

م.د. محمد سامي محمد  
جامعة ديالى – كلية التربية للعلوم الصرفة  
قسم الحاسبات  
**2021/2022**

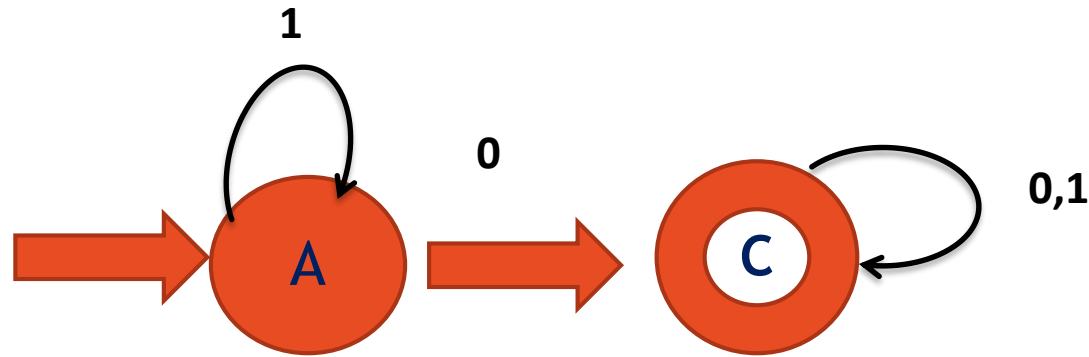
**Lecture 14**

**Sunday 6-2-2022**

**And Lecture 15**

**Thursday 10-2-2022**

Q1/ Construct a NFA that accepts all words over  $\{0, 1\}$  which contain at least single (0) at any digit?



