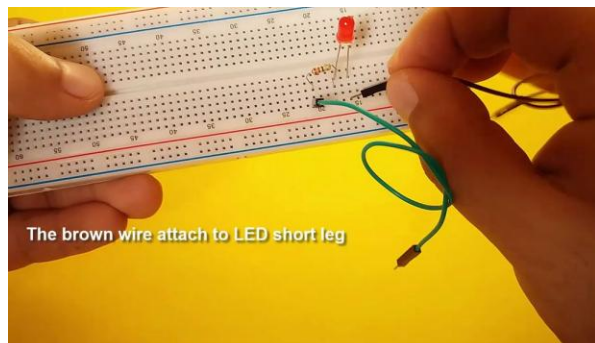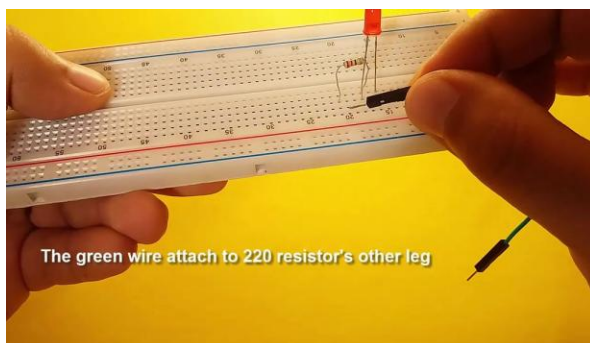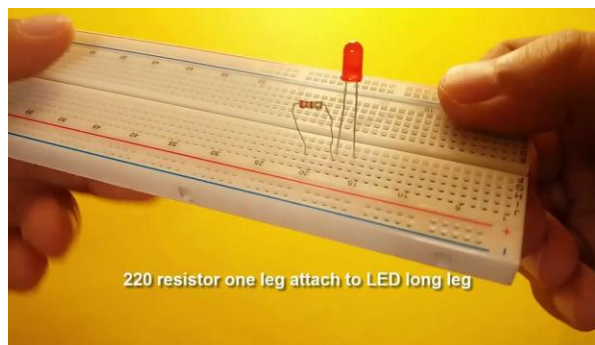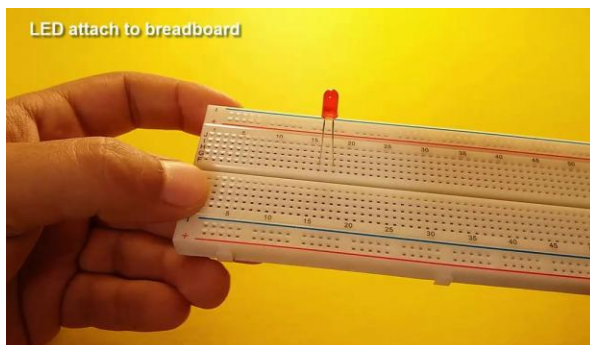# LESSON 5: LDR

INTRODUCTION

An LDR is a component that has a (variable) resistance that changes with the light intensity that falls upon it. This allows them to be used in light sensing circuits. In this project we will use arduino uno. This is simple arduino project; turn on LED when it's dark and turn off when is light.

