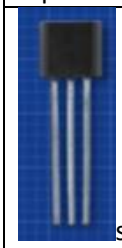
Lab 6

Oppgaver:

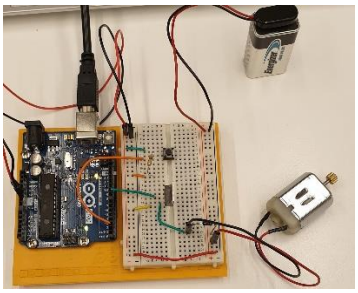
Oppgave 1

Transistor:

Det er to transistor hovedtyper Bipolar og felteffekt-transistor. Transistorer er småe elektroniske komponenter med to hovedfungsjoner. kan bli brukt som en bryter og amplifisere signal.

Bipolar	felteffekt
 småe lav effekts transistorer har en type plast for å beskytte indre komponenter	 høy effets transistorer har metal utenfor å fjerne meste parten av varmen som blir produsert.

Oppkobling:



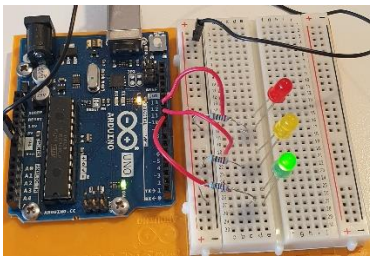
Kode:

```
const int switchPin = 2;
const int motorPin = 9;

void setup() {
  pinMode(motorPin, OUTPUT);
  pinMode(switchPin, INPUT);
}

void loop() {
  digitalWrite(motorPin, digitalRead(switchPin));
}
```

Oppgave 2

Oppgave 2A

Oppkobling:

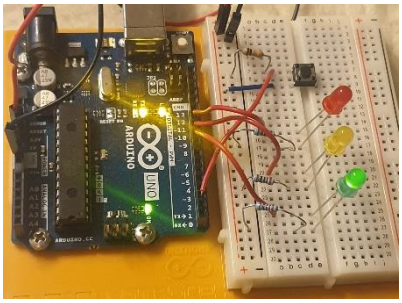


Kode:

```
const int redPin = 9;
const int yellowPin = 10;
const int greenPin = 11;
int aktivPin = 9;

void setup() {
  pinMode(greenPin, OUTPUT);
  pinMode(yellowPin, OUTPUT);
  pinMode(greenPin, OUTPUT);

}

void loop() {
  for(int i = 0; i < 255; i++){
    analogWrite(aktivPin, i);
    delay(10);
  }

  for(int i = 255; i > 0; i--){
    analogWrite(aktivPin, i);
    delay(10);
  }

}
```

Oppgave 2B

Oppkobling:



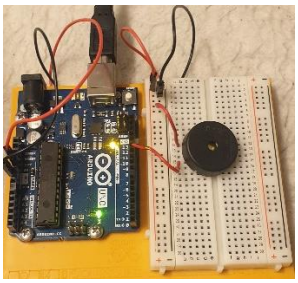
Kode:

```
const int interuptPin = 2;
const int redPin = 9;
const int yellowPin = 10;
const int greenPin = 11;

volatile int aktivPin = 9;

void setup() {
  Serial.begin(9600);

  Serial.println("Hello");

  pinMode(greenPin, OUTPUT);
  pinMode(yellowPin, OUTPUT);
  pinMode(greenPin, OUTPUT);
  pinMode(interuptPin, INPUT);
  attachInterrupt(digitalPinToInterrupt(interuptPin), changeLight, RISING);
}
```

```
void loop() {
  for(int i = 0; i < 255; i++){
    analogWrite(aktivPin, i);
    delay(10);
  }

  for(int i = 255; i > 0; i--){
    analogWrite(aktivPin, i);
    delay(10);
  }
  Serial.println(aktivPin);
}

void changeLight(){
  if (aktivPin >= 11){
    aktivPin = 9;
  } else {
    aktivPin++;
  }

  Serial.println(aktivPin);
}
```

Oppgave 3

Oppkobling:



Kode:

```
#define C1 260
#define D 292
#define E 328
#define F 348
#define G 392
#define A 440
#define H 492
#define C2 520

const int tonePin = 12;

int tones[8]= {C1,D,E,F,G,A,H,C2};
int count = 0;

void setup() {
  Serial.begin(9600);
  pinMode(tonePin, OUTPUT);
}

void loop() {
  Serial.println(tones[count]);
  delay(400);
  tone(tonePin, tones[count], 400000);
  count = (count + 1) % 8; //bruker modelo opperator for å telle fra 0 til 7

}
```

Oppgave 4

Oppkobling: lik oppg.3

Kode:

```
#define C1 260
#define D 292
#define E 328
#define F 348
#define G 392
#define A 440
#define H 492
#define C2 520

const int tonePin = 12;
int count = 0;

int melodi[22] = {C1,D,E,F,G,G,A,A,A,G,F,F,F,E,E,D,D,D,C1};
int varighet[22] = {1,1,1,1,2,2,1,1,1,1,4,1,1,1,2,2,1,1,1,1,4};

void setup() {
  Serial.begin(9600);
  pinMode(tonePin, OUTPUT);
}

void loop() {
  Serial.println(melodi[count]);
  delay(varighet[count]* 500);
  tone(tonePin, melodi[count], varighet[count] * 1000000 - 10);
  count = (count + 1) % 22;
  }
```