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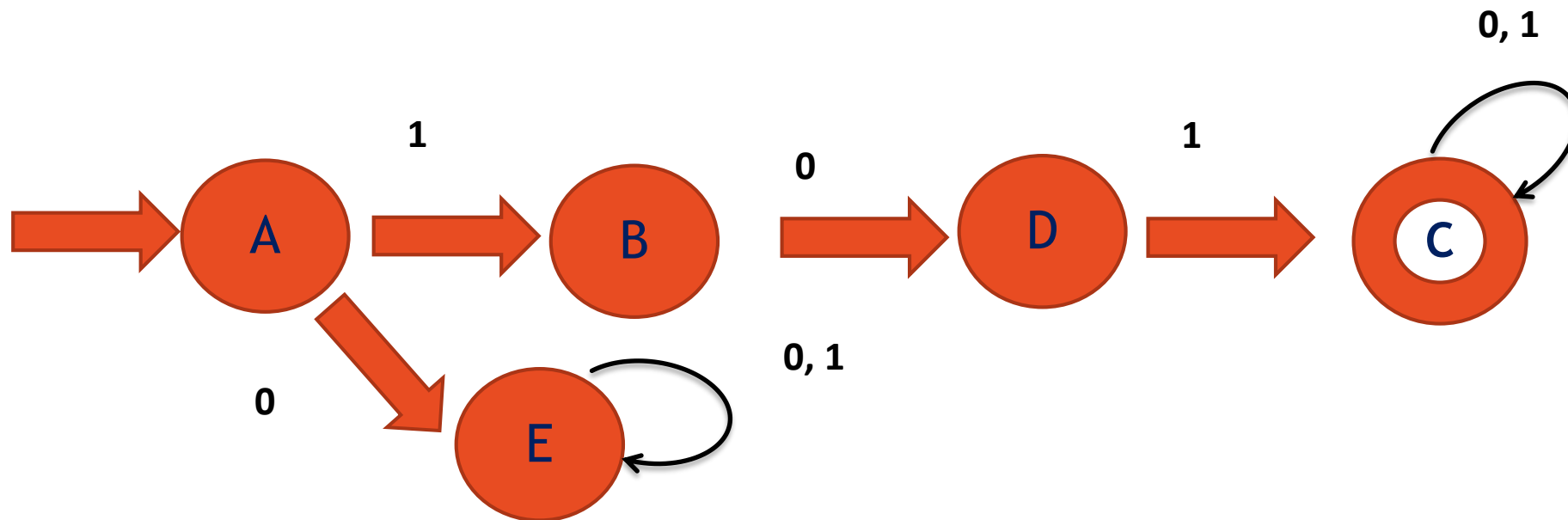
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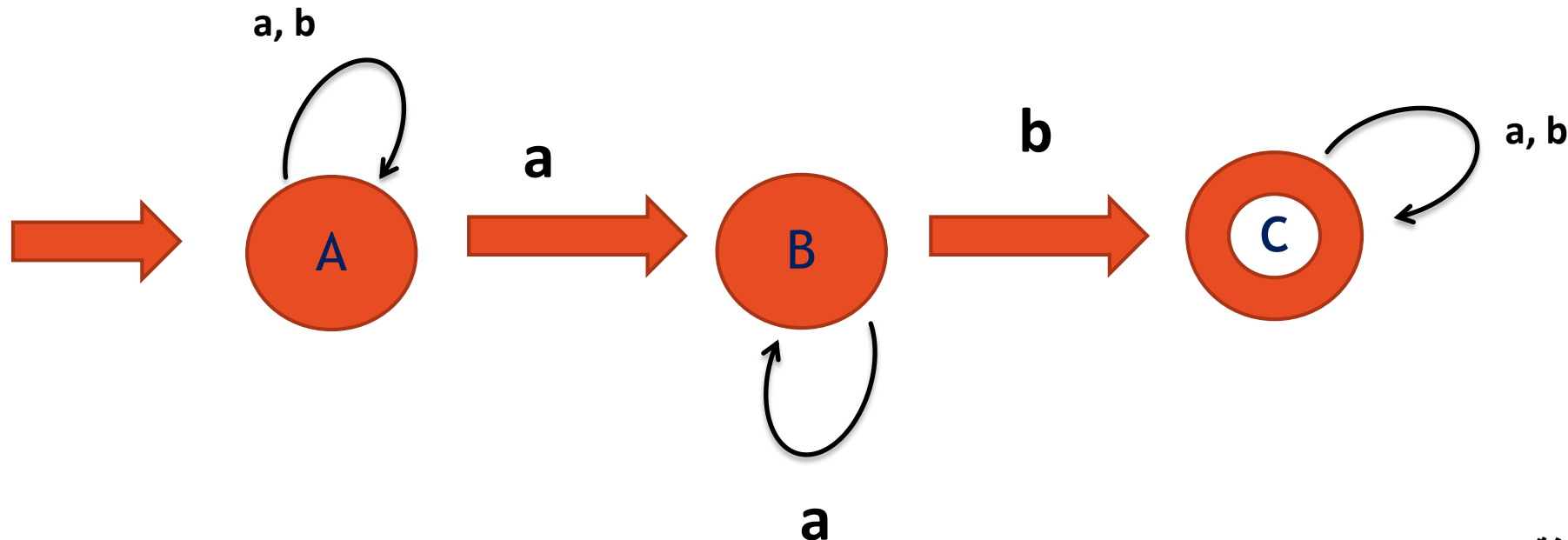
Q2/ Construct a NFA that accepts all words over  $\{0, 1\}$  that **ONLY** start with 101?

