unacademy

# Parsing-V

Complete Course on Compiler Design

**Subbarao Lingamgunta** • Lesson 8 • Aug 24, 2023

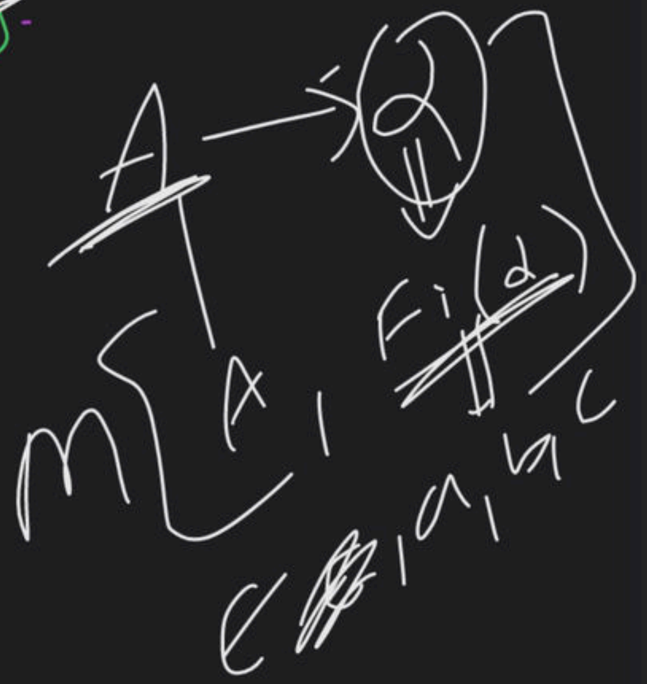
unacademy

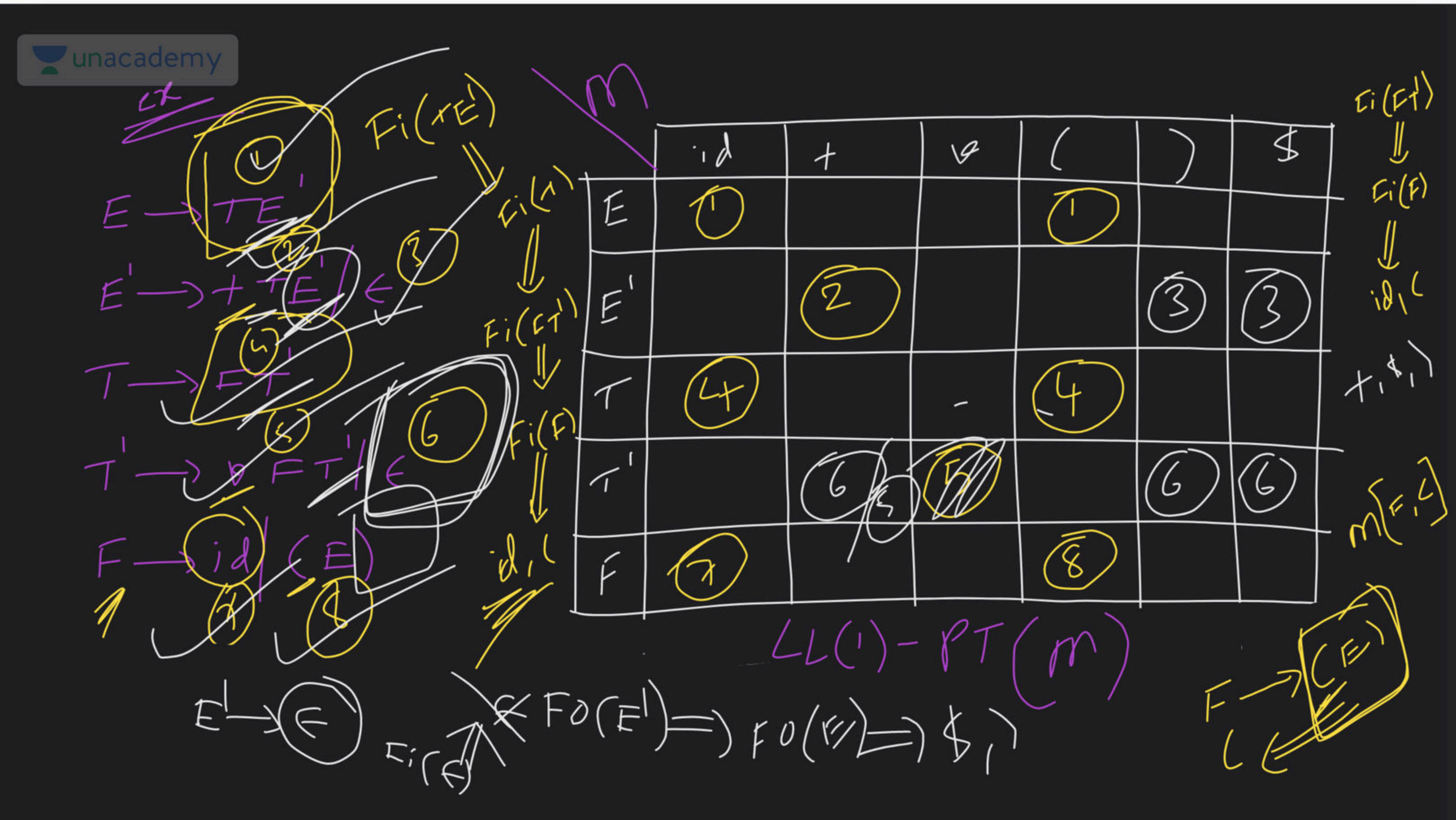
Algo

for each production $A \to \alpha$
repeate following steps:

(1) add $A \to \alpha$ under $M[A, d]$.
$\forall d \in First(\alpha)$

(2) if $First(\alpha)$ contain $\epsilon$ then
add $A \to \alpha$ under $M[A, e]$
$\forall e \in Follow(A)$.




unacademy
CFG
E → TE'
E' → +TE' | ∈
T → FT'
T' → *FT' | ∈
F → id | (E)
Fi(TE')
Fi(T)
Fi(FT')
Fi(F)
id, (
M
id
+
*
(
)
$
E
E'
T
T'
F
LL(1) - PT (M)
Fi(FT')
Fi(F)
id, (
+, $, )
M[F, (]
F → (E)
(
E' → ∈
Fi(∈)
Fo(E')
Fo(∈)
$, )

unacademy

ex

$S \rightarrow (L) \mid a$ ① ②

$L \rightarrow SL'$ ③

$L' \rightarrow ,SL' \mid \epsilon$ ④ ⑤

| | , | a | ( | ) | $ |
|---|---|---|---|---|---|
| S | | ② | ① | | |
| L | | ③ | ③ | | |
| L' | ④ | | | ⑤ | |

