COMPILATION TECHNIQUES TASK
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1.) Sequence of Derivation
a.) Legal String

- 7+3*4-9
    - **exp** →
    - **exp addop term** →
    - **exp addop term** addop term →
    - exp addop **term mulop factor** addop term →
    - **term** addop term mulop factor addop term →
    - **factor** addop term mulop factor addop term →
    - **number** addop term mulop factor addop term →
    - **7** addop term mulop factor addop term →
    - 7 + term mulop factor addop term →
    - 7 + **factor** mulop factor addop term →
    - 7 + **number** mulop factor addop term →
    - 7 + **3** mulop factor addop term →
    - 7 + 3 ***** factor addop term →
    - 7 + 3 * **number** addop term →
    - 7+3***4** addop term →
    - 7+3*4**-** term →
    - 7+3*4- **factor** →
    - 7+3*4- **number** →
    - <mark>7+3*4-9</mark>

b.) Illegal String
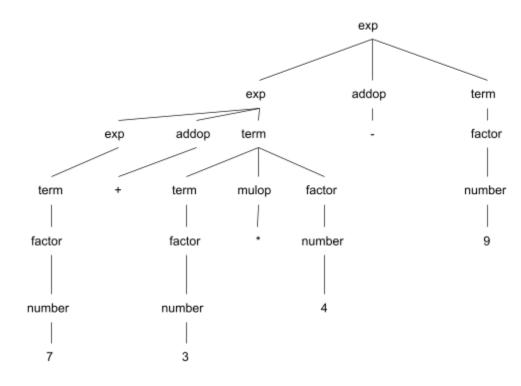
- 7+3*
    - **exp** →
    - **exp addop term** →
    - exp addop **term mulop factor** →
    - **term** addop term mulop factor →
    - **factor** addop term mulop factor →
    - **number** addop term mulop factor →
    - **7** addop term mulop factor →
    - 7 + term mulop factor →
    - 7 + **factor** mulop factor →
    - 7 + **number** mulop factor →
    - 7 + **3** mulop factor →
    - 7+3* factor

- The string above returns an error because it requires a number token at the end to be completed.

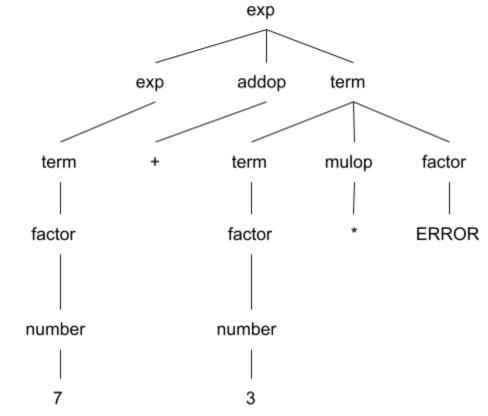## 2.) Parse Tree

a.) Legal String

b.) Illegal String

```
                              exp
             ┌─────────────────┼─────────────────┐
            exp              addop             term
         ┌────┘           ┌────┘         ┌──────┼──────┐
       term              +             term   mulop   factor
         │                              │      │        │
       factor                         factor   *      ERROR
         │                              │
       number                         number
         │                              │
         7                              3
```