



# Week 3 - VBL

- Post it in the forum – Newbinusmaya
- Due: **Tuesday, 8 March 2022, BEFORE mid-day**
- Individual Assignment part 1 and 2



# Assignment Part 1

- Let any set of production rules in a CFG be
$$X \rightarrow (X) \mid X+X \mid X*X \mid X-X \mid X \mid a$$
- $a*a+(a-a)$**

## Questions:

1. Show leftmost derivation & draw the parse tree
2. Show rightmost derivation & draw the parse tree



# Assignment Part. 2

Consider grammar G

$V = \{ \text{Expr, Term, Factor} \}$

$T = \{ +, -, *, /, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, \dots, (, ) \}$

$P = \{$   
     $\text{Expr} \rightarrow \text{Expr} + \text{Term},$   
     $\text{Expr} \rightarrow \text{Expr} - \text{Term},$   
     $\text{Expr} \rightarrow \text{Term},$   
     $\text{Term} \rightarrow \text{Term} * \text{Factor},$   
     $\text{Term} \rightarrow \text{Term} / \text{Factor},$   
     $\text{Term} \rightarrow \text{Factor},$   
     $\text{Factor} \rightarrow \text{digit},$   
     $\text{Term} \rightarrow ( \text{Expr} ),$   
     $\text{Factor} \rightarrow ( \text{Expr} ),$   
     $\text{digit} \rightarrow 0 \mid 1 \mid 2 \mid 3 \mid \dots$   
     $\}$

$S = \text{Expr}$

## Questions:

1. Show left derivation of “ $(2+3) * 5+7 / (9-4)$ ”
2. Show right derivation of “ $(2+3) * 5+7 / (9-4)$ ”
3. Draw parse tree for point (1) above
4. Draw parse tree for point (2) above

The background is a solid blue color. On the left side, there are two large, overlapping circles. The circle in the foreground is a lighter shade of blue, while the one behind it is a darker shade. They overlap in the center-left area of the slide.

Thank you