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ΜΕΤΑΓΛΩΤΤΙΣΤΕΣ - Εργασία 1

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Αρχική Γραμματική (για μονοψήφιους αριθμούς)

1. exp → num | exp op exp | (exp)
2. op → + | - | * | /
3. num → 0|1|2|3|4|5|6|7|8|9

Ενδιάμεση Γραμματική - Προτεραιότητα Τελεστών

1. exp → exp + term
2. | exp - term
3. | term
4. term → term * factor
5. | term / factor
6. | factor
7. factor → num
8. | (exp)
9. num → 0|1|2|3|4|5|6|7|8|9

Τελική Γραμματική - LL(1)

1. exp → term exp2
2. exp2 → + term exp2
3. | - term exp2
4. | ε
5. term → factor term2
6. term2 → * factor term2
7. | / factor term2
8. | ε
9. factor → num
10. | (exp)
11. num → 0|1|2|3|4|5|6|7|8|9

Σύνολα FIRST

- FIRST(exp) = FIRST(term) = FIRST(factor) = FIRST(num) ∪ { (} = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, (}
- FIRST(exp2) = { +, −, ε }
- FIRST(term) = FIRST(factor) = FIRST(num) ∪ { (} = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, (}
- FIRST(term2) = { *, /, ε }
- FIRST(factor) = FIRST(num) ∪ { (} = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, (}
- FIRST(num) = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

Σύνολα FOLLOW

- FOLLOW(exp) = { EOF,) }
- FOLLOW(exp2) = FOLLOW(exp) = { EOF,) }
- FOLLOW(term) = FIRST(exp2) = {+, −, ε} = {+, −} ∪ FOLLOW(exp2) = { +, −, EOF,) }
- FOLLOW(term2) = FOLLOW(term) = { +, −, EOF,) }
- FOLLOW(factor) = FIRST(term2) = {*, /, ε} = {*, /} ∪ FOLLOW(term2) = { *, /, +, −, EOF,) }
- FOLLOW(num) = FOLLOW(factor) = { *, /, +, −, EOF,) }

Σύνολα FIRST+

- FIRST+(exp) = FIRST(exp) = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, (}
- FIRST+(exp2) = FIRST(exp2) − {ε} ∪ FOLLOW(exp2) = { +, −, EOF,) }
- FIRST+(term) = FIRST(term) = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, (}
- FIRST+(term2) = FIRST(term2) − {ε} ∪ FOLLOW(term2) = { *, /, +, −, EOF,) }
- FIRST+(factor) = FIRST(factor) = { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, (}
- FIRST+(num) = FIRST(num) = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

Lookup Table

	+	−	*	/	(	)	$	0|1|2|3|4|5|6|7|8|9
exp	error	error	error	error	term exp2	error	error	term exp2
exp2	+term exp2	-term exp2	error	error	error	ε	ε	error
term	error	error	error	error	factor term2	error	error	factor term2
term2	ε	ε	*factor term2	/factor term2	error	ε	ε	error
factor	error	error	error	error	(exp)	error	error	num
num	error	error	error	error	error	error	error	do nothing