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Lucrare de laborator nr.2

Varianta 1

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:

```
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 
ightarrow 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 
ightarrow v,
9.Z 
ightarrow ZY_3
10.Y_3 
ightarrow X_4 X_5
11.X_4 
ightarrow,
12.X_5 
ightarrow v
}
```

Generam un cuvant din gramatica:

$$D o ZY_1 o vX_1S o v:X_2Y_2 o v:(ZX_3 o v:(v)$$
 $T_{11}=Z|X_5$
 $T_{21}=X_1$
 $T_{31}=X_2$
 $T_{41}=Z|X_5$
 $T_{51}=X_3$

$$T_{12} = ZX_1 | X_5 X_1$$

$$T_{22}=X_1X_2$$

$$T_{32} = X_2 Z | X_2 X_5$$

$$T_{42} = ZX_3|X_5X_3$$

$$T_{13} = -$$

$$T_{23}=-$$

$$T_{33}=X_2Y_2$$

$$T_{14}=-$$

$$T_{24}=X_1S$$

$$T_{15} = ZY_1 | X_5 Y_1$$

	V	:	(V)
	Z, X ₅	X ₁	X ₂	Z, X ₅	X ₃
	-	=	=	Y ₂	
	-	-	S		
	=	Y ₁			
,	D				

Confirmam ca cuvantul face parte din gramatica.