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PSE Übungsblatt 8

Aufgabe 1

a) (\n wird hier für einen Zeilenumbruch verwendet)

Postanschrift = Name "\n" Straße " " Hausnummer "\n" Postleitzahl " " Städtename "\n" [Land];

Name = (Personenname|Firmenname);

Personenname = {Vorname} " " Nachname;

Vorname = {Buchstabe};

Nachname = {Buchstabe};

Buchstabe = ("a"|"b"|"c"|"d"|"e"|"f"|"g"|"h"|"i"|"j"|"k"|"l"|"m"|"n"|"o"|"p"|"q"|"r"|"s"|"t"|"u"|"v"|"w"|"x"|"y"|"z"|"ä"|"ö"|"ü"|"ß"|"é"|"è"|"à"|" " |"-");

Firmenname = {Buchstabe};

Straße = {Buchstabe};

Hausnummer = ZifferOhneNull {Ziffer};

ZifferOhneNull = ("1"|"2"|"3"|"4"|"5"|"6"|"7"|"8"|"9");

Ziffer = (ZifferOhneNull|"0");

Postleitzahl = Ziffer Ziffer Ziffer Ziffer Ziffer;

Städtename = {Buchstabe};

Land = {Buchstabe};

b)

Term \Rightarrow Term "*" Term \Rightarrow Var "*" Term \Rightarrow "x" "*" Term \Rightarrow

"x" "*" "(" Term ")" \Rightarrow "x" "*" "(" Term "+" Term ")" \Rightarrow

"x" "*" "(" Var "+" Term ")" \Rightarrow "x" "*" "(" "x" "+" Term ")" \Rightarrow

"x" "*" "(" "x" "+" Term "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" Konst "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" Zahl "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" Zahl Ziffer "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" Ziffer Ziffer "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" "2" Ziffer "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" Term ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" "(" Term ")" ")" \Rightarrow

