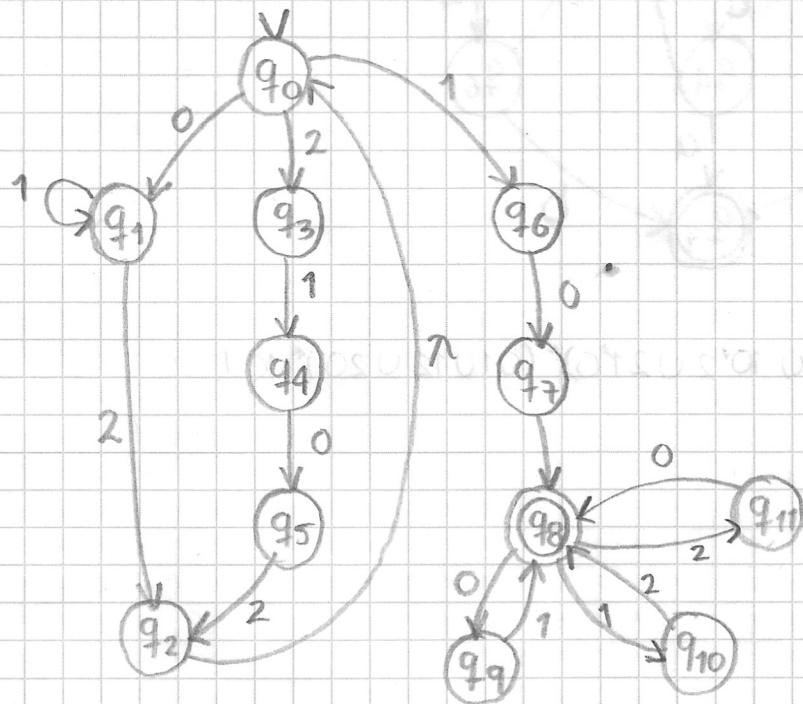


Computer Science III

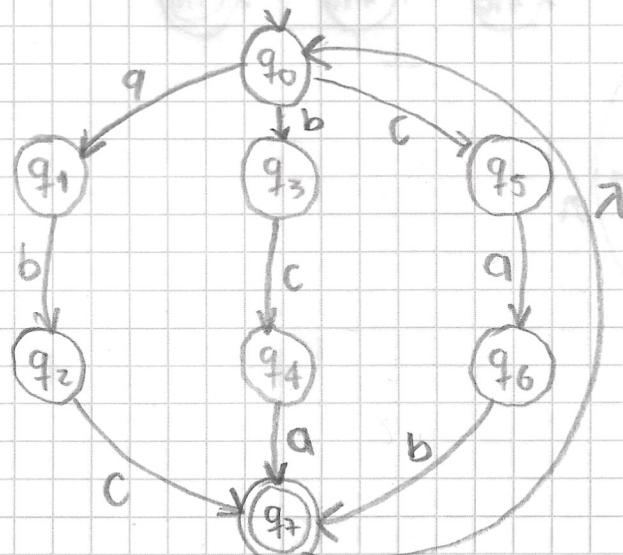
WorkShop 1.

Student: laura Daniela Cubillos Escobar -20211020045.

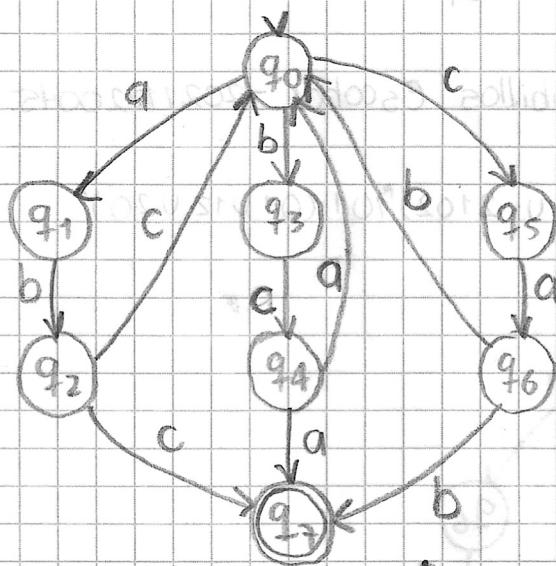
$$\text{① i) } \Sigma = \{0, 1, 2\} \quad L = (01^* 2 \cup 2102)^* 01 (01 \cup 12 \cup 20)^*$$



