Task 25

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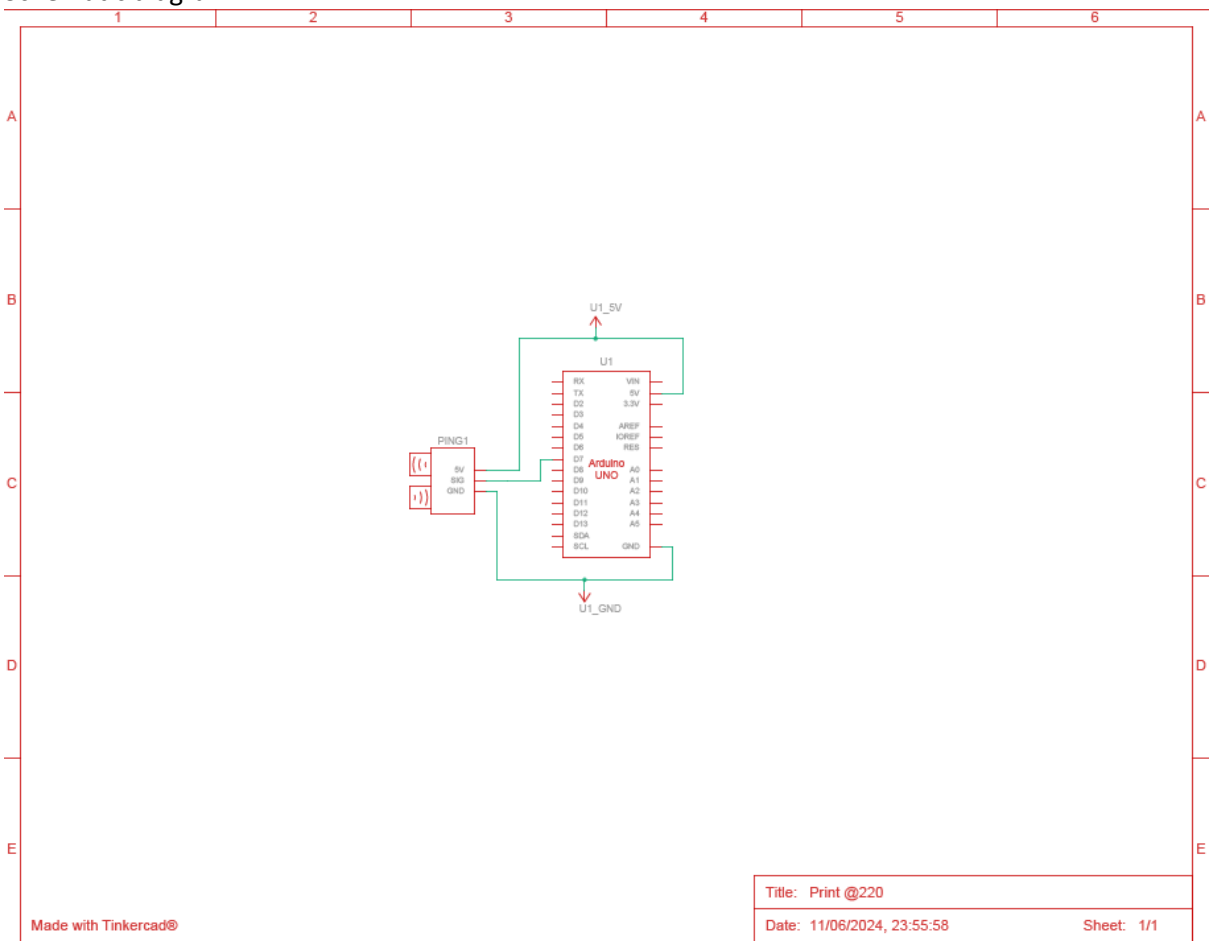
Question : print a message when distance of object from ultrasonic sensor is 220m and write about its component list,schematic diagram and working principle.

Answer :

- Working principle :
  The working principle of ultrasonic sensors is that it has 2 parts an emitter and a collector part from which the emitter part emits the ultrasonic waves and collector part receives the signal.it calculates the time between emission and collection and from time it gives us a distance by multiplying it with a constant 0.01723 to give us the distance in centimeters.

- Schematic diagram :



- Component list :

Name	Quantity used	Component
U1	1	Arduino Uno R3
PING1	1	Ultrasonic Distance Sensor

- Code :

```
int cm = 0;
int inch = 0;

long timeCalc(int TriggerPin , int EchoPin){
pinMode(TriggerPin , OUTPUT);
digitalWrite(TriggerPin,LOW);
delayMicroseconds(2);
digitalWrite(TriggerPin,HIGH);
delayMicroseconds(10);
digitalWrite(TriggerPin,LOW);
pinMode(EchoPin , INPUT);
return pulseIn(EchoPin,HIGH);
}
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  cm = 0.01723 * timeCalc(7, 7);
  inch = (cm / 2.54);
  if(200<cm && cm<220){
    Serial.println("hello");
    Serial.println("kem cho!");
    delay(2);
  }
  Serial.print(inch);
  Serial.print("in, ");
  Serial.print(cm);
  Serial.println("cm");
  delay(100);
}
```

- Output :

```
85in, 216cm
hello
kem cho!
85in, 216cm
hello
kem cho!
```

- Graph :