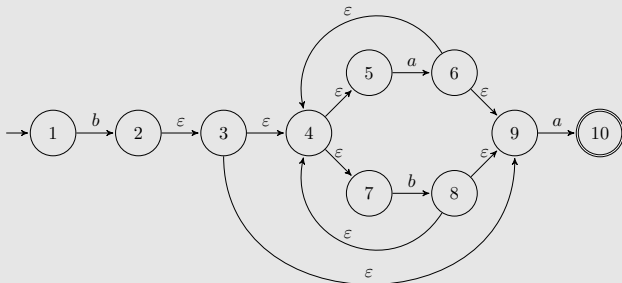


# CSEN 1002

## Task 2: Non-Deterministic Finite Automata to Deterministic Finite Automata

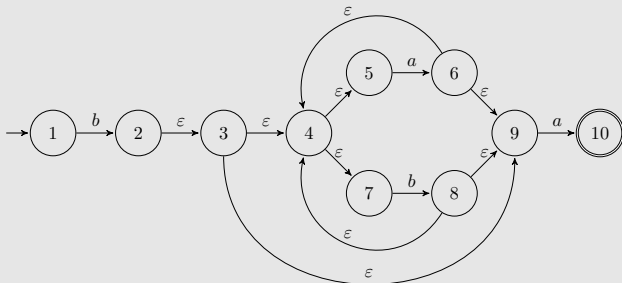
# NFA String Representation

## NFA



# NFA String Representation

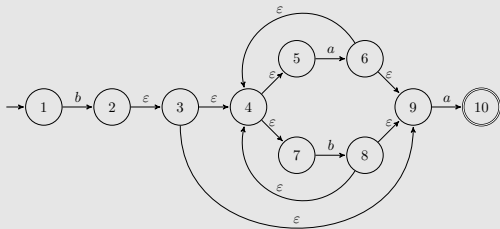
## NFA



## String Representation

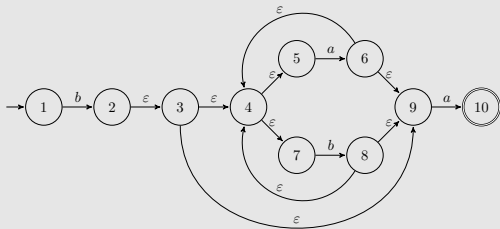
0;1;2;3;4;5;6;7;8;9;10#a;b#1,b,2;2,e,3;3,e,4;3,e,9;4,e,5;  
4,e,7;5,a,6;6,e,4;6,e,9;7,b,8;8,e,4;8,e,9;9,a,10#1#10

## NFA to DFA



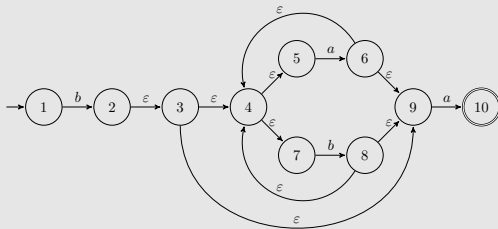
State	$\epsilon$ -closure
1	1
2	2
3	3
4	4
5	5
6	4
7	7
8	4
9	9
10	10

## NFA to DFA



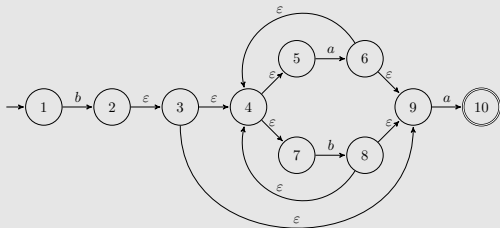
State	$\epsilon$ -closure
1	1
2	2,3
3	3,4,9
4	4,5,7
5	5
6	4,6,9
7	7
8	4,8,9
9	9
10	10

## NFA to DFA



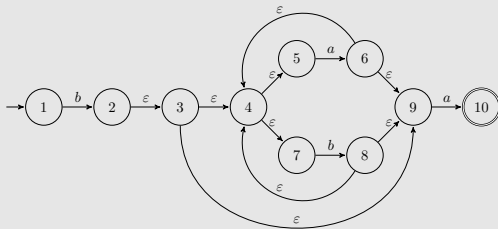
State	$\epsilon$ -closure
1	1
2	2,3,4,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10

