AFLL REVISION SHEET

① Consider the regular expression (0+1)(0+1)... n times. The minimum State finite automations that reganize the language by this regular expression contains:

Ans: n+1 States.

② Let the Alphabet be (0,1), $L = \{0+1\}^*$ & $R = \{0^{n^2}\}$ Such that $n > 0$, then language (L UR) & R are respectively.

Ans: Regular, not Regular

③ The string 1101 does not belong to the set represented by:

Ans 110*(0+1)

④ Let L be the set of all binary strings whose last two symbols are the same. The number of states in the minimum state deterministic finite state automation accepting L is:

Ans 5 States

⑤ How many states does the DFA constructed for the set of all strings ending with "00" have?

Ans 3

⑥ How many minimum number of states are required in the DFA (over the Alphabet {0,1}) accepting all the strings with the number of a's divisible by 4 & the number of b's divisible by:

Ans 20

(7) Which of the following is false?

Ans There is some NFA, for which no DFA can be constructed.

(8) How many minimum number of states will there be in the DFA accepting all the strings (over the alphabet {a,b}), that do not contain two consecutive b's?

Ans 3

(9) Which of the following regular expression represented by the set of strings which do not contain a substring 'pq' if $\Sigma = \{p, q\}$:

Ans $(q^* p^*)$

(10) Which of the following regular expression represent the language the set of all binary strings having two consecutive 0s & two consecutive's 1.

Ans $(0+1)^* (00(0+1)^* 11 + 11(0+1)^* 00)(0+1)^*$

(11) How many states does the DFA and NFA constructed for the "set of all binary strings where the second last symbol will never be a 1" have?

Ans 4

(12) Consider the language 'L' given by the regular expression $(a+b)^* b (a+b)$ over the alphabet (a,b). The smallest number of states needed in a DFA accepting L is 4 states.

(13) Provide a regular expression for the following language over the alphabet {a, b}:

(a) All strings beginning and ending in a.

(b) All strings with an odd numbers of a

→ b*(ab* ab*)*ab*

(c) All strings without two consecutive a's

(14) Construct a Regex for the following:

(A) A Decimal Number

→ /^[+-]?([0-9]+\.?[0-9]*|\.[0-9]+)$/

(B) A variable name in 'C' Language

→ (?:\w+\s+)([a-zA-Z_][a-zA-Z0-9]+)

(C) A number in its scientific exponential form.

→ -?[\d.]+(?:e-?\d+)?

(D) A relational expression consisting of 1 relational operator.

→

16. Differentiate between Context-free grammar & regular grammar. When can a Context free grammar be converted to regular Grammar?

Ans REGULAR GRAMMAR:

* Lexical rules are quite simple in case of RG.
* Notation in RG is easy to understand.
* A set of string is defined in case RG.
* It is easy to construct efficient recognizer from regular Expression.

CONTEXT-FREE GRAMMAR:

* Lexical rules are difficult.
* Notations in CFG is quite complex.
* In CFG, the language is defined by the collection of production.
* By using CFG,

(17) What is ambiguous Grammar? Explain by giving examples for the following cases of Ambiguous grammar.

Ans A grammar that makes more than one leftmost Derivation (or Rightmost) derivation for the similar sentences is called Ambiguous grammar.

A Dagling-else problem with appropriate grammar

The Dongling-else problem, references the context-free language which is ambiguous, meaning there is more than one correct parse tree.

(18) What is sentence? What is a sentential form?

Ans A sentence is a sentential form consisting only of terminals such as a+a*a.

A sentential form is any string derivable form the start symbol. Thus, in the derivation of a+a*a, E→T*F and E→F*a and F→a*a are all sentential form as are E and a+a* a themselves.

(19) What are the different Parsing techniques?

Ans Depending upon how the parse tree is built, parsing technique are classified into three general categories, such as UNIVERSAL PARSING, TOP-DOWN PARSING AND BOTTOM-UP PARSING. The most commonly used parse techniques are top-down & bottom-up parsing

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