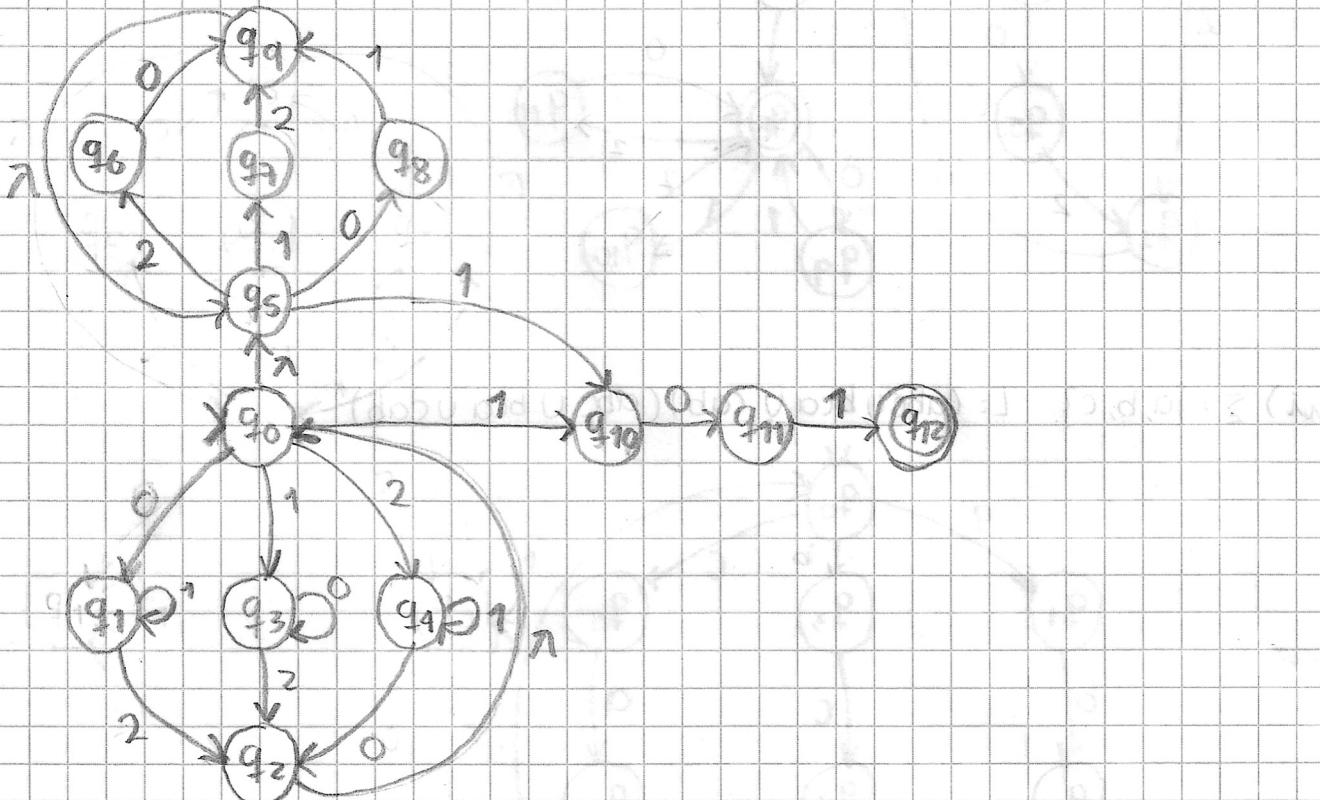
$$\text{ii) } \Sigma = \{a, b, c\} \quad L = (abc \cup bca \cup cab)(abc \cup bca \cup cab)^*$$



iii) $\Sigma = \{a, b, c\}$ $L = (abc \cup bca \cup cab)^* (abc \cup bca \cup cab)$



iv) $\Sigma = \{0, 1, 2\}$ $L = (01^* 2 \cup 10^* 2 \cup 21^* 0)^* (01 \cup 12 \cup 20)^* 101$



