doc.md 9/23/2022

CYK01. Fie gramatica independenta de context

```
G = (V_N, V_T, P, D), \ V_N = \{D, L, S, Z\}, \ V_T = \{:, (,), v, ,, i\}, \ P = \{ \ 1.D 
ightarrow L, \ 2.L 
ightarrow Z: S, \ 3.S 
ightarrow i, \ 4.S 
ightarrow (Z), \ 5.Z 
ightarrow v, \ 6.Z 
ightarrow Z, v \ \}
```

Generati un cuvant alcatuit din 5-7 simboluri. Efectuati analiza sintactica utilizand algoritmul Cocke-Yanger-Kasami.

## Rezolvare:

Initial transformam gramatica pentru a elimina epsilon productiile, redenumirile si simboluri inaccesibile si inutile. Gramatica nu are epsilon productii, iar singura redenumire este in regula 1:

```
G = (V_N, V_T, P, D), \ V_N = \{D, S, Z\}, \ V_T = \{:, (,), v, ., i\}, \ P = \{ \ 1.D 
ightarrow Z : S, \ 2.S 
ightarrow i, \ 3.S 
ightarrow (Z), \ 4.Z 
ightarrow v, \ 5.Z 
ightarrow Z, v \ \}
```

Reguli inaccesibile si inutile nu avem, deci reducem la FNC:

doc.md 9/23/2022

```
G = (V_N, V_T, P, D),
V_N = \{D, S, Z, X_1, X_2, X_3, X_4, X_5\},
V_T = \{:,(,),v,,,i\},
P =
{
1.D 	o ZX_1S,
2.X_1 \rightarrow:
3.S \rightarrow i,
4.S \rightarrow X_2 Z X_3
5.X_2 
ightarrow (
6.X_3 
ightarrow)
7.Z 
ightarrow v,
8.Z 
ightarrow ZX_4X_5
9.X_4 \rightarrow,
10.X_5 
ightarrow v
}
G = (V_N, V_T, P, D),
V_N = \{D, S, Z, X_1, X_2, X_3, X_4, X_5, Y_1, Y_2\},
V_T = \{:,(,),v,,,i\},
P =
{
1.D 
ightarrow ZY_1,
2.Y_1 
ightarrow X_1 S
2.X_1 \rightarrow:
3.S 
ightarrow i,
4.S 
ightarrow X_2 Y_2,
5.Y_2 
ightarrow ZX_3
6.X_2 
ightarrow (
7.X_3 \rightarrow)
8.Z \rightarrow v,
9.Z 
ightarrow ZY_3
10.Y_3 
ightarrow X_4 X_5
11.X_4 \rightarrow,
12.X_5 
ightarrow v
}
```

Generam un cuvant din gramatica:

$$egin{align} D 
ightarrow ZY_1 
ightarrow vX_1S 
ightarrow v: X_2Y_2 
ightarrow v: (ZX_3 
ightarrow v: (v) \ & T_{11} 
ightarrow Z|X_5 \ & T_{21} 
ightarrow X_1 \ & T_{31} 
ightarrow X_2 \ & T_{41} 
ightarrow Z|X_5 \ & T_{51} 
ightarrow X_3 \ & \end{array}$$

doc.md 9/23/2022

| V                 | :              | (              | V                 | )              |
|-------------------|----------------|----------------|-------------------|----------------|
| Z, X <sub>5</sub> | X <sub>1</sub> | X <sub>2</sub> | Z, X <sub>5</sub> | X <sub>3</sub> |
| -                 | -              | -              | Y <sub>2</sub>    |                |
| -                 | -              | S              |                   |                |
| -                 | Y <sub>1</sub> |                |                   |                |
| D                 |                |                |                   |                |

Confirmam ca cuvantul face parte din gramatica.