## NFA to DFA



State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10

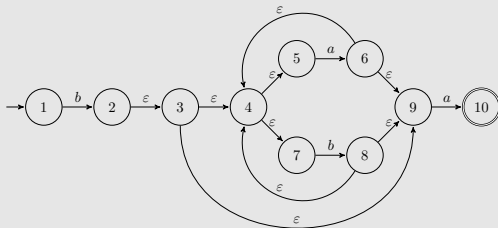
## NFA to DFA



State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



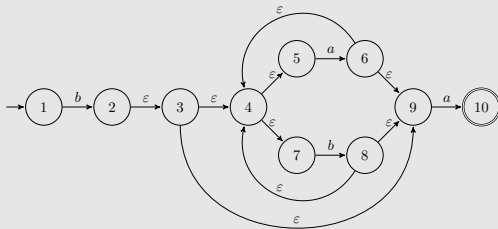
## NFA to DFA



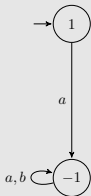
State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



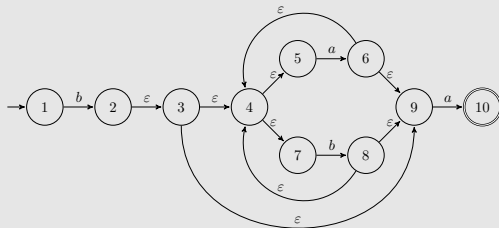
## NFA to DFA



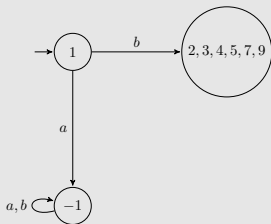
State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



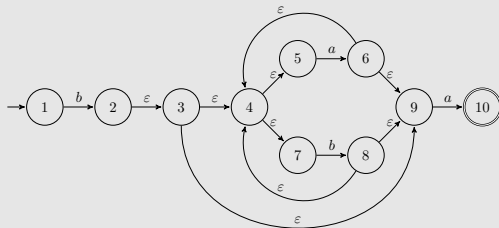
## NFA to DFA



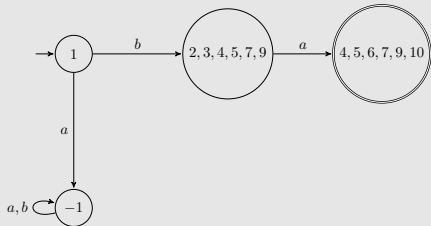
State	$\epsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



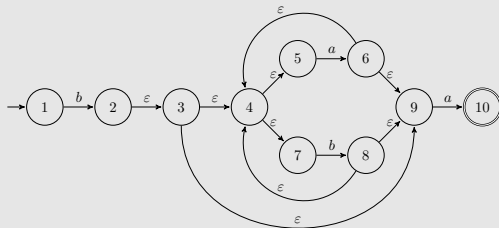
## NFA to DFA



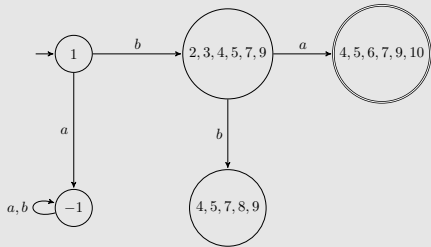
State	$\epsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



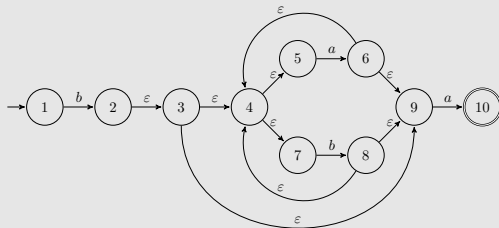
## NFA to DFA



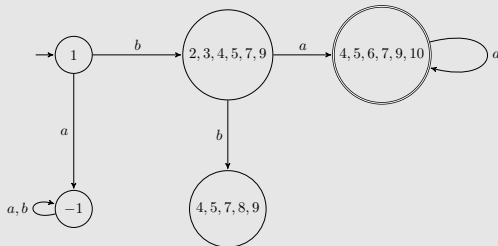
State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