② i) regular expression: $(0^+10^+1^*)^*$

generative grammar:

$$G = \begin{cases} S \rightarrow 0A1\lambda \\ A \rightarrow 0A11B \\ B \rightarrow 0B10C \\ C \rightarrow 1C11S1\lambda \end{cases}$$

ii) regular expression: $((aub)c(\lambda \cup a \cup ac) \cup (b \cup c)a(\lambda \cup c \cup ca)) \times (a(b \cup c)^*) \cup \lambda$

generative grammar:

$$G = \begin{cases} S \rightarrow aA|bA|bB|cB \\ A \rightarrow cB|cD \\ B \rightarrow aA|aD \\ D \rightarrow aE \\ E \rightarrow bE|cE|\lambda \end{cases}$$

③ i)

$$G = \begin{cases} S \rightarrow aAd \\ A \rightarrow aAd|bBc \\ B \rightarrow bBc|\lambda \end{cases}$$

ii) *

$$G = \begin{cases} S \rightarrow AB \\ A \rightarrow aAb|ab \\ B \rightarrow cBd|cd \end{cases}$$

iii)

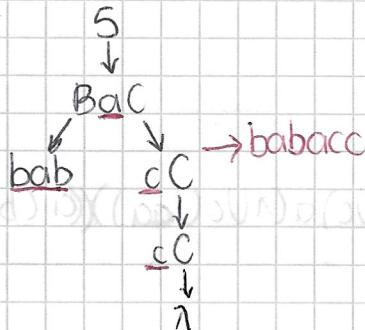
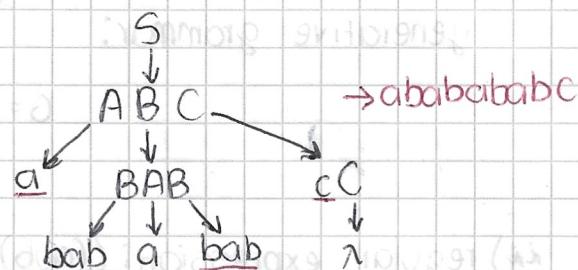
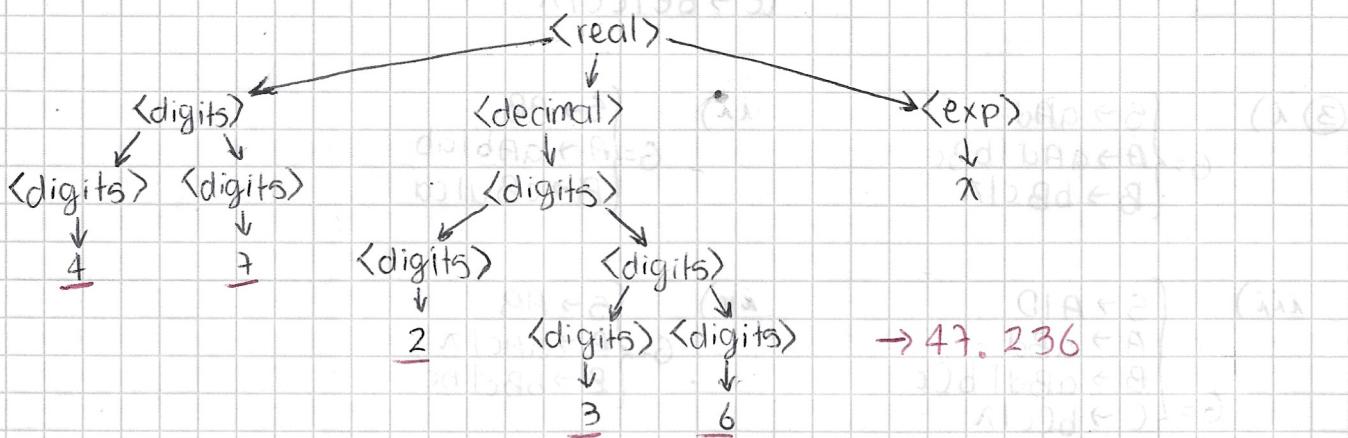
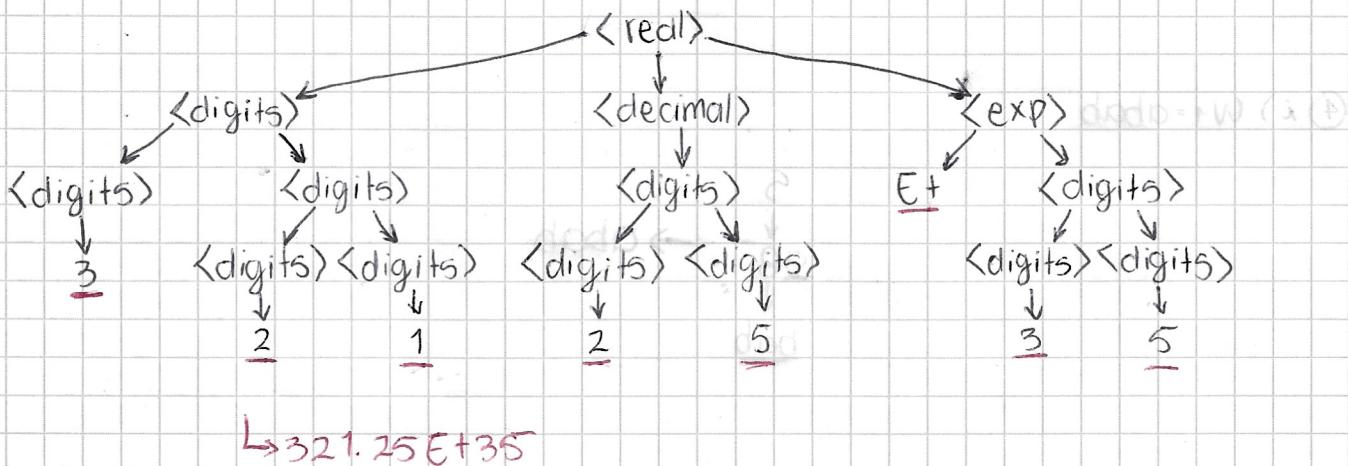
$$G = \begin{cases} S \rightarrow AID \\ A \rightarrow aBd \\ B \rightarrow aBd|bCc \\ C \rightarrow bCc|\lambda \\ D \rightarrow EF \\ E \rightarrow aEb|ab \\ F \rightarrow cFd|cd \end{cases}$$