$Fi(\epsilon) = \{\epsilon\}$

$Fo(L') \Rightarrow$ LL(1) - PT

$Fi(SL') = Fi(S)$

$L, a$

$\alpha_1 \rightarrow \beta$

$Fi(\beta_1) = Fo(\alpha_1)$

unacademy

ex

1

$S \rightarrow aBDh$ ✓

2 3

$B \rightarrow cC \mid \epsilon$ ✓

$C \rightarrow bC \mid \epsilon$ ✓

4 5

$D \rightarrow FE$ ✓

6

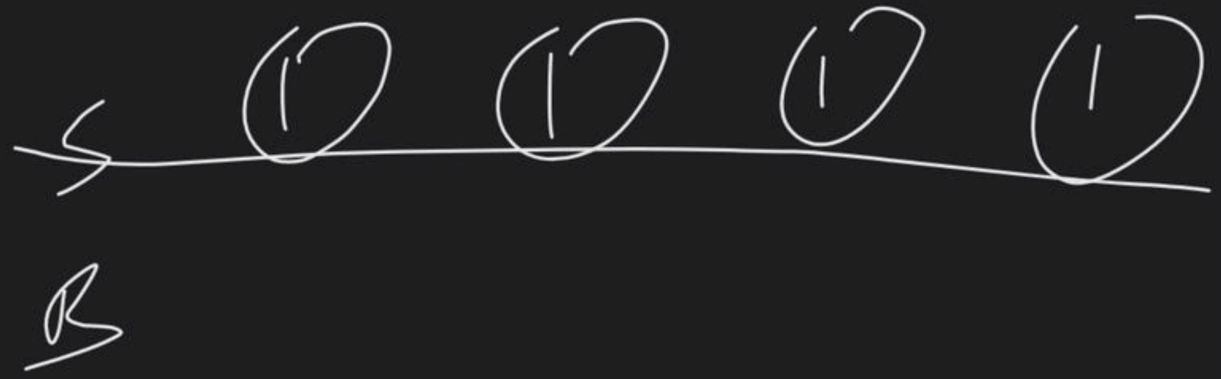
$F \rightarrow f \mid \epsilon$ ✓

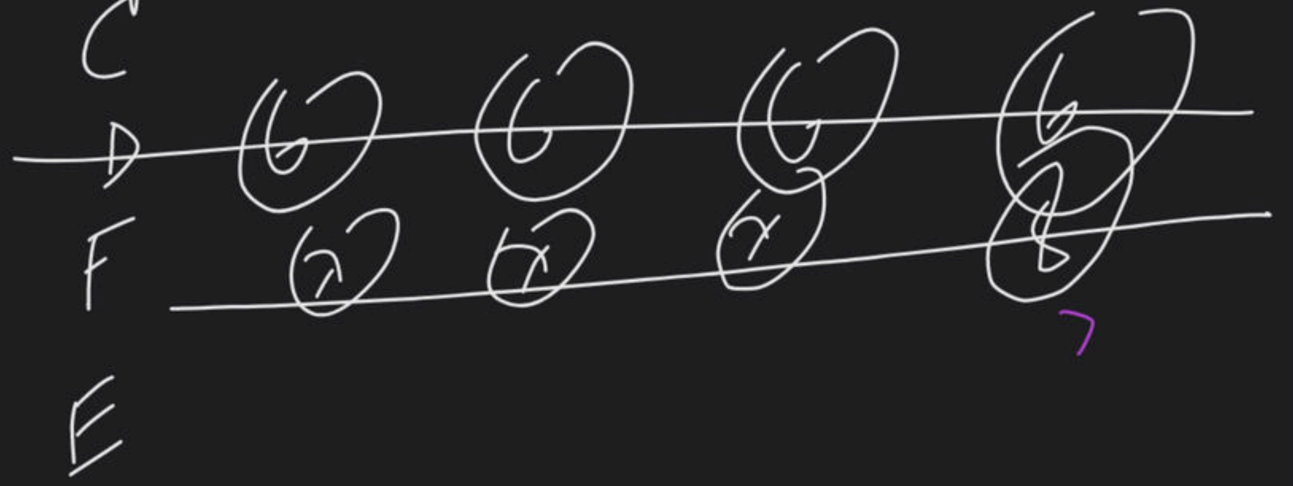
7 8

$E \rightarrow f \mid \epsilon$ ✓

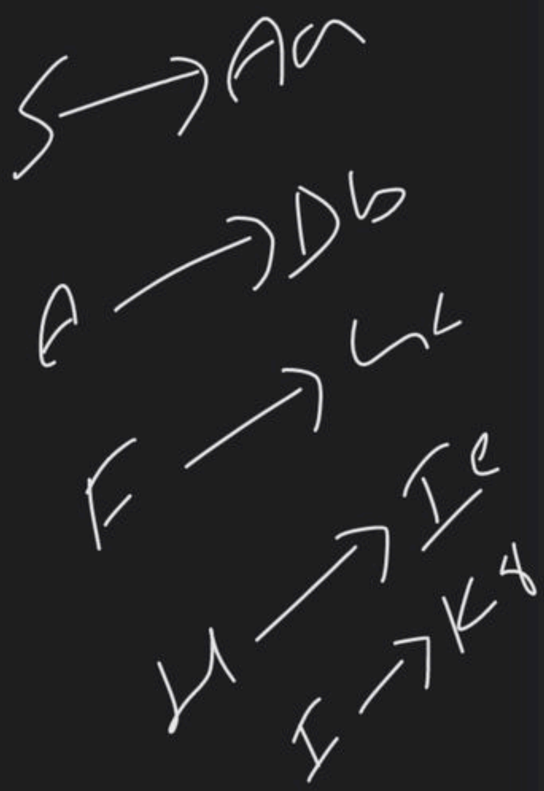
9 10

| | | | | |
|---|---|---|---|---|
| S | 1 | 1 | 1 | 1 |
| B | | | | |
| C | | | | |
| D | 6 | 6 | 6 | 6 |
| F | 7 | 7 | 7 | 8 |
| E | | | | |





unacademy



unacademy

$S \rightarrow aSbS \mid bSaS \mid \epsilon$

| | Fi() | Fo() |
|---|---|---|
| S | a, b, ε | $, b, a |

$S \rightarrow aAb \mid BbBa$

$A \rightarrow \epsilon$

$B \rightarrow \epsilon$

| | Fi() | Fo() |
|---|---|---|
| S | a, b | $ |
| A | ε | a, b |
| B | ε | b, a |