## Plan for Today

**Meggy Java compiler for PA3**

**Regression testing**

**Expressions in MeggyJava**

**Syntax-directed expression evaluation**
- example
- but what about grammar ambiguity?

**Ambiguity and examples of removing it**
- modifying the grammar
- using JavaCUP precedence and left and right keywords



## Overview of PA3

**Building a lexer with JLex**

**Building a parser with JavaCUP**

**Use syntax-directed eval of constant integer and byte expressions.**

**Use syntax-directed translation to generate AVR code.**

**Create regression testing framework and show to instructor in recit.**

## Regression Testing

**Main ideas**

- Automated testing framework
- When modify program, test that previous functionality works
- Be able to easily add test cases for new functionality

**Examples you have written?**

**PA3**

- MeggyJava compiler
- Meggy java-only interface
- Meggy AVR simulator

**Ideas?**

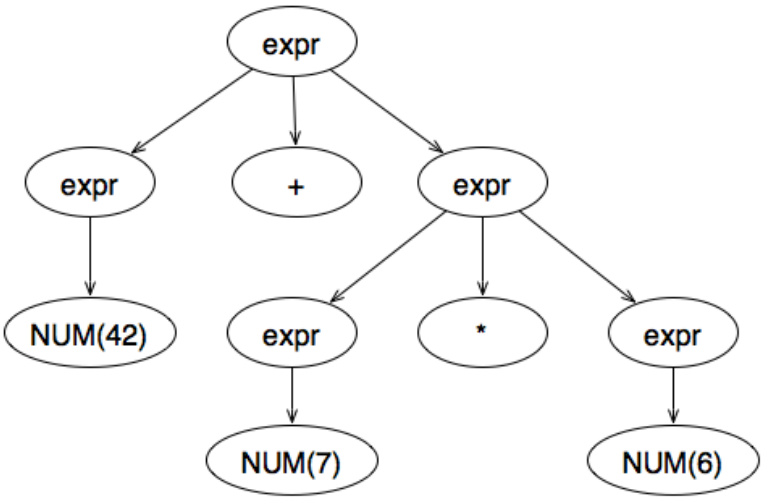


## Subset of MeggyJava Expression Grammar

*Subset*

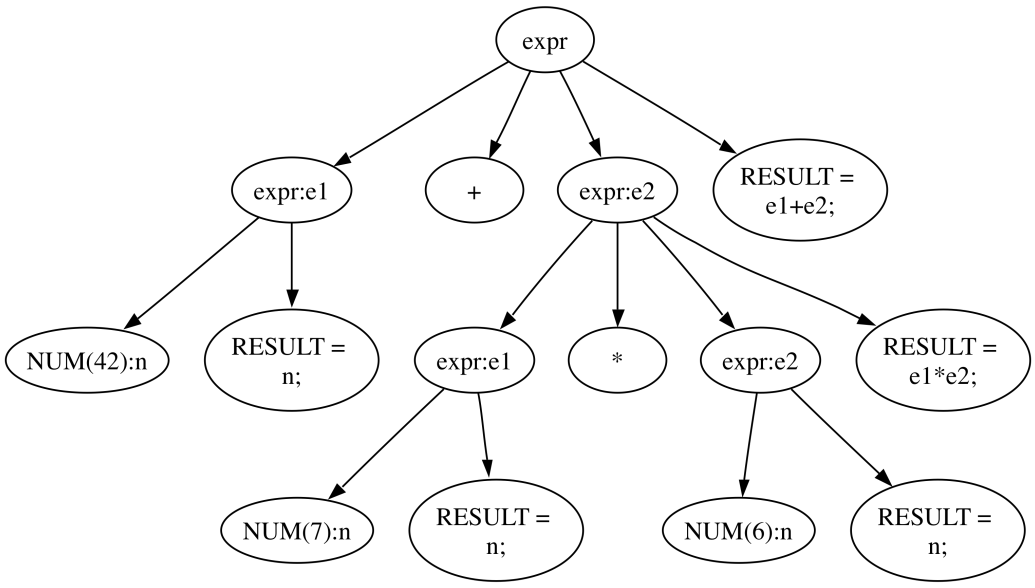
```
Expression ::=
      Expression ("+" | "-" | "*" ) Expression

    | “(“ “byte” “)” Expression

    | <INTEGER_LITERAL>

    | <COLOR_LITERAL>

    | "(" Expression ")"
```

## Parse Tree Example

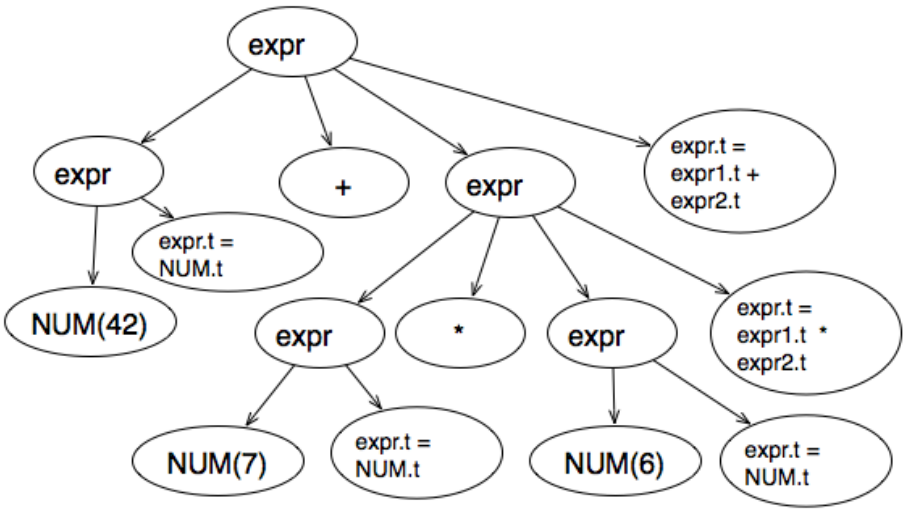





## Semantic Rules for Expression Example (JavaCUP)



## Semantic Rules for Expression Example (book notation)






## Another valid parse tree