iv)

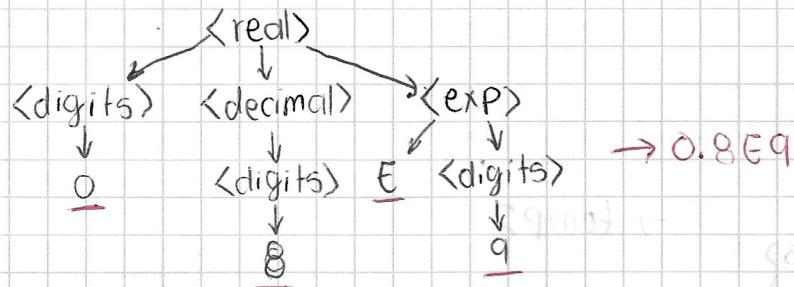
$$G = \begin{cases} S \rightarrow AB \\ A \rightarrow aAc|\lambda \\ B \rightarrow bBc|bc \end{cases}$$

④ i) $w_1 = abab$

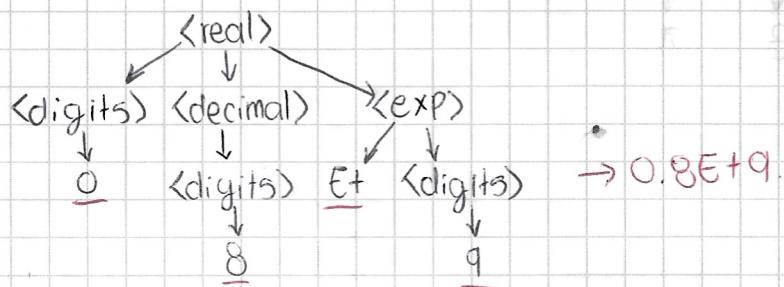
$$\begin{array}{c} S \\ \downarrow \\ \underline{aB} \\ \downarrow \\ \underline{bab} \end{array} \rightarrow abab$$

