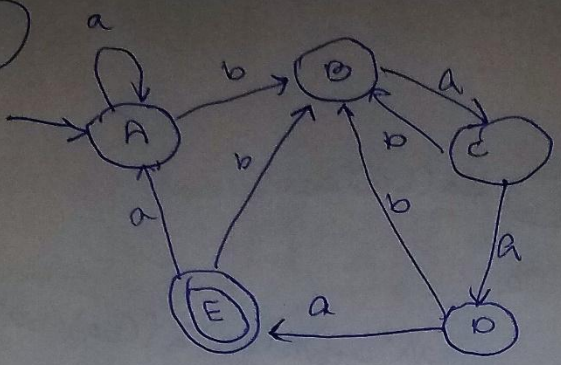
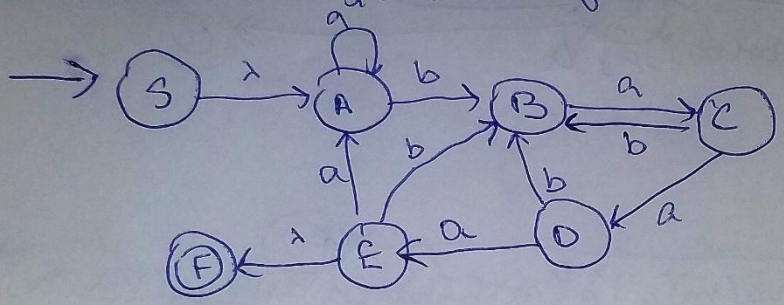
Assignment 2 solution

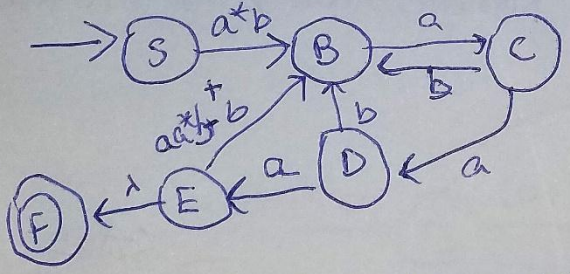
1 (a)



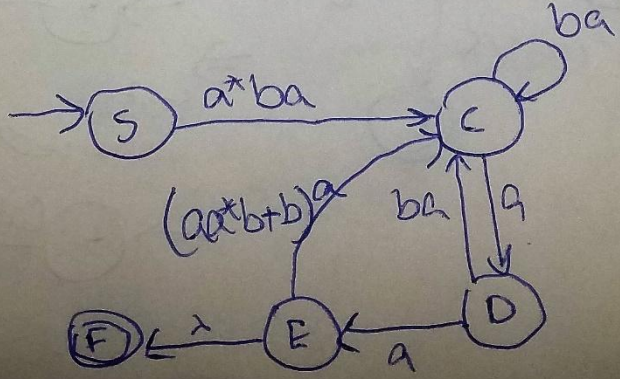
Introduce new start and finial state



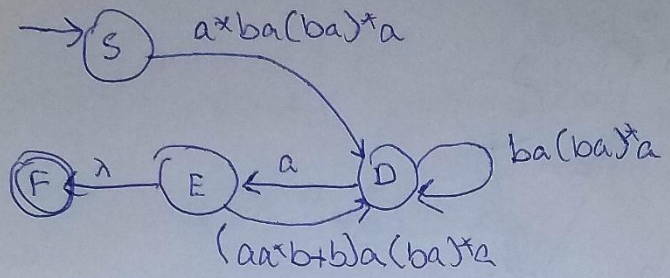
Eliminate state A — being used in S–A–B
E–A–B