**101**00011111

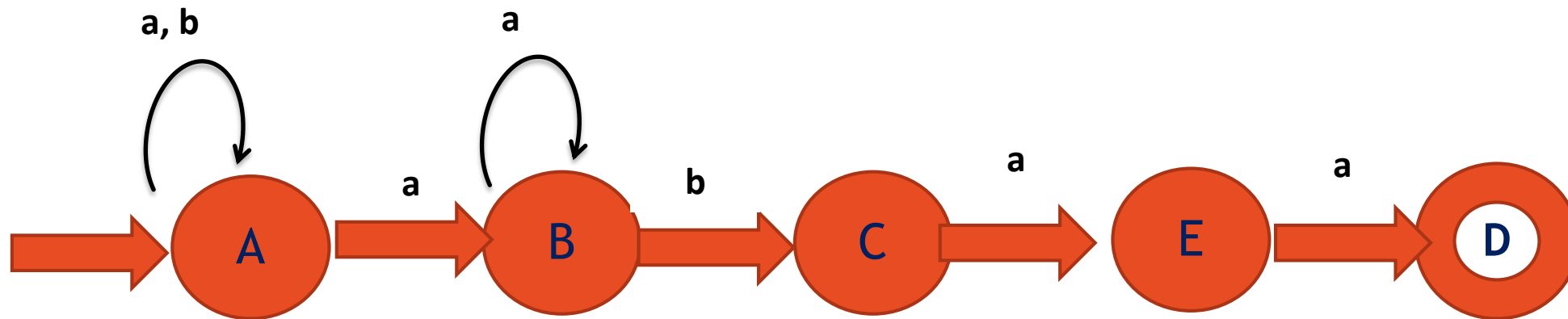


Q3/ Construct a NFA that accepts all words over {a, b} which **must** contain ab in the same sequence?

(aabbaba) ab (aaabbababa)



Q4/ Construct a NFA that accepts all words over {a, b} which **only** ends with abaa?



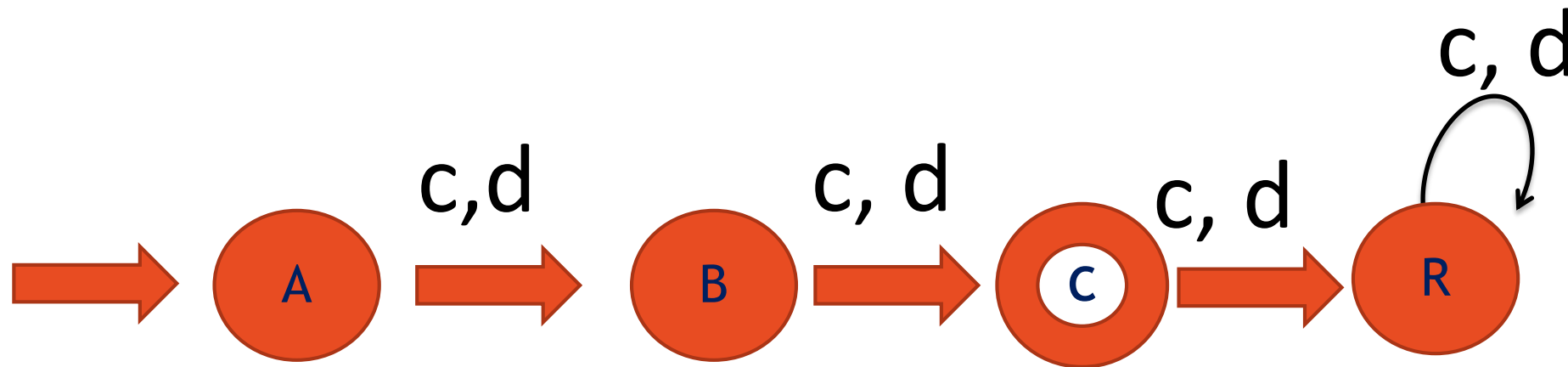
aabaa

0, 1

Q5/ Construct a NFA that accepts all words over {c, d} which have **only** length =2?