(ii) $w_2 = babacc$ (iii) $w_3 = ababababc$ (5) i) $w_1 = 47.236$ (i) $w_2 = 321.25E+35$ 

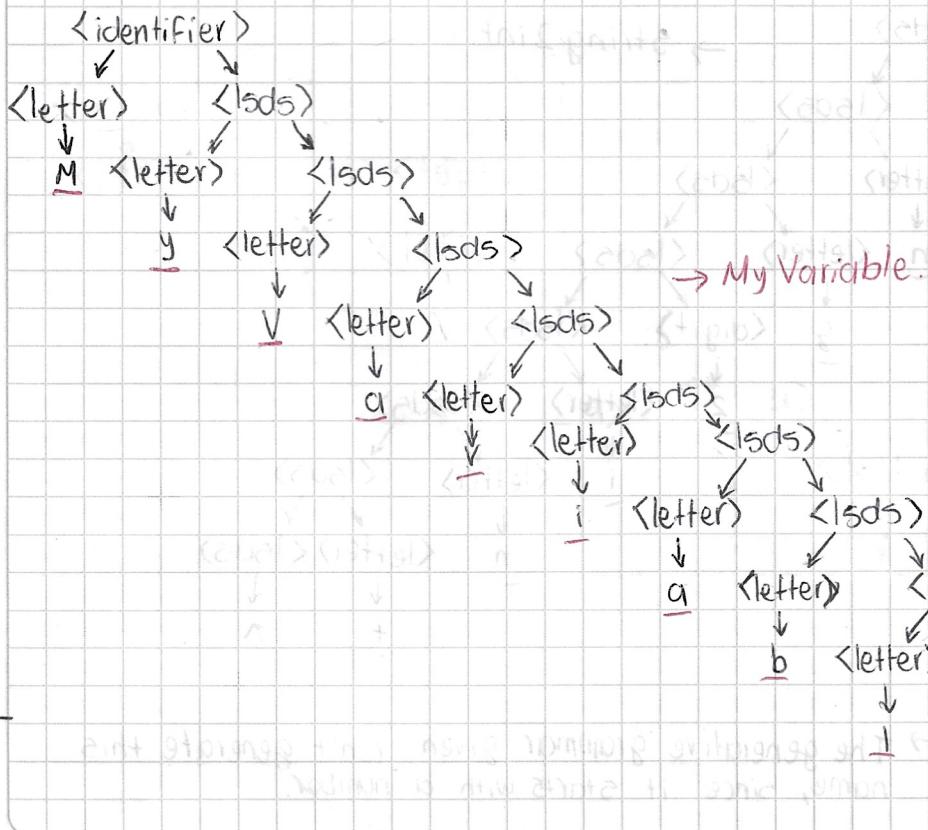
iii) $W_3 = 0.8E9$



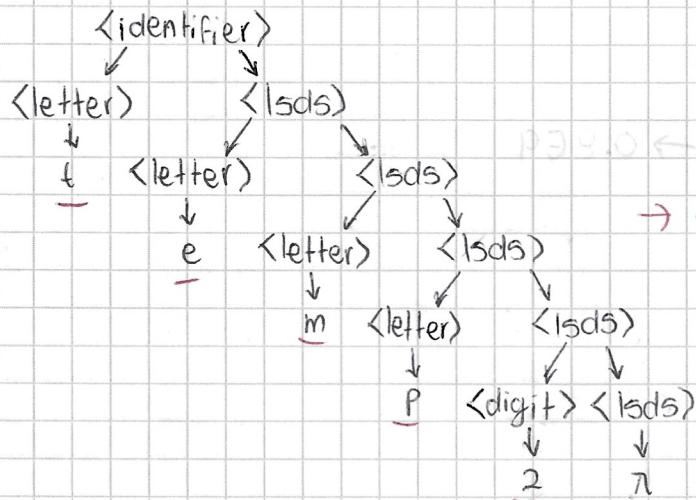
iv) $W_4 = 0.8E+9$



⑥ i) $W_1 = \text{My Variable}$

