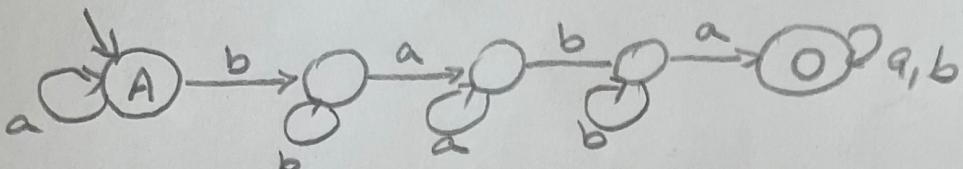


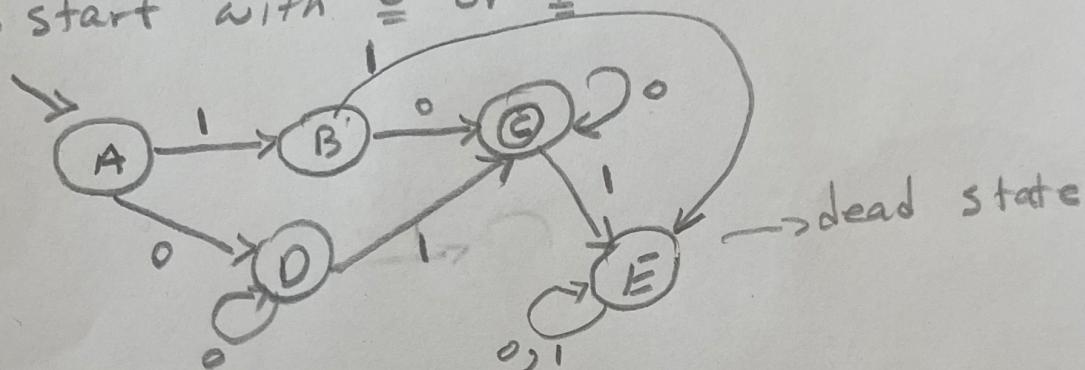
## DFA HW Solution

Page 1

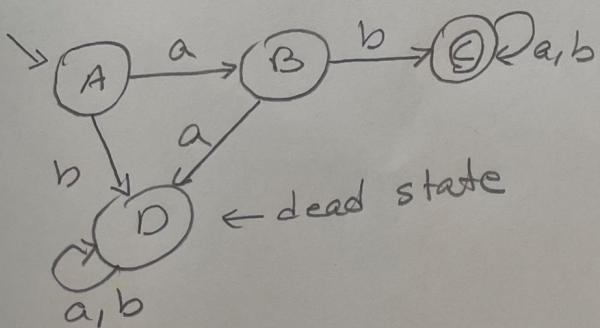
1. Design a DFA for the language over  $\{a, b\}$  for all the strings with at least two occurrences of  $ba$ . The two occurrences can be anywhere.



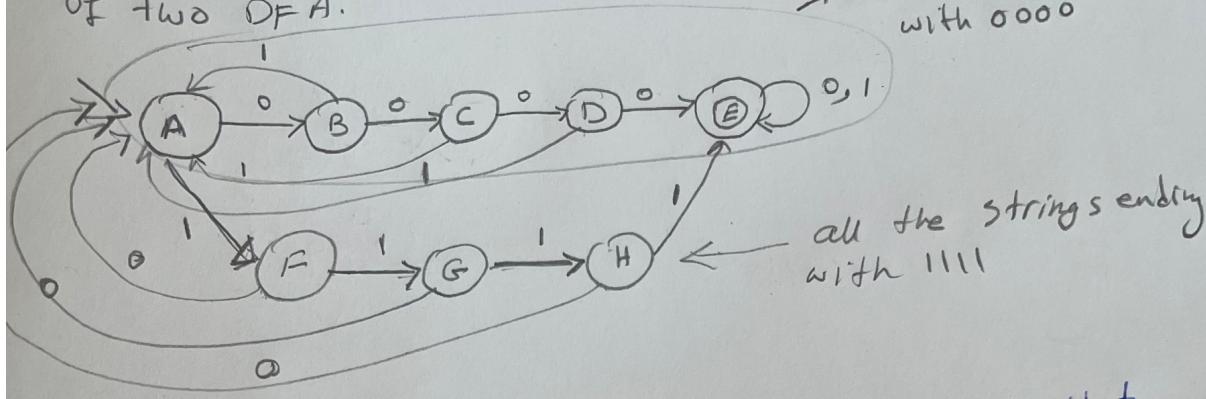
2. Design a DFA over  $\{0, 1\}$  for all the strings with exactly one  $1$  and at least one zero. Each string can start with  $0$  or  $1$ .