COMPONENTS

- Arduino Uno
- LED
- LDR (photoresistor)
- 220Ω and 10k ohm resistors
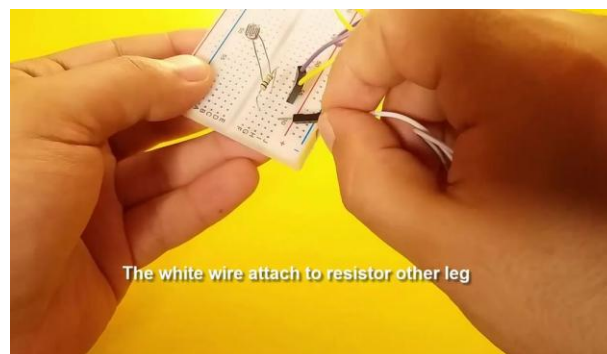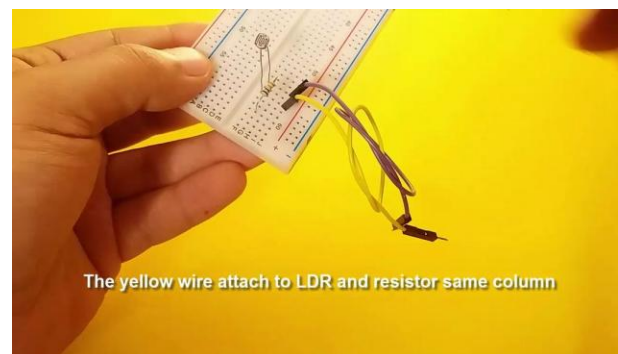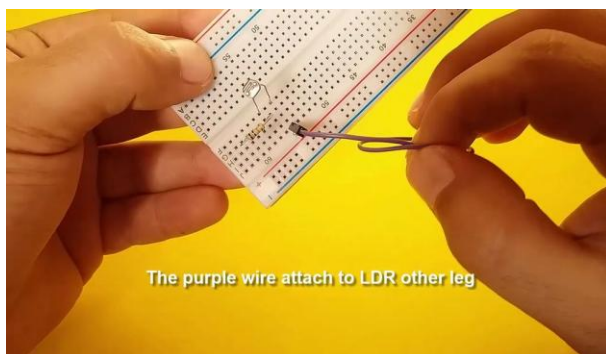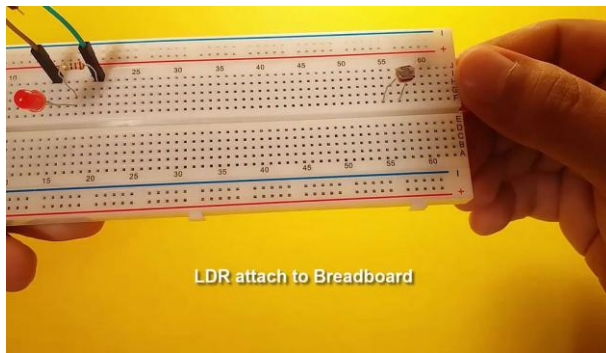- Jumper wires
- Breadboard

CONNECTION

STEP 1: LED Connection

LED attach to breadboard

220 resistor one leg attach to LED long leg

The green wire attach to 220 resistor's other leg

The brown wire attach to LED short leg

1. LED attach to board
2. Resistor (220 ohm) one leg attach to LED long leg
3. The green wire attach to resistor's empty leg
4. The brown wire attach o LED short leg

STEP 2: LDR Connection

LDR attach to Breadboard

10K resistor attach to LDR one leg

The purple wire attach to LDR other leg

The yellow wire attach to LDR and resistor same column

The white wire attach to resistor other leg
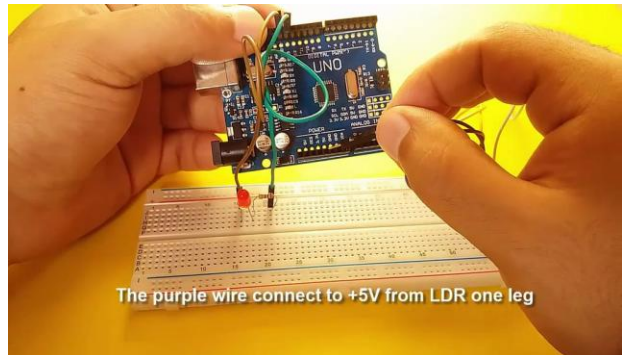
1. LDR attach to board
2. Resistor (10k ohm) attach to LDR one leg
3. The purple wire attach to LDR other (empty) leg
4. The yellow wire attach to LDR and resistor same column
5. The white wire attach to resistor empty leg

