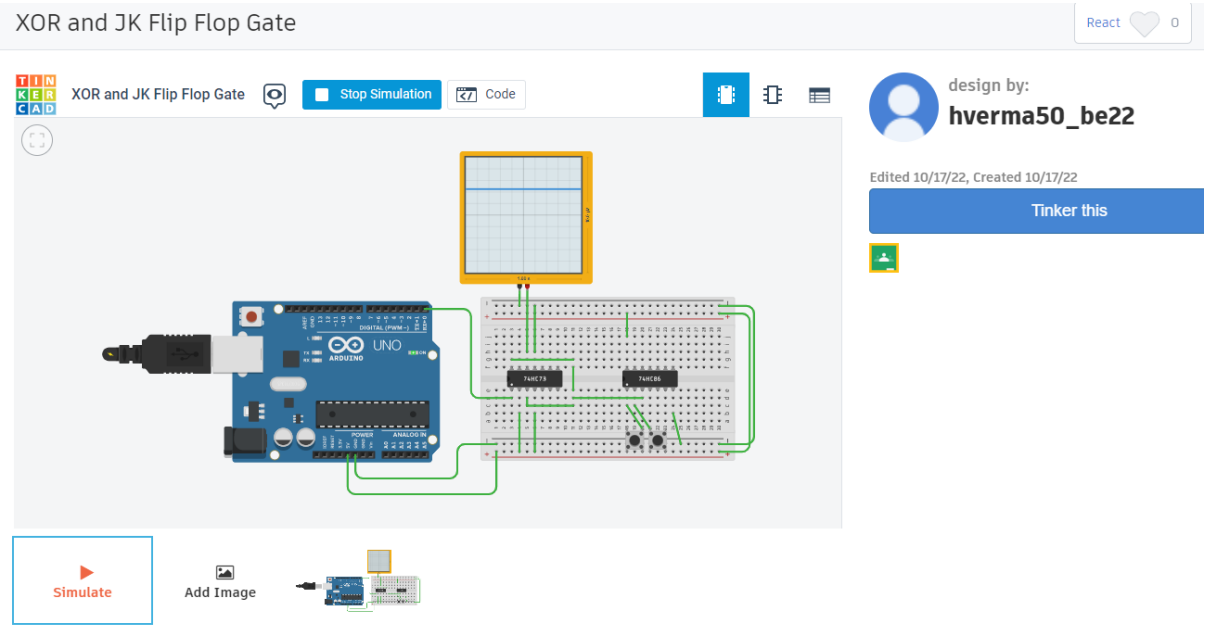
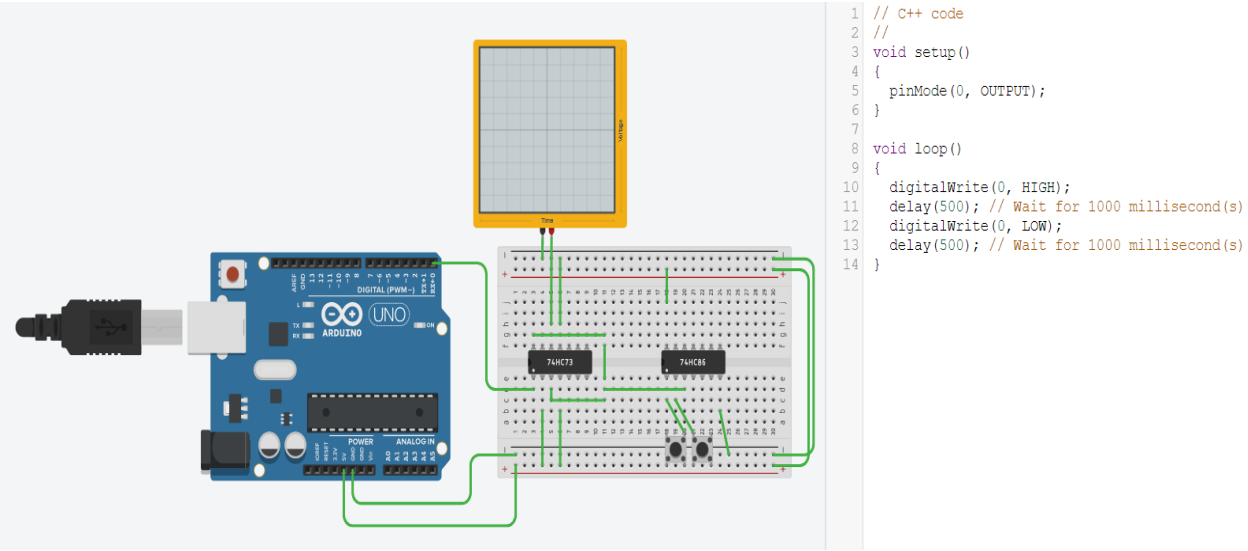
b. Using XOR and JK flip flop Gate





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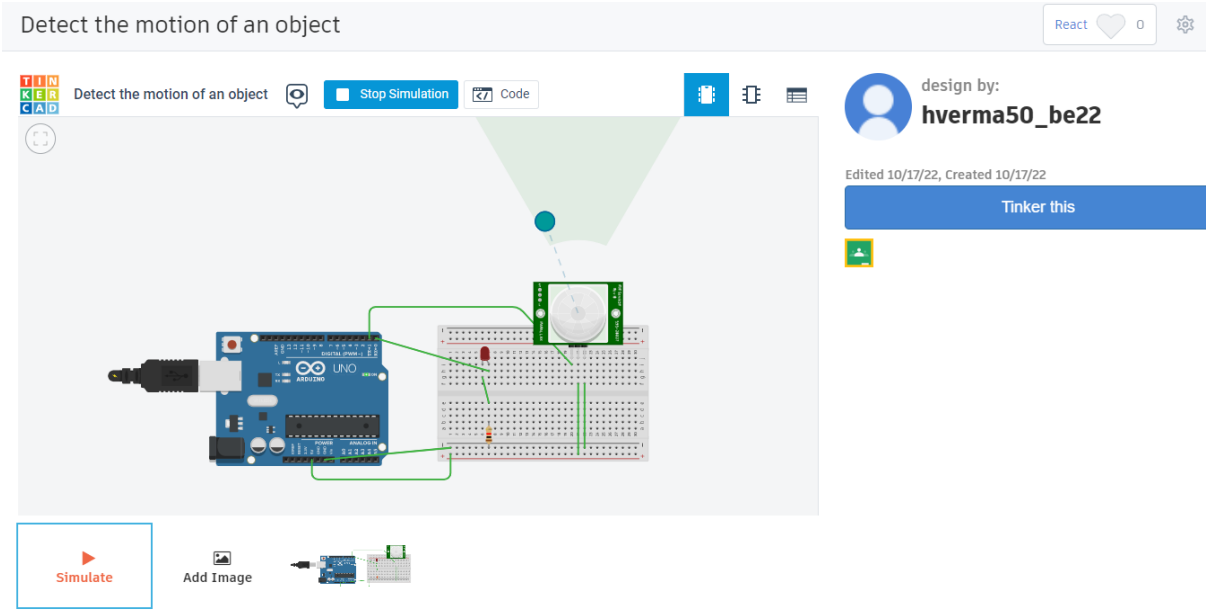
