Lærerveiledning - 7-Segment Display

Arduino Oppgave

Informasjon til veiledere

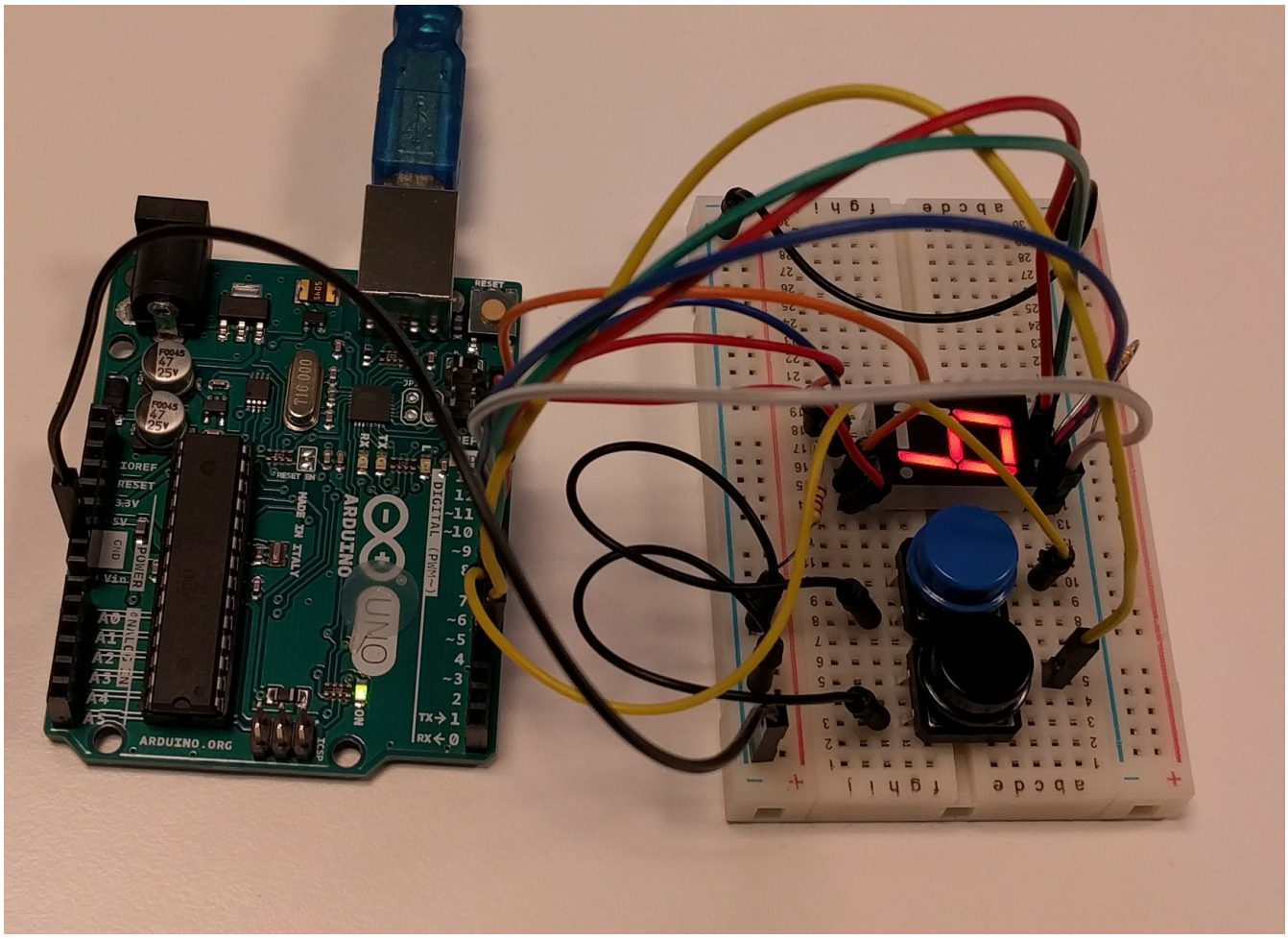
Læringsmål

Oppgaven «7-Segment Display» introduserer flere konsepter:

- En teknikk for å utforske ukjente komponenter
- 7-Segment Display
- Funksjoner og funksjonskall
- Switch statements