STEP 3: Arduino Connection

The green wire connect to digital13 from 220 resistor leg

The brown wire connect to ground (GND) from LED short leg

The purple wire connect to +5V from LDR one leg

The yellow wire connect to analog input (A0) from LDR and resistor same column
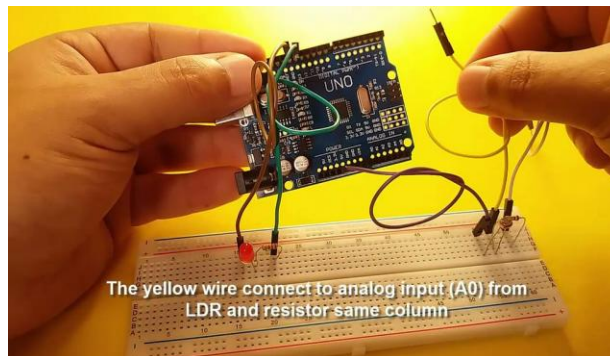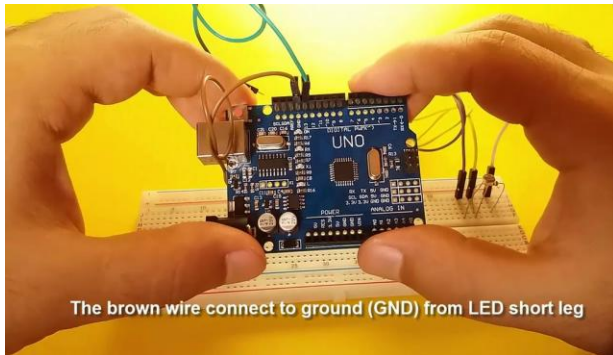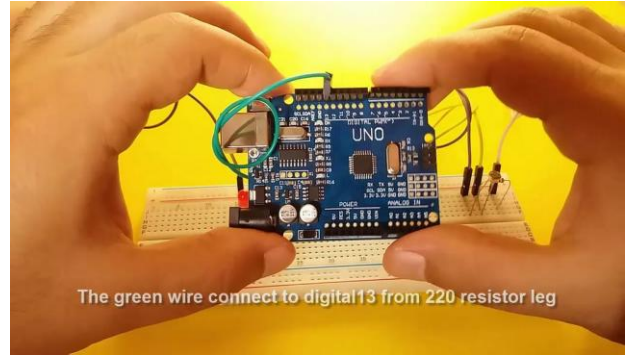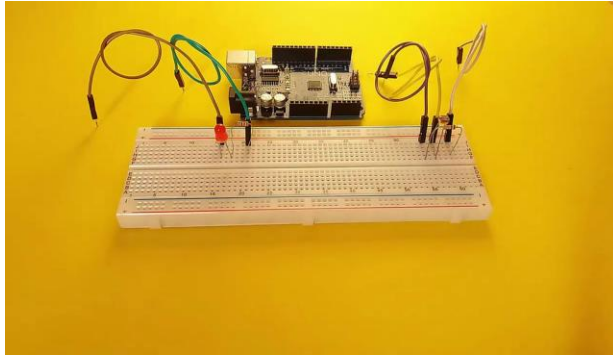
1. The green wire connect to digital 13 from resistor leg
2. The brown wire connect to GND from LED short leg
3. The purple wire connect to +5V from LDR
4. The yellow wire connect to A0
5. The white wire connect to GND