{cc, cd, dc, dd}

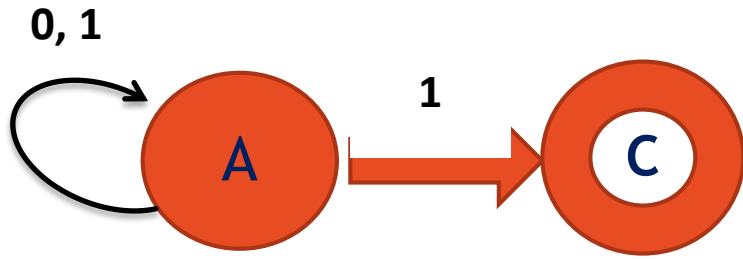
ddd



0, 1

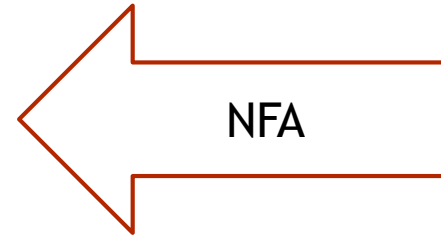
1

Q6

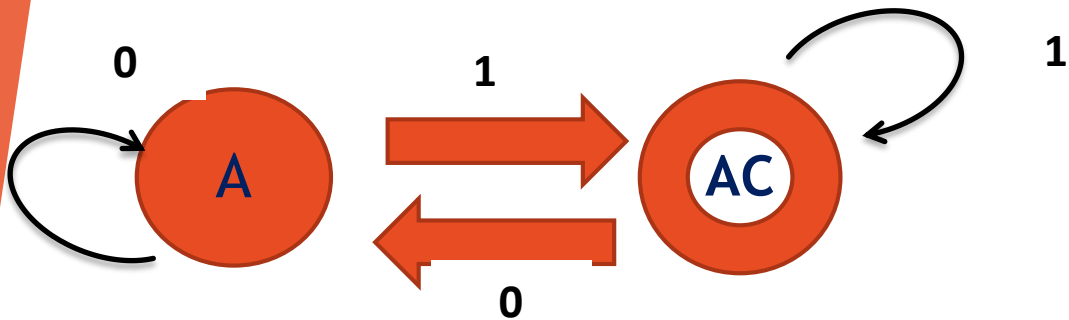


Convert this language from NFA to DFA?

	Next State	
	0	1
A	A	A, C
C	-	-



	Next State	
	0	1
A	A	AC
AC	A	AC



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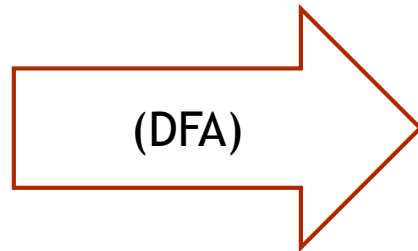
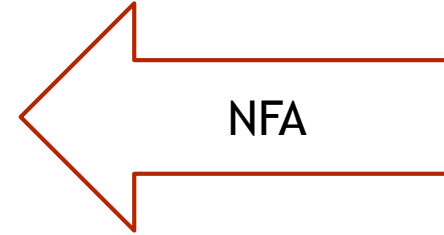
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Q7/ convert this language from NFA to DFA?

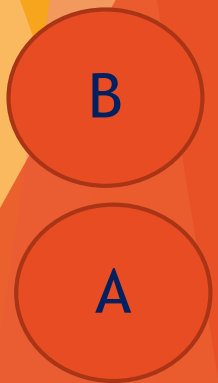
$K = \{ (A, B, C), (a, b), f, A, \{c\} \}$

Previous State	Next State	
	0	1
A	A,B	C
B	A	B
C	-	A, B



Previous State	Next State	
	0	1
A	AB	C
AB	AB	BC
BC	A	AB
C	D	AB
D	D	D
	D: Trap State	