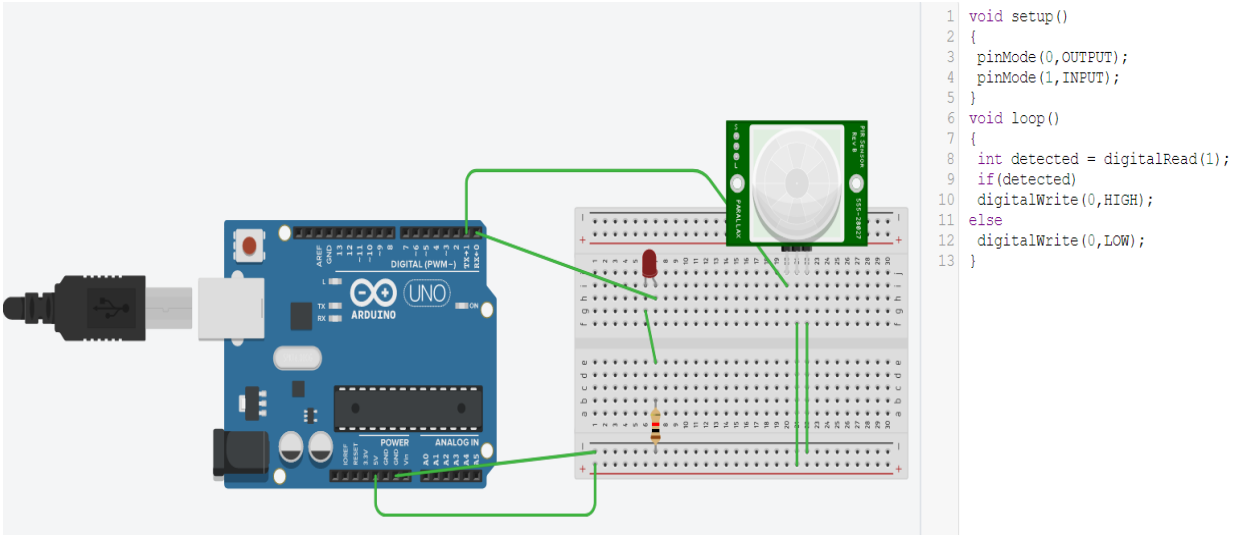
2. Using Tinkercad, design the following sensor based micro-projects to:
a. Detect the motion of an object,





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