STEP 4: Program

```
//set pin numbers
//const won't change
const int ledPin = 13;   //the number of the LED pin
const int ldrPin = A0;   //the number of the LDR pin


void setup() {
  Serial.begin(9600);
  pinMode(ledPin, OUTPUT);  //initialize the LED pin as an output
  pinMode(ldrPin, INPUT);   //initialize the LDR as an input
}

void loop() {

int ldrStatus = analogRead(ldrPin);  //read the status of the LDR value

  //check if the LDR status is <= 300
  //if it is, the LED is HIGH

if (ldrStatus <=300) {

  digitalWrite(ledPin, HIGH);     //turn LED on
  Serial.println("LDR is DARK, LED is ON");
}

else {

  digitalWrite(ledPin, LOW);     //turn LED off
  Serial.println("---------------");
}

}
```
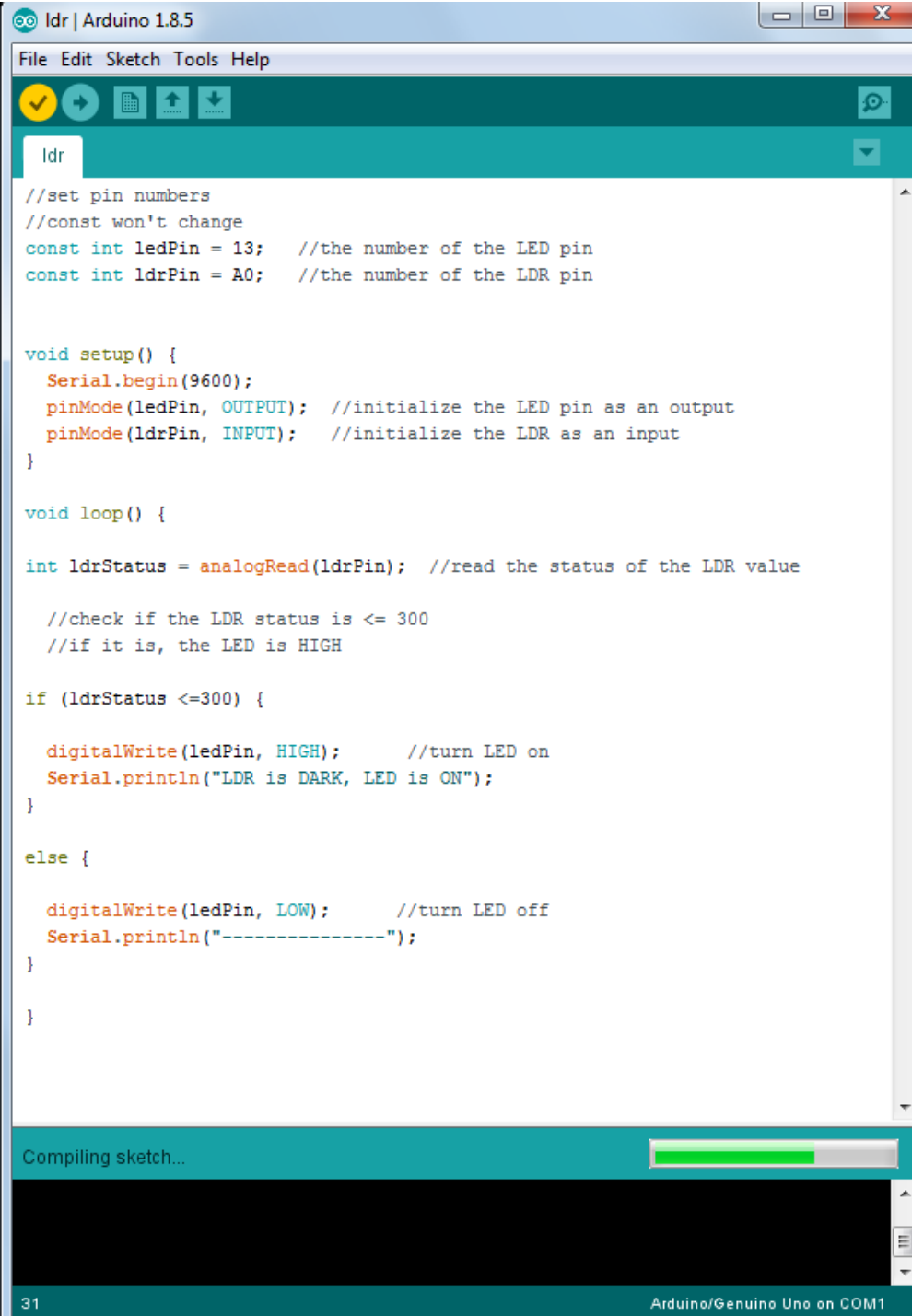
STEP 5: Compile the code