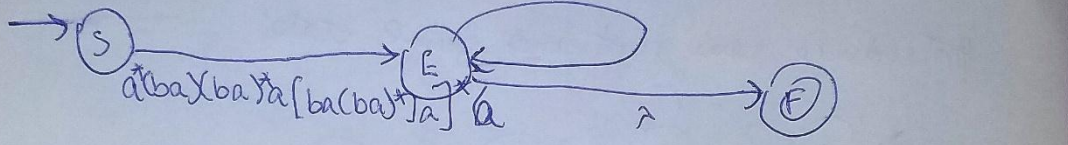
Eliminate state B — being used in S–B–C
D–B–C
C–B–C
E–B–C



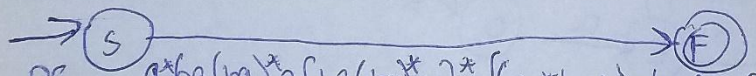
Eliminate state C — S–C–D
— D–C–D
E–C–D



Eliminate D

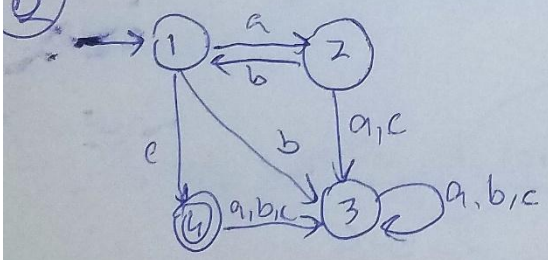


Eliminate E

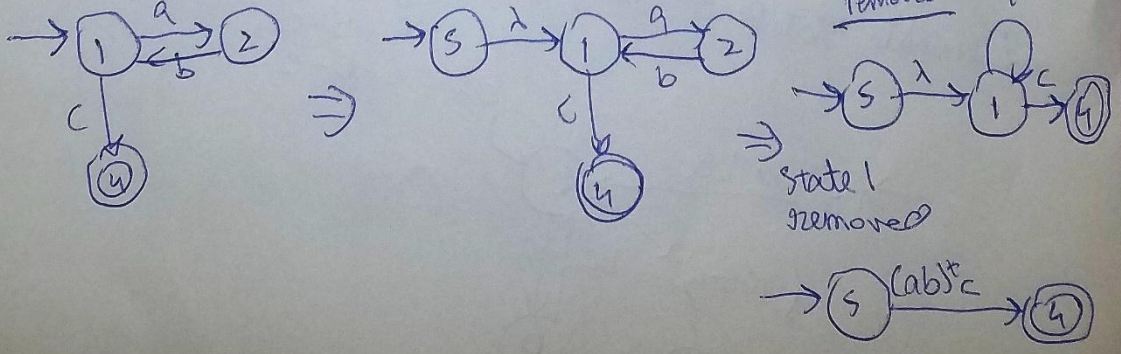


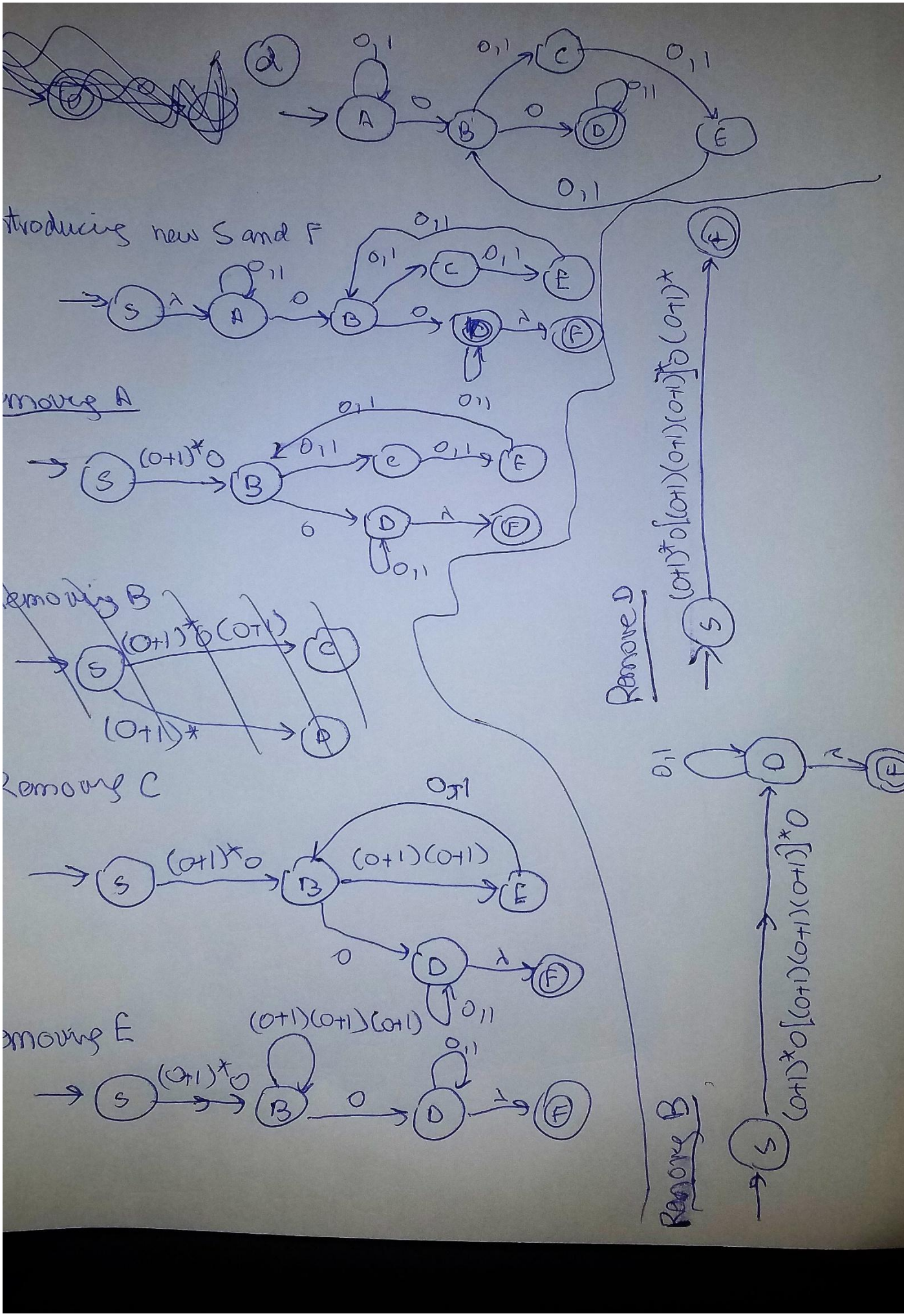
RE = $a^*ba(ba)^*a[ba(ba)^*a]^*a[(aa^*b+b)aba)^*a[[ba(ba)^*a]^*a]^*$

(b)