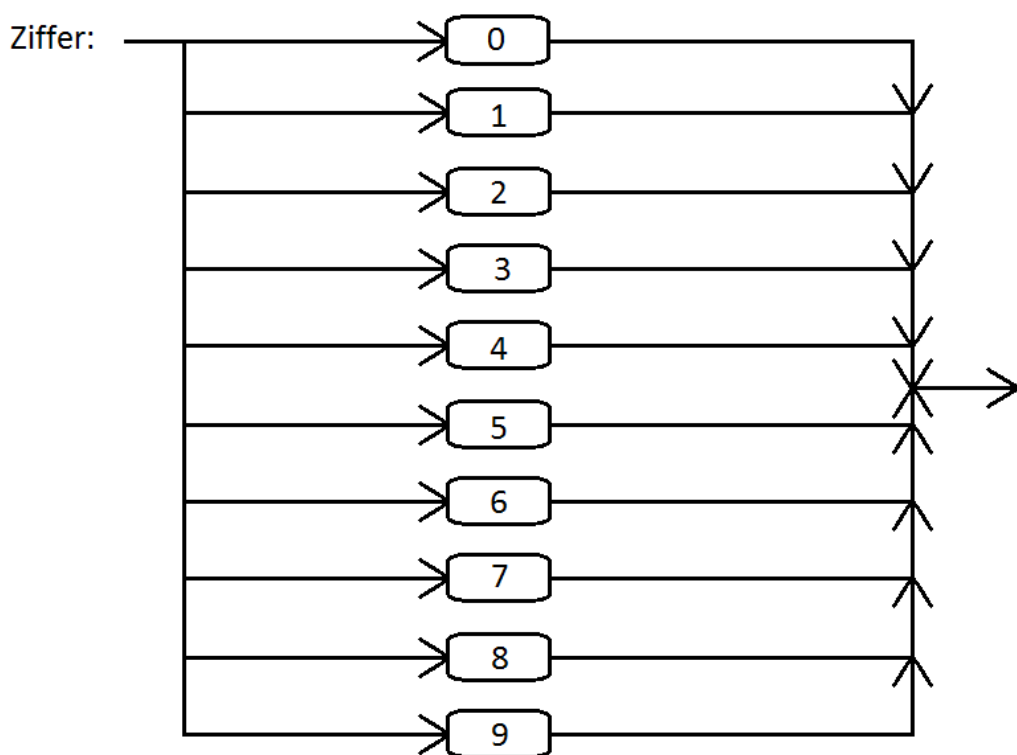
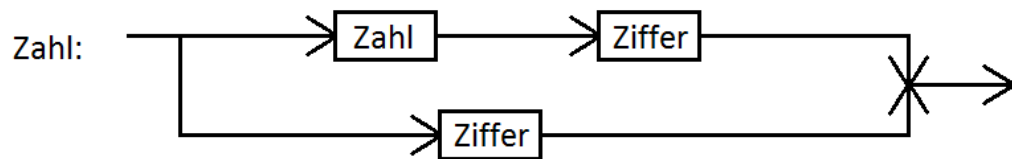
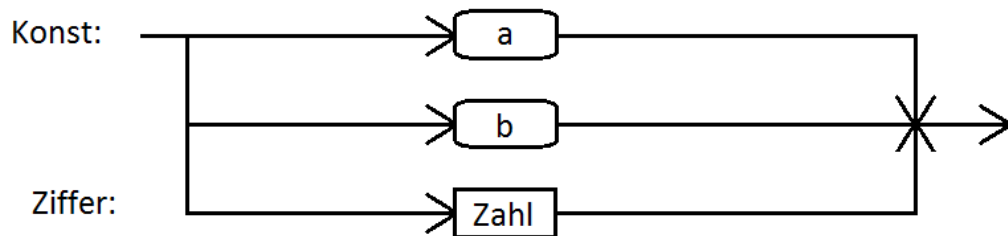
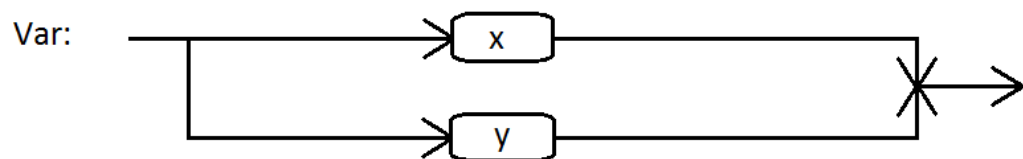
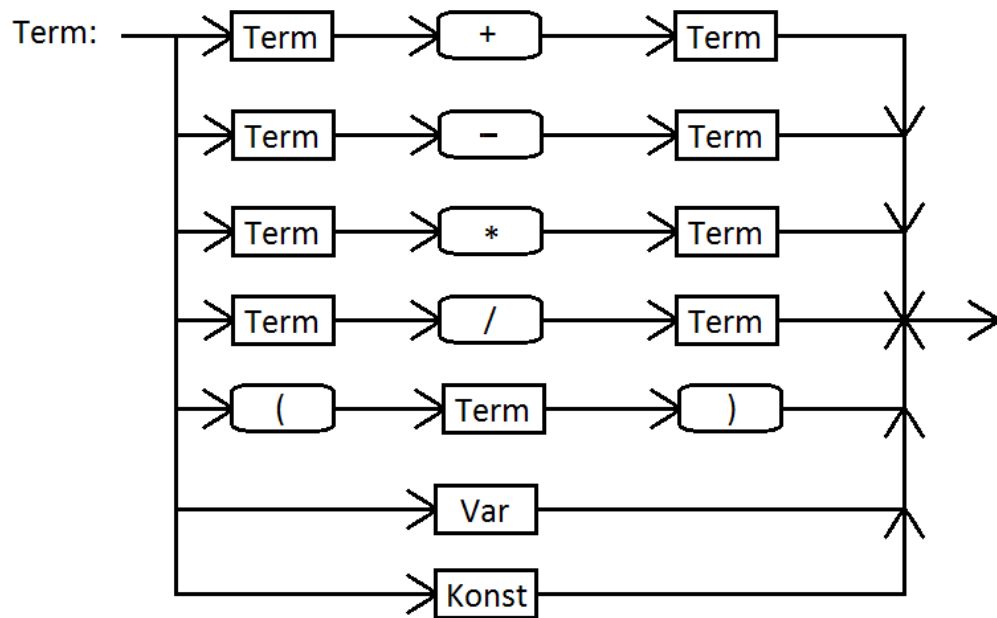
"x" "*" "(" "x" "+" "2" "5" "*" "(" Term "-" Term ")" ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" "(" Konst "-" Term ")" ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" "(" "a" "-" Term ")" ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" "(" "a" "-" Konst ")" ")" \Rightarrow

"x" "*" "(" "x" "+" "2" "5" "*" "(" "a" "-" "b" ")" ")"



c)

$S = ("a"|"a"S"a"|S"a");$

Aufgabe 2

a)

$S \Rightarrow aB \Rightarrow aaBB \Rightarrow aabB \Rightarrow aabbS \Rightarrow aabbbA \Rightarrow aabbbaS \Rightarrow aabbbaaB \Rightarrow$
 $aabbbbaaaBB \Rightarrow aabbbaaabB \Rightarrow aabbbaaabb$

b)

$L(G_2) = \{a^n b^n \mid n > 0\}$

c)

$G_3 = (\{a, b, c\}, \{S, A, B\}, \{S \rightarrow AB \mid \varepsilon, A \rightarrow AA \mid a, B \rightarrow bBc \mid bc\}, S)$

$S \Rightarrow AB \Rightarrow AAB \Rightarrow aAB \Rightarrow aaB \Rightarrow aabBc \Rightarrow aabbBcc \Rightarrow aabbbBccc \Rightarrow$
 $aabbbbccccc$

d)

$S \Rightarrow aSBC \Rightarrow aaBCBC \Rightarrow aaBBCC \Rightarrow aabBCC \Rightarrow aabbCC \Rightarrow aabbcC \Rightarrow$
 $aabbcc$