STEP 6: Upload the sketch to the Arduino UNO.


```
//set pin numbers
//const won't change
const int ledPin = 13;    //the number of the LED pin
const int ldrPin = A0;    //the number of the LDR pin


void setup() {
  Serial.begin(9600);
  pinMode(ledPin, OUTPUT);  //initialize the LED pin as an output
  pinMode(ldrPin, INPUT);   //initialize the LDR as an input
}

void loop() {

int ldrStatus = analogRead(ldrPin);  //read the status of the LDR value

  //check if the LDR status is <= 300
  //if it is, the LED is HIGH

if (ldrStatus <=300) {

  digitalWrite(ledPin, HIGH);      //turn LED on
  Serial.println("LDR is DARK, LED is ON");
}

else {

  digitalWrite(ledPin, LOW);      //turn LED off
  Serial.println("---------------");
}

}
```
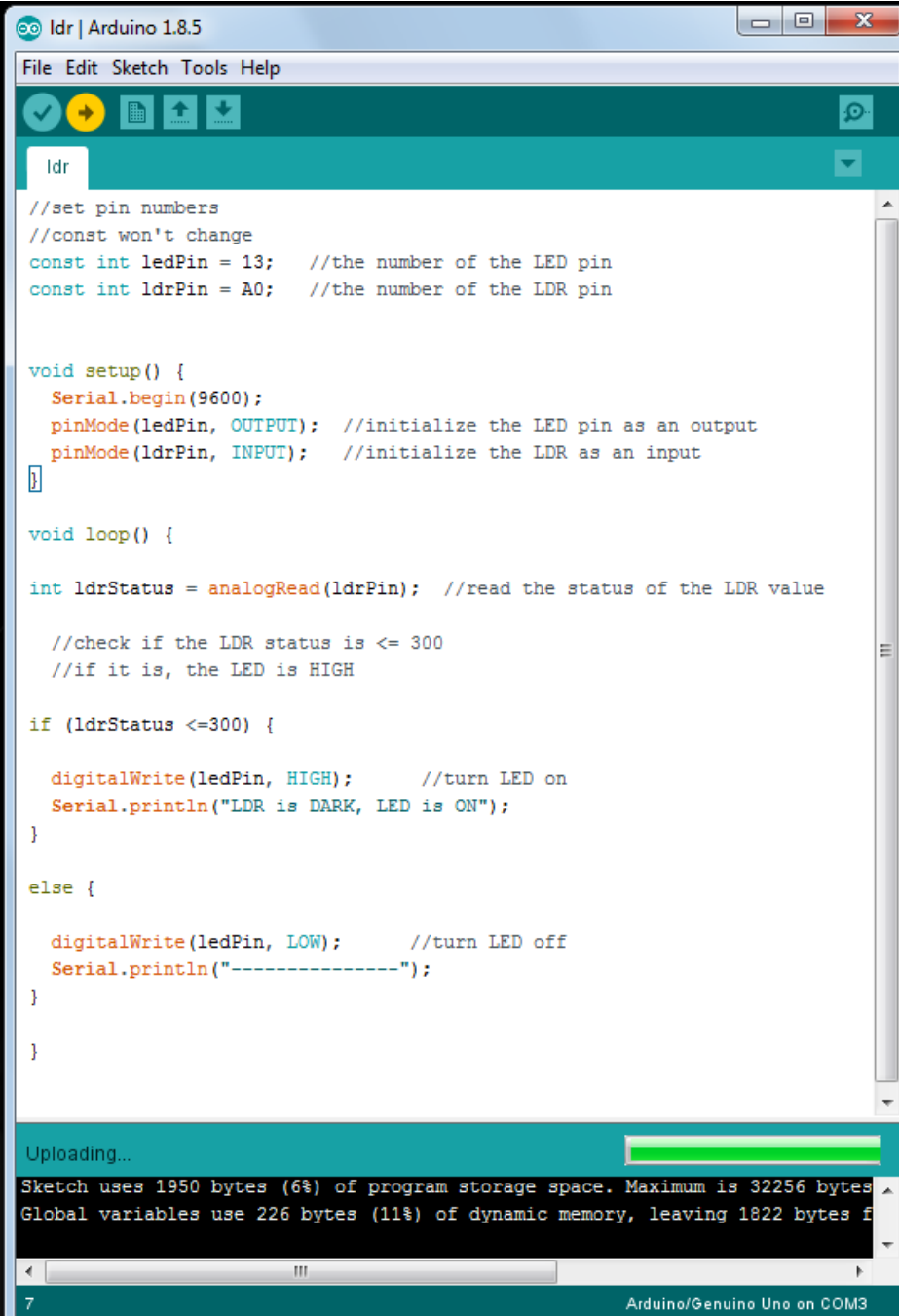
Uploading...

Sketch uses 1950 bytes (6%) of program storage space. Maximum is 32256 bytes
Global variables use 226 bytes (11%) of dynamic memory, leaving 1822 bytes f

RESULT: LED turn on when it's dark and turn off when is light.

COM3 (Arduino/Genuino Uno)

```
LDR is DARK, LED is ON
LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
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LDR is DARK, LED is ON
---------------
```

Autoscroll   No line ending   9600 baud   Clear output