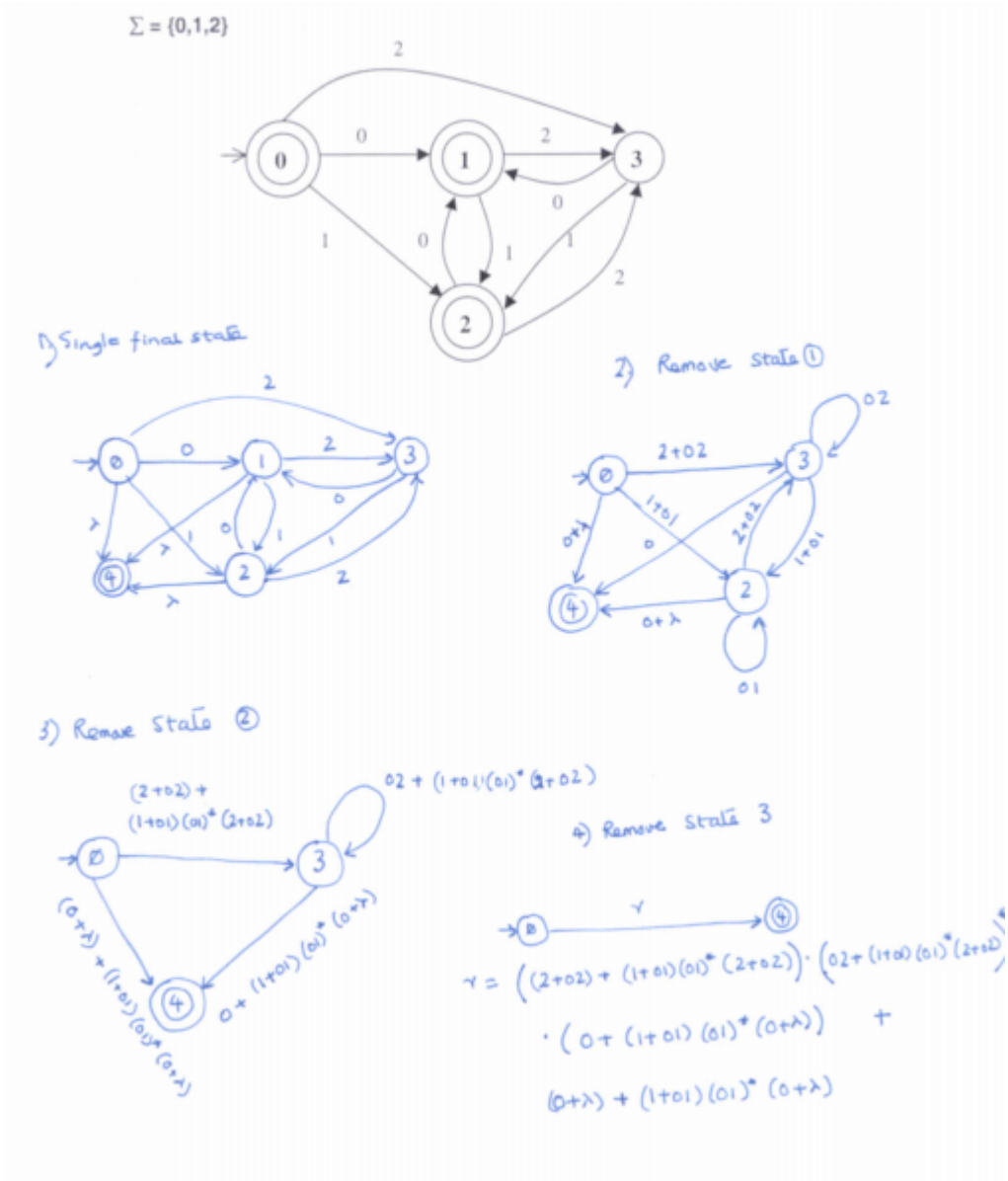


Remove state 3 as it is trap




A
B
C
D
E
0,1
0
Introducing new S and F
S
F
λ
Removing A
(0+1)*0
Removing B
(0+1)*0(0+1)
(0+1)*
Removing C
0+1
(0+1)(0+1)
(0+1)(0+1)(0+1)
Removing E
Remove D
(0+1)*0[(0+1)(0+1)(0+1)]*0(0+1)*
Remove B
(0+1)*0[(0+1)(0+1)(0+1)]*0

Question 1 c)


Σ = {0,1,2}
1) Single final state
2) Remove State ①
3) Remove State ②
4) Remove State 3
(2+02) + (1+01)(01)* (2+02)
02 + (1+01)(01)* (2+02)
(0+1) + (1+01)(01)* (0+1)
0 + (1+01)(01)* (0+λ)
Y = ((2+02) + (1+01)(01)* (2+02)) · (02 + (1+01)(01)* (2+02))
· (0 + (1+01)(01)* (0+λ)) +
(0+λ) + (1+01)(01)* (0+λ)