

Øving 4 Datateknikk

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February 2, 2019

1 Oppgave 1 - Logiske betingelser

```
1  %Oppgave 1
2
3  x=[-1,2,3,-2]
4  y=[0.2,3.1,0,-3]
5  z=[3,0,1,0.1]
6
7  %a)
8  x>z
9  x<y
10 x<y>z %Ser at vektoren evalueres elementvis
11
12 %b)
13 x+¬y
14 z
15 x+¬y>z %x+¬y>z 2/4 tilfeller
16
17 %c)
18 x==y %Determine eq. Vi f r kun 0
19 ¬z %Ser hva ¬z gir oss.
20 x==y≠z %Ser hvor not eq. er (x==y)≠z
```

2 Oppgave 2 - Practice-oppgaver

```
1 %4.3
2 function outtype = findargtype(inputarg)
3
4 [r c] = size(inputarg);
5 if r==1 && c==1
6     outtype = 'scalar';
7 else if r>c
8     outtype = 'row vector';
9     else if c>r
10        outtype = 'column vector';
11        else
12            outtype = 'matrix';
13        end
14    end
15 end
16
17 findargtype(33) %scalar
18 findargtype(2:3) %column vector
19 findargtype(3:2) %row vector
20 findargtype(randi(2,5)) %matrix
```

```
1 %4.4
2
3 function outtype = findargtypn(inputarg)
4
5 [r c] = size(inputarg);
6 if r==1 || c==1
7     outtype = 'vector';
8 end
9 if r==1 && c==1
10    outtype = 'scalar';
11 end
12 if r>1 && c>1
13    outtype = 'matrix';
14 end
15
16 findargtypn(2:5) %'vector'
17 findargtypn(255) %'scalar'
18 findargtypn(randi(5,5)) %'matrix'
```

```
1 %4.5
2
3 x=input('Enter text to display: ','s');
4 if isletter(x)
5     fprintf('You entered: %s\n',x);
6 else
7     error('You goofed up');
8 end
```

3 Oppgave 3 - switch..case

```
1 %Oppgave 3 - switch..case
2
3 disp('Write your car brand and find out its nationality!');
4 fprintf('\n');
5 x = input('Input brand here: ','s');
6
7 if isempty(x)
8     error('Please input a car brand');
9 else
10     switch x
11         case {'Ferrari','ferrari'}
12             disp('Italia');
13         case {'Toyota','toyota'}
14             disp('Japan');
15         case {'Tesla','tesla'}
16             disp('USA');
17         case {'Mercedes','VW','mercedes','Vw','vw',
18             'volkswagen','Volkswagen','bmw','BMW'}
19             disp('Germany');
20         otherwise
21             error('Brand not found. Try again');
22     end
23 end
```

```

1 //Oppgave 3.b
2 void setup() {
3     Serial.begin(9600); //definerer en startverdi
4
5     pinMode(7, OUTPUT); //Initierer LED-lysene
6     pinMode(6, OUTPUT);
7     pinMode(8, OUTPUT);
8     Serial.println("Input a,b or c. 0 to turn off the lights");
9
10
11 }
12
13 void loop() {
14     if(Serial.available()>0){ //Avleser sensor
15         int lesV = Serial.read();
16
17         switch(lesV){ //Initierer switch-case
18             case 'a':
19             case 'A':
20                 digitalWrite(7, HIGH);
21                 break;
22             case 'b':
23             case 'B':
24                 digitalWrite(6, HIGH);
25                 break;
26             case 'c':
27             case 'C':
28                 digitalWrite(8, HIGH);
29                 break;
30             case 'o':
31             case 'O':
32                 digitalWrite(6, LOW);
33                 digitalWrite(7, LOW);
34                 digitalWrite(8, LOW);
35                 break;
36             }
37         }
38     }

```

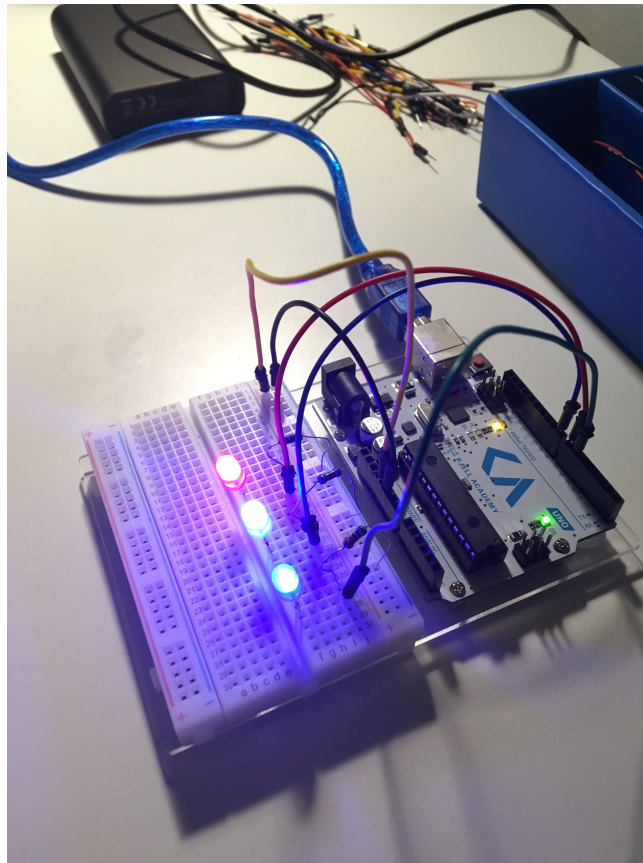


Figure 1: Bilde av koblingen

4 Oppgave 4 - Konvertere kontrollstrukturer

```

1  %Exercise 23
2
3  ranforce = randi([0,12]);
4  if ranforce==0
5      disp('There is no wind')
6  elseif ranforce>0 && ranforce<7
7      disp('There is a breeze');
8  elseif ranforce>6 && ranforce<10
9      disp('This is a gale');
10 elseif ranforce>9 && ranforce<12
11     disp('It is a storm');
12 else
13     disp('Hello, Hurricane!');
14 end

```

```
1 %Exercise 24
2 num=randi([-10,10],1); %Initierer en random integer for variablen
3
4 switch num
5     case {0,1,2}
6         f2(num)
7     case {-1, -2}
8         f3(num)
9     case {3,4}
10        f4(num)
11    otherwise
12        f1(num)
13 end
```