Merk

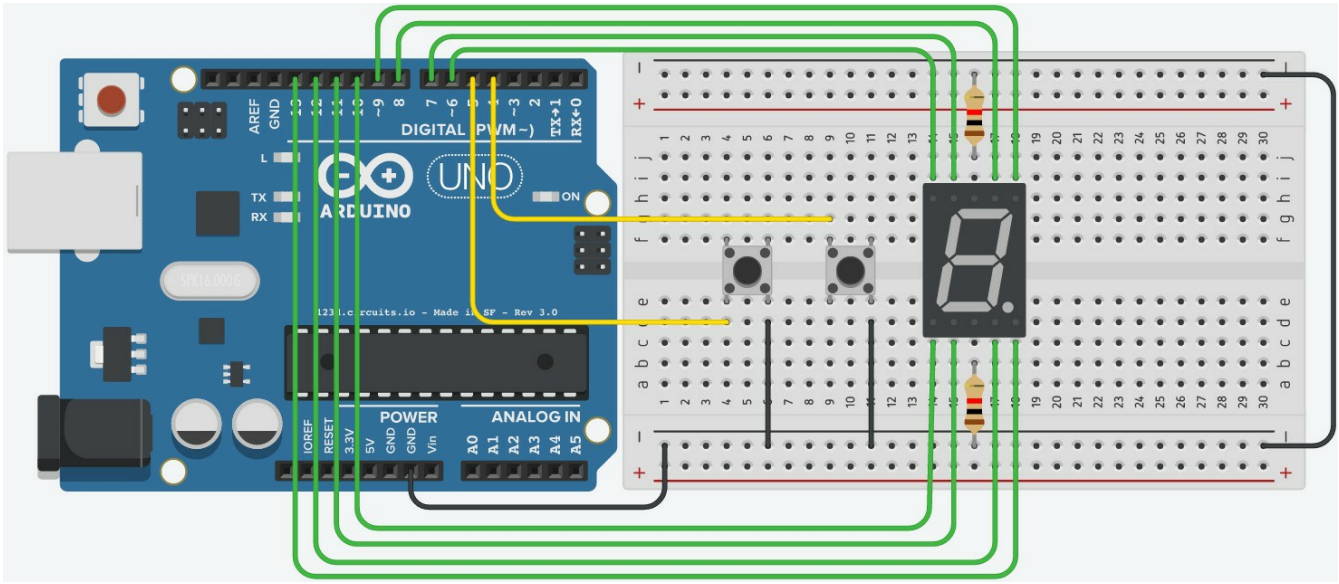
Denne oppgaven krever at elevene holder styr på en god del ledninger, og sluttresultatet vil se noe kaotisk ut.



Løsningsforslag

Display som teller opp og ned med to knapper.

Kobling:



Kode:

```
void blank() {
  for (int led = 6; led <= 13; led++) {
    digitalWrite(led, LOW);
  }
}

void tegn_0() {
  blank();
  digitalWrite(7, HIGH);
  digitalWrite(8, HIGH);
  digitalWrite(9, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(11, HIGH);
  digitalWrite(10, HIGH);
}

void tegn_1() {
  blank();
  digitalWrite(9, HIGH);
  digitalWrite(12, HIGH);
}

void tegn_2() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(9, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(10, HIGH);
  digitalWrite(11, HIGH);
}

void tegn_3() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(9, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(11, HIGH);
}

void tegn_4() {
  blank();
  digitalWrite(7, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(9, HIGH);
  digitalWrite(12, HIGH);
}
```

```
}

void tegn_5() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(7, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(11, HIGH);
}

void tegn_6() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(7, HIGH);
  digitalWrite(10, HIGH);
  digitalWrite(11, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(6, HIGH);
}

void tegn_7() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(9, HIGH);
  digitalWrite(12, HIGH);
}

void tegn_8() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(7, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(10, HIGH);
  digitalWrite(11, HIGH);
  digitalWrite(9, HIGH);
}

void tegn_9() {
  blank();
  digitalWrite(8, HIGH);
  digitalWrite(7, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(9, HIGH);
  digitalWrite(12, HIGH);
}

int minus = 5;
int pluss = 4;
int tall = 0;

void setup() {
  for (int led = 6; led <= 13; led++) {
    pinMode(led, OUTPUT);
  }
  pinMode(pluss, INPUT_PULLUP);
  pinMode(minus, INPUT_PULLUP);
  tegn_0();
}

void oppdater() {
  switch (tall) {
    case 1:
      tegn_1();
      break;
    case 2:
      tegn_2();
      break;
    case 3:
      tegn_3();
      break;
```

```
    break;
   case 4:
    tegn_4();
    break;
   case 5:
    tegn_5();
    break;
   case 6:
    tegn_6();
    break;
   case 7:
    tegn_7();
    break;
   case 8:
    tegn_8();
    break;
   case 9:
    tegn_9();
    break;
   case 10:
    tall = 9;
    break;
   default:
    tegn_0();
    tall = 0;
    break;
  }
  digitalWrite(13, HIGH);
  delay(150);
  digitalWrite(13, LOW);
  delay(150);
}

void loop() {
  if (digitalRead(pluss) == LOW) {
   tall += 1;
   oppdater();
  }
  if (digitalRead(minus) == LOW) {
   tall -= 1;
   oppdater();
  }
}
```