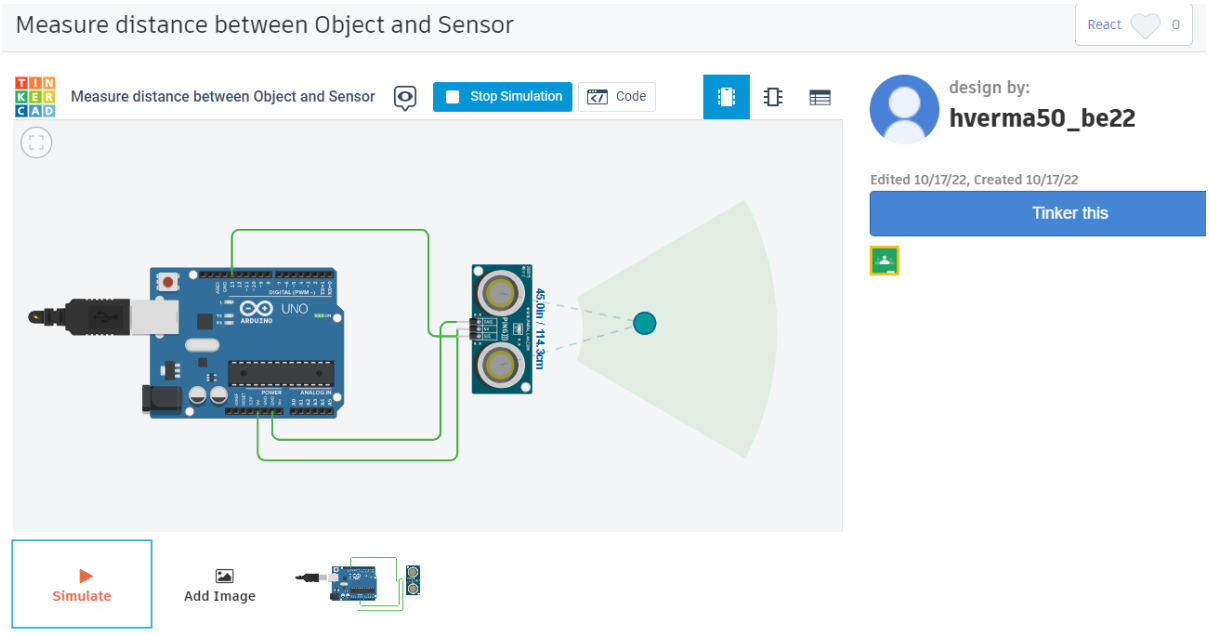
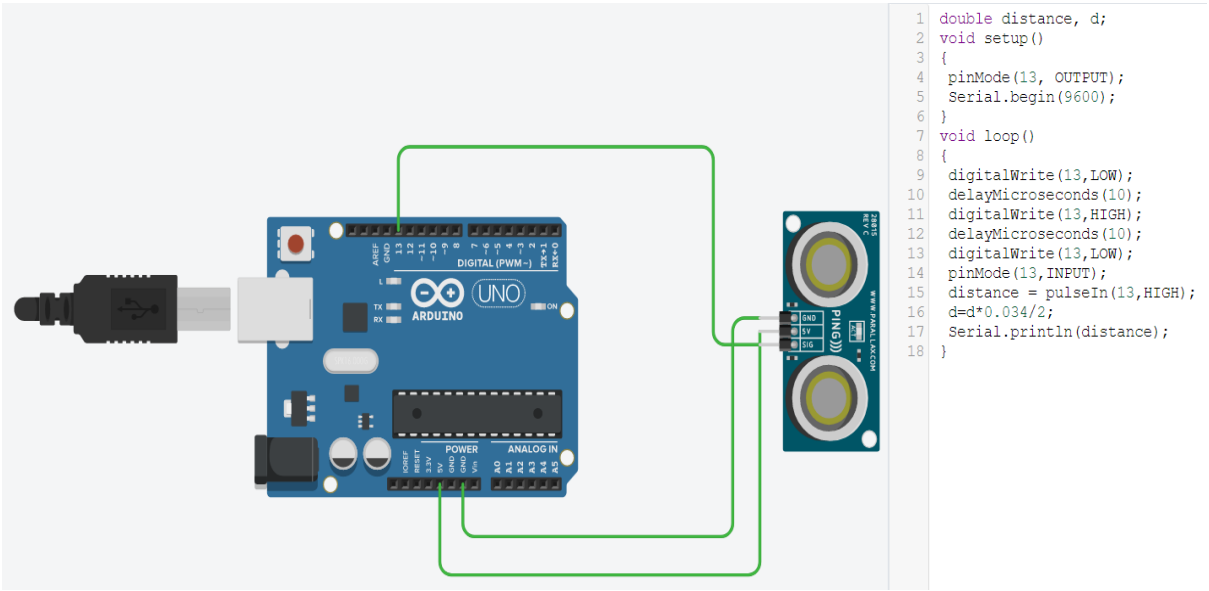
b. Measure distance between an object and the sensor itself






```
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 }
```