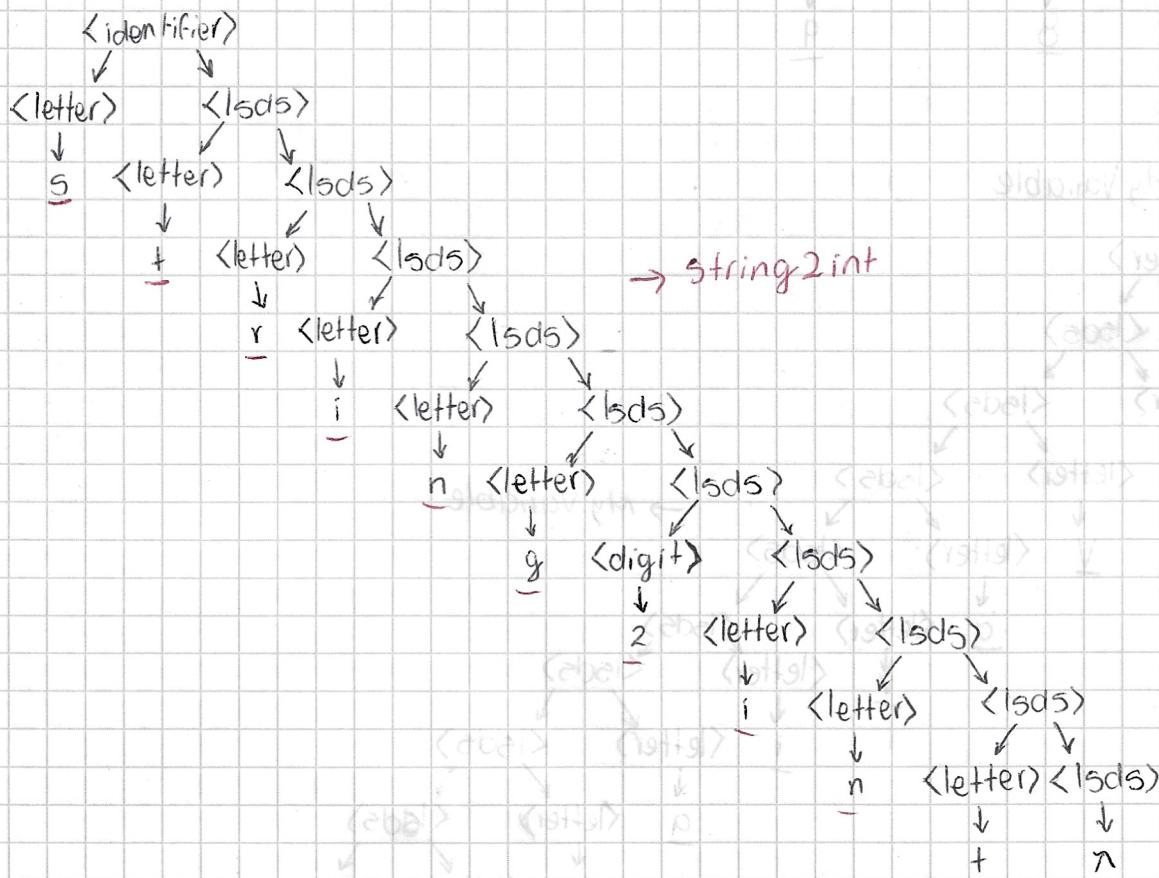


ii) $w_2 = \text{temp2}$



$\rightarrow \text{temp2}$

iii) $w_3 = \text{string2int}$



$\rightarrow \text{string2int}$

iv) $w_4 = 2$ Not A Variable \rightarrow The generative grammar given, can't generate this name, since it starts with a number.