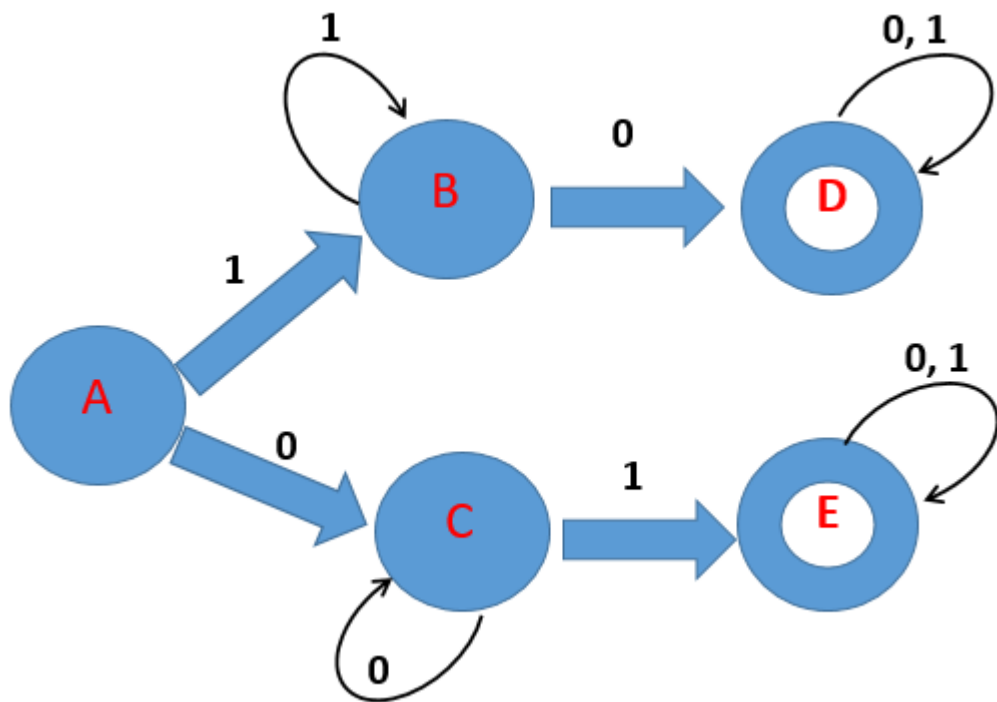
1  
0, 1



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Q8/ What is DFA figure can discover? Define it and then check these words (001, 01, 110, 1110)?

