

Day: MTWTFs

Date: 1

Muhammad Pkhar

Roll Number P180054

Assignment #01

### Descriptive Definition

The language  $L_1$  of string  
of start with letter  $a$ ,  
defined over

$$\Sigma = \{a, b\}$$

$L_1 = \{a, aa, ab, aaa, aab, aba, abb,$   
 $aaaa, aaa-b, aab-a, \dots\}$

The language  $L_2$  of String  
of end with letter  $a$  defined  
over

$$\Sigma = \{a, b\}$$

$L_2 = \{b, ab, bb, aab, abb, baab, bbb,$   
 $aaab, aabb, abab, \dots\}$

The language  $L_3$  of string of  
which contains 2 times  $a$   
defined over

$$\Sigma = \{a, b\}$$

$L_3 = \{aa, aaa, aab, aba, baa,$   
 $aaaa, aaab, aaba, aabb,$   
 $abaa, \dots\}$

The language of  $L_4$  of string which contain 2's times 'b' defined over

$$\Sigma = \{a, b\}$$

$$L_4 = \{bb, abb, bbb, abbb, bab, bba, bbb, aabb, abab, abba, \dots\}$$

The language of  $L_5$  of string which contain only 'a' defined over

↓ letter

$$\Sigma = \{a, b\}$$

$$L_5 = \{a, aa, aaa, aaaa, aaaaa, aaaaaa, aaaaaaa, aaaaaaaaa, aaaaaaaaaa, aaaaaaaaaa, \dots\}$$

The language of  $L_6$  of string which contain at least one 'a' letter at the start and end with letter 'b' defined over  $\Sigma = \{a, b\}$

$$L_6 = \{ab, aab, abb, aaab, aabb, abab, abbb, aaba, aabb, aabab, \dots\}$$

The language of  $L_7$  of string  
which contain odd number  
of 'a' letter defined over

$$\Sigma = \{a, b\}$$

$$L_7 = \{a, ab, ba, aaa, aba, abb, bab, bba, aabb, aabab\}$$

The language of  $L_8$  of string  
which contain even number  
of 'b' letter, defined over

$$L_8 = \{bb, abh, bab, bba, aabb, abab, abba, baab, baab, bbaa, \dots\}$$

The language of  $L_9$  of string  
which contain start with letter  
'a' letter consecutive, defined  
over  $\Sigma = \{a, b\}$

$$L_9 = \{aaa, aab, aaaa, aabab, aaba, aabb, abaa, baaa, baab\}$$

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The language  $L$  of strings  
in which contain ~~single~~ ~~times~~  
'a' letter and consecutive 'b'  
letter defined over  
 $\Sigma = \{a, b\}$

$L = \{ abb, bba, aabb, abba, abbb, \\ babb, bbaa, bbab, bbba, aaabb \}$



Write Recursive Definition for  
5 Different language

1 language

number

The set whole is defined by  
three Rules

Step 1 0 is in whole

Step 2 If  $x$  is whole then

$x+1$  is also whole

Step 3 The only element in the set  
Even that those can be produced  
from the above Rule

2nd language

The set odd is defined by  
three Rules

Step 1 1 is in odd

Step 2 If  $x$  is in odd then

$x+2$  is also odd

Step 3 No string except those  
constructed in above are  
allowed to be odd.

## 3rd languages

language  $L$  of string containing  
 $bb$  defined over  
 $\Sigma = \{a, b\}$

Step 1  $bb$  is in  $L$

Step 2  $s(bb)s$  is also in  $L$   
 where  $s$  belong to  $\Sigma^*$

Step 3

No string except those constructed  
 in above are allowed  
 $bb$  in  $L$

## 4th language

Step 1 Any number in polynomial

Step 2 The variable  $x$  is in  
 polynomial

Step 3 If  $p$  and  $q$  are in polynomial  
 then so are  $p+q$  and  $|p|$   
 and  $pq$

Step 4: Polynomial contains only  
 those things which can  
 be created by above  
 Rule.

5th language

The language  $L$  start with double 'aa' and ending double "bb" defined

$$\Sigma = \{a, b\}$$

Step 1 aa and bb is in  $L$

Step 2 aa ~~(x)~~ bb also in  $L$   
where  $s$  belong to  $\Sigma^*$

Step 3

No string except those constructed in above are allowed to be in  $L$