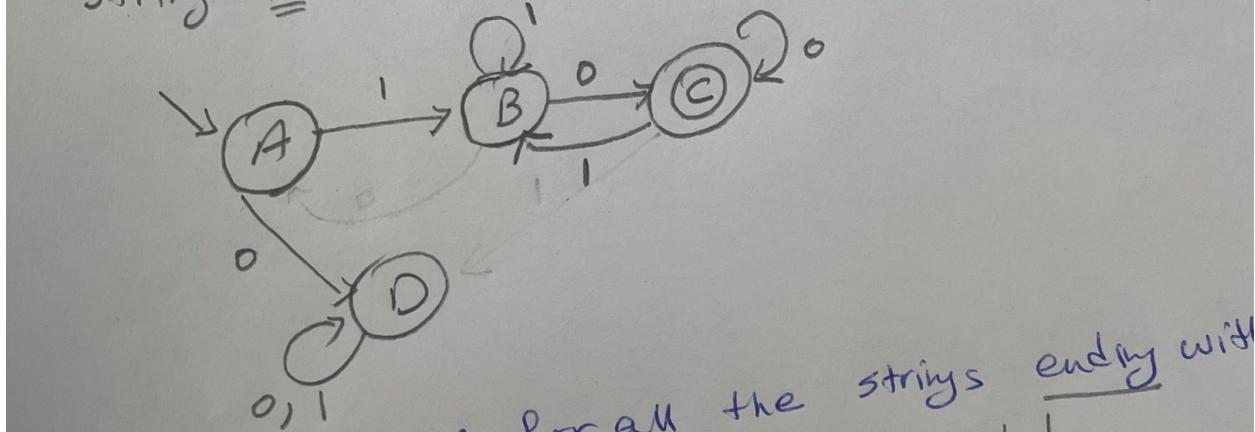
3. Design a DFA for the language of all the strings starting with  $ab$ . The string  $\underline{ab}$  should be accepted as well.

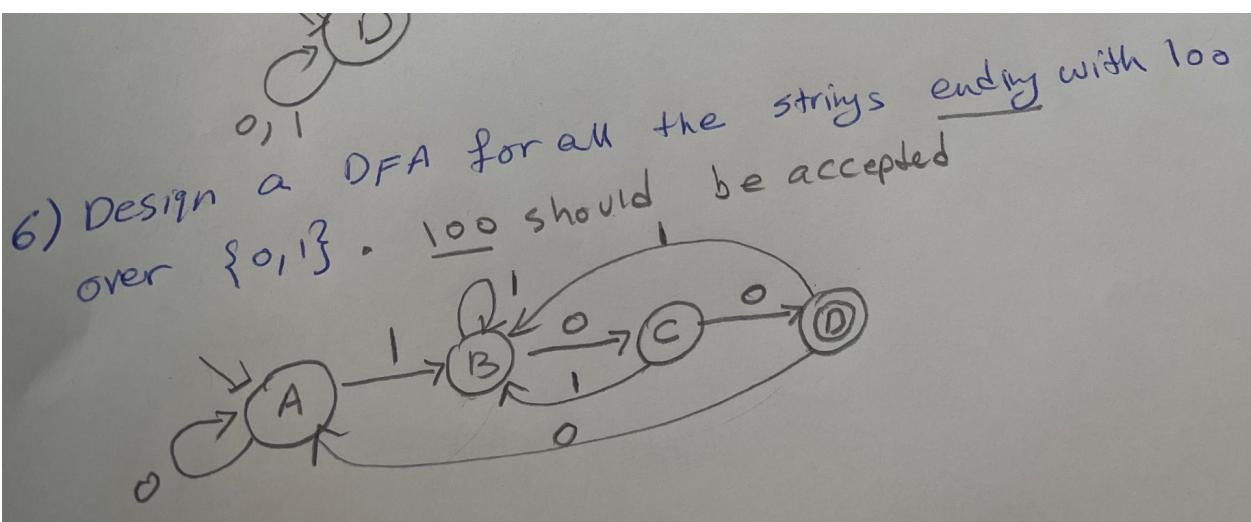


4. Design a DFA for all the strings over  $\{0,1\}$  that begins with  $0000$  or ends with  $1111$ . This is the union of two DFA.

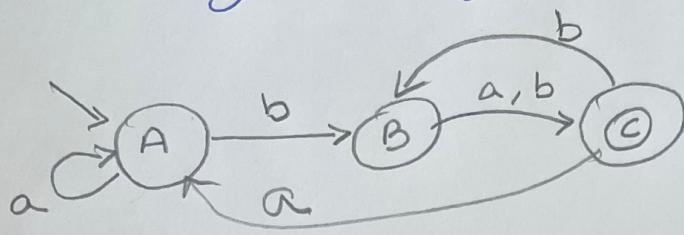


5. Design a DFA over  $\{0,1\}$  for all the string that starts with  $\neq$  and ends with zero. String  $10$  should be accepted.

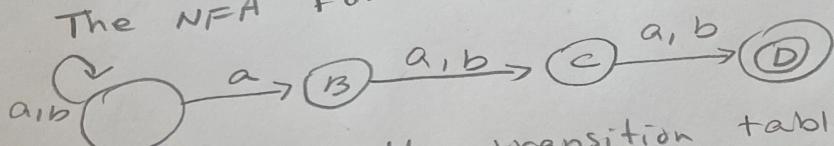




Page 3  
7. Design a DFA for all the strings over  $\{a, b\}$  where the second to the last symbol is a b. Therefore all the strings are ending with bb or ba



8. Design a DFA for all the strings over  $\{a, b\}$  such that the third symbol to the right is an 'a', if the third symbol to the right is an a then all the strings must end with a ab, aba, abb, aaa  
The NFA for this language is



After creating the transition table for the NFA and creating the transition table for DFA we can draw the DFA

DFA transition table

draw the DFA

NFA

	a	b
A	A	A
B	C	C
C	D	D
D	$\emptyset$	$\emptyset$

DFA transition table

	a	b
A	AB	A
AB	ABC	AC
AC	ABD	AD
(AD)	AB	A
ABC	ABCD	ACD
(ABD)	ABC	AC
(ACD)	ABD	AD
(ABCD)	ACD	ACD

page 4

