

CSC301 Assignment 13

Given our language ONE, add subtraction to the language. That is:

- add subtraction to the BNF grammar for ONE
- add the minus/2 term to the Prolog-interpreted operational semantics (also used as the abstract syntax tree representation)
- extend the natural semantics with a rule for subtraction.

Demonstrate that your semantic definitions derive correct values for subtraction. For each of the following sentences, show:

- Show the complete parse tree of the sentence
- Show that your operational semantic interpreter produces the correct result (apply **val1** to the AST; e.g., `val1(minus(const(2),const(1),X)` for the first sentence) query and Prolog's response
- Show the natural semantic interpretation / proof

These are the Language ONE sentences to use in your demonstrations:

1. **2-1**
2. **3*2-3**
3. **3*(2-3)**

What to hand in:

Please submit the following in a **single pdf**:

- BNF syntax of the extended language ONE
- Operational semantic interpreter of ONE, submit screenshot of the Prolog code
- Demonstration of the operational semantics include screenshot of your Prolog query and Prolog's response
- Parse trees and the natural semantics