

Problem 1

Make syntax diagram for the following EBNF

```

<program> → { <setning>* }
<setning> → <tilordning> | <if-then-else> | <while>
<tilordning> → <identifiser> = <exp>
<if-then-else> → if <exp> { <setning>+ } |
                 if <exp> { <setning>+ } else { <setning>+ }
<while> → while <exp> { <setning>+ }
<exp> → <identifiser> | <number> | (<exp>) | <exp> <operator> <exp>

```

Problem 2

Make the parse tree (according to the grammar in Problem 1) for

```

{ i=1
  while i<10 {
    i=i+1
    j=j+i
  }
}

```

Assume that <operator> may be one of the ordinary operators and that 'i' og 'j' are legal <identifiser>s.

Problem 3

```

<uttrykk> → - <startterm> | <startterm>
<startterm> → 0 | T | T <term>
<term> → 0 <term> | T <term> | ε

```

Make non-deterministic and deterministic automata and corresponding (state,terminal symbol) table.

Problem 4

Make a metamodel corresponding to the grammar in Problem 1.

Hint: Think of how a parse tree would be represented by means of a structure of objects, and make the class model that reflects this.

Note that there is not one and only one correct metamodel.

Are there any advantages/disadvantages compared to grammars/parsetrees?