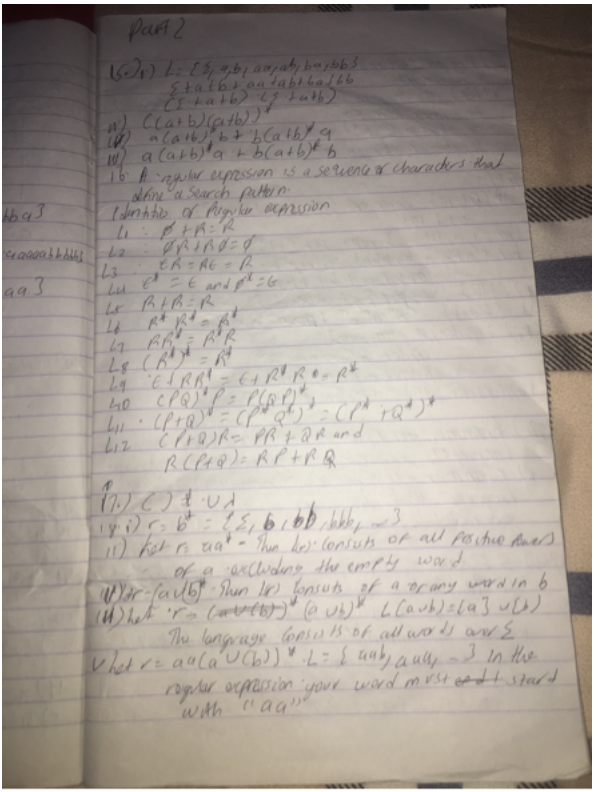
Pt2 of csc304

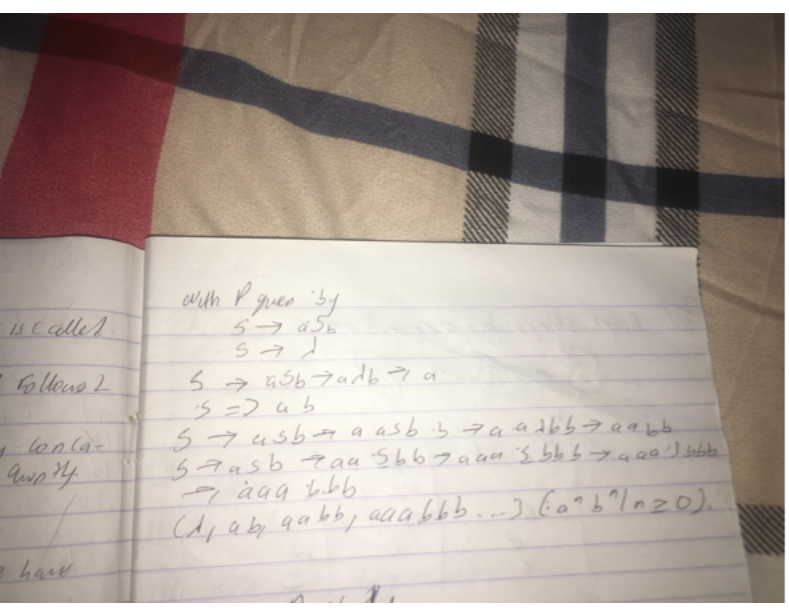


20) Any set represented by a regular expression is called a Regular set.
i) L(A) : a string in L(A,B) is obtained from A followed by a string from B.
ii) a string in L(A*) is a string obtained by concatenating n elements for some n ≥ 0 where each is in A.

21)
iii) {01,10} : union of {01} and {10} then we have 01 + 10.
iv) {1, 11, 111, ...} rep: set {1}*
v) {abb, a, bba} is rep by abbtatbtbba
vi) {110} : first by 1 followed by 1 and 0
vii) {baab} : $b^m a^n b^m$ | m ≥ 0, n ≥ 0, m ≥ 0, n ≥ 0)
viii) {epsilon, a, aa, aaa}: epsilon followed by a^* epsilon + a + aa + aaa + ...
ix) {Epsilon, 10} : Epsilon + 10

22) Grammar are finite set of rules used to describe languages; grammar is a generation of language
ii) Grammar are finite set of rules used to describe language while language is a set of strings generated by grammar.

24) $S \Rightarrow w_1 \Rightarrow w_2 \Rightarrow \ldots \Rightarrow w_n \Rightarrow w$ is a derivation of the sentence w.
The strings S, w_1, w_2, w_n which contain variables as well as terminals are called sentential derivation of strings in grammar.
Example
G = {{S}, {a, b}, S, P}


is called

follows

concat-
enation

have

with P given by

$S \to aSb$

$S \to \lambda$

$S \to aSb \to a\lambda b \to ab$

$S \Rightarrow ab$

$S \to aSb \to a\,aSb\,b \to aa\lambda bb \to aabb$

$S \to aSb \to aa\,Sbb \to aaa\,Sbbb \to aaa\lambda bbb$

$\to aaabbb$

$(\lambda, ab, aabb, aaabbb \ldots) \{a^n b^n \mid n \geq 0\}.$