EDIDIONG IME-ESSIEN

CSC 304

17/SCI01/041

PART 2

15. (i) length is at most 2: L ={∑, a, b, aa, ab, ba, bb}

∑+a+ b+ aa+ ab+ ba+ bb= (∑+a+b) (∑+a+b).

(ii) language of even length: ((a+b) (a+b))\*

(iii) language starting and ending with the same letter: a(a+b)\*a

(iv) language starting and ending with a different letter: a(a+b)\*b+b(a+b)\*a

16. Regular expression :these are used for representing certain sets of string in an algebraic fashion.

Identities in RE

L +M = M + L

2. (L +M) + N = L + (M + N)

3. (LM)N = L(MN)

4. L(M + N) = LM + LN

5. (M + N)L = ML + NL

6. L + L = L

7. (L\*)\* = L\*

17. Each letter in A is a regular expression

If r is a RE then r\* is a RE

If r1and r2 are RE then r1 Ur2 is a RE

If r1and r2 are RE then r1r2 is a RE.

5 symbols used RE : (),\*,U,∑,λ.

18. r=b\* i.e the language (r) consists of all powers of b including λ.

(ii) r=aa\* i.e (r) consists of all positive powers of a excluding λ.

(iii) r={aUb} i.e L(aUb)= {a} u {b}. the language consists of all words over ∑.

iv. Let r=(a∪〖b)〗\* : r consists of any word in a and b

v. Let r=aa(a∪〖b)〗\*:

 vi. Let r=(a〖∩b)〗\* r consists of words either in a or b

19.

20. Regular set is any set that’s represented by a regular expression.

A string in L(r1+r2) is a string from R1 or a string r2

(ii) a string is L(r1r2) is a string from r1 followed by a string from r2

(iii) a string in L(r\*) is a string obtained by concatenating n elements for some n>=0.

21. 

22. 

23. Grammars are finite set of rules used to describe languages, it is also a generator of language WHILE a language is a set of strings generated by a grammar.