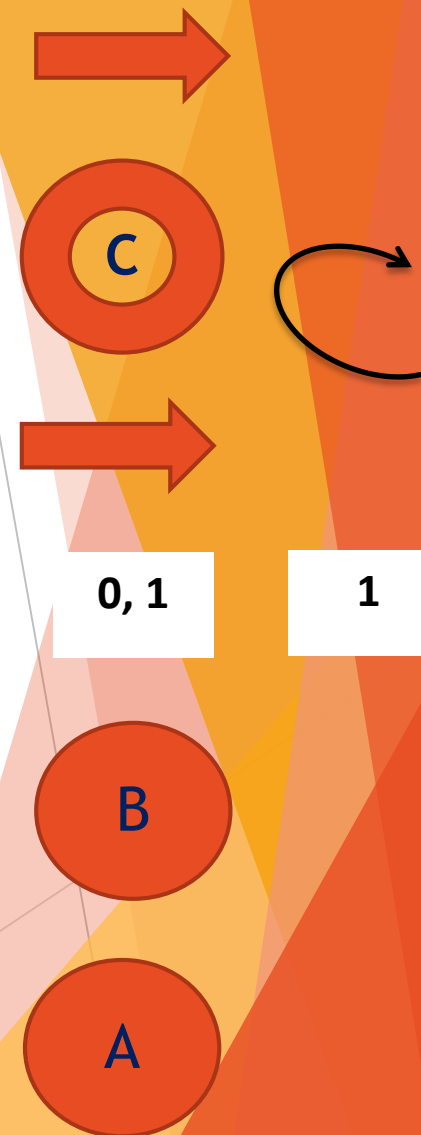


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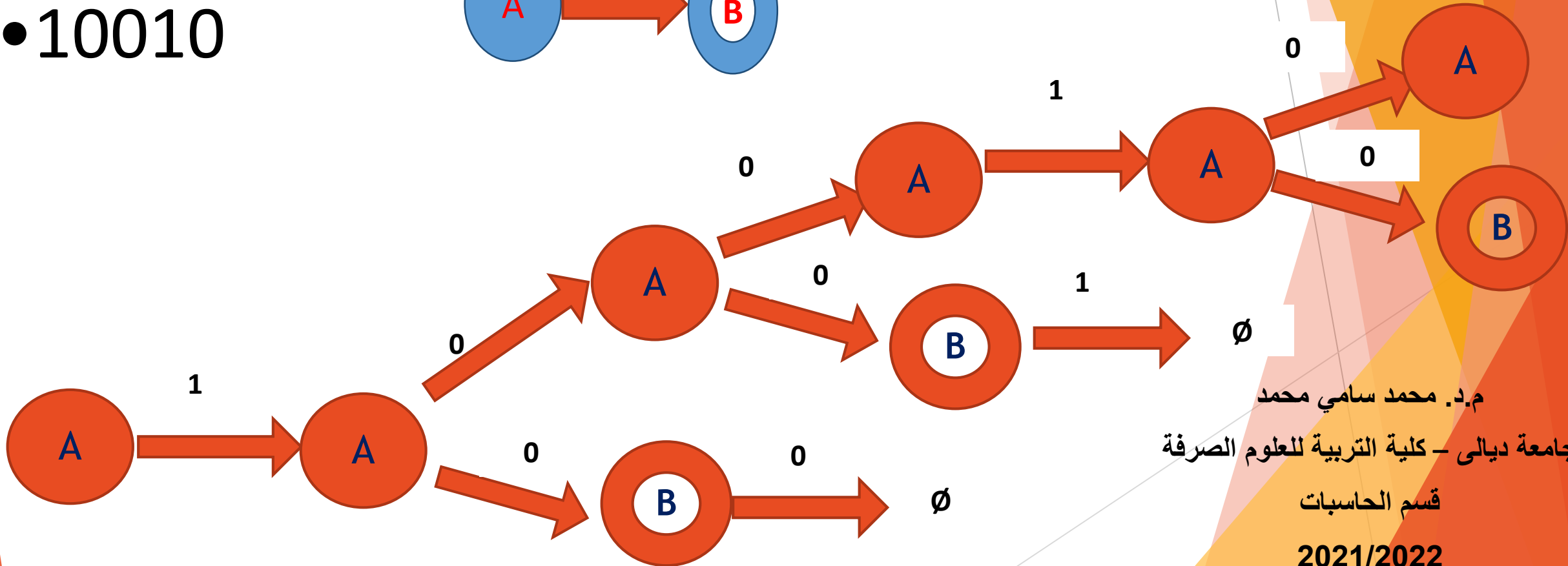
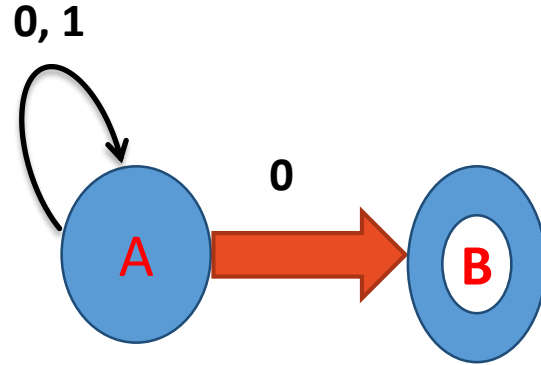
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Q9/ Is this figure representing a DFA or NFA? What words can you describe it for this figure? Check these words (**using two method**)

- 01 NOT ACCEPTED
- 001
- 110
- 101
- **10010**

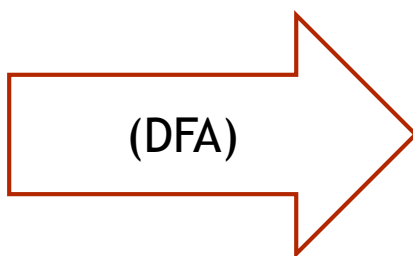
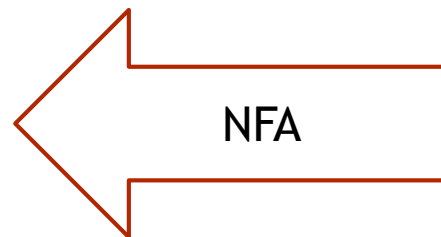


Q10/ if you have this function: -

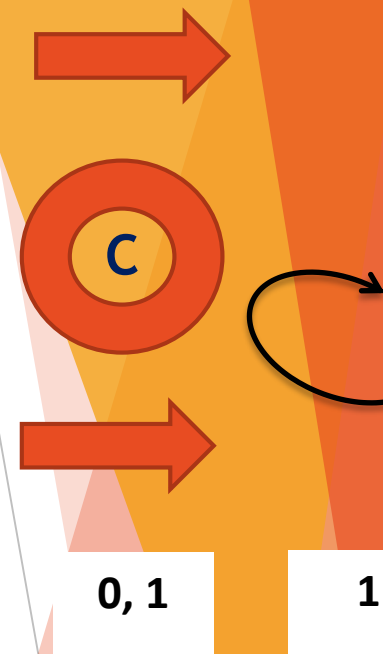
$M = \{ \{A, B, C\}, (a, b), f, A, \{C\} \}$  And  $f$  is equal to this table: -

Then Convert it from NFA to DFA

	a	b
A	A, B	C
B	A	B
C	-	A, B



	a	b
A	AB	C
AB	AB	BC
BC	A	AB
C	D	AB
D	D	D



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