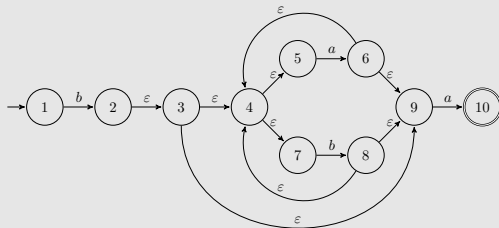
## NFA to DFA



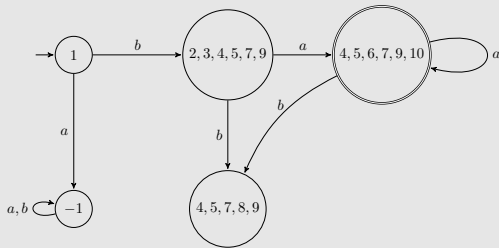
State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



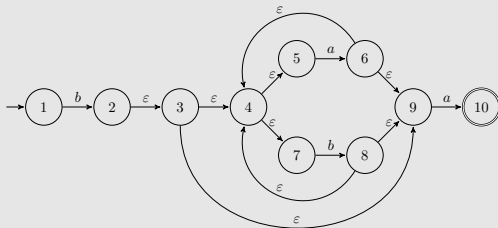
## NFA to DFA



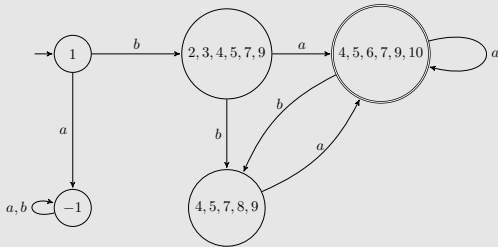
State	$\epsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



## NFA to DFA

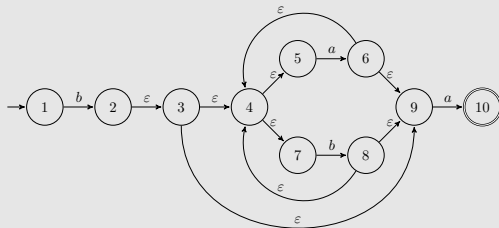


State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10

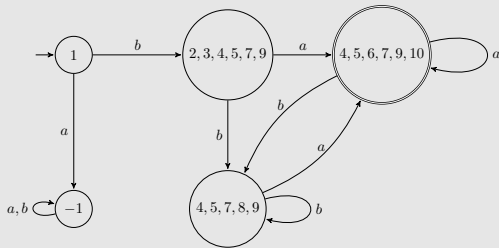




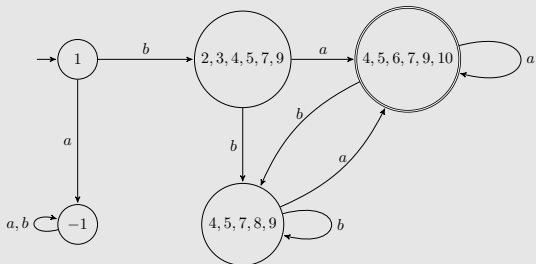
## NFA to DFA



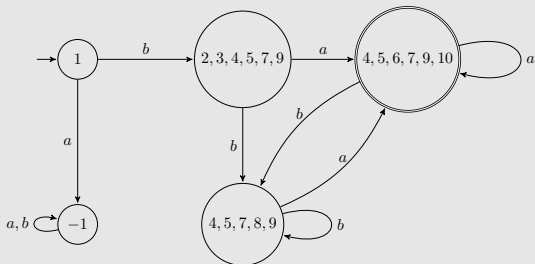
State	$\varepsilon$ -closure
1	1
2	2,3,4,5,7,9
3	3,4,5,7,9
4	4,5,7
5	5
6	4,5,6,7,9
7	7
8	4,5,7,8,9
9	9
10	10



# DFA String Representation



# DFA String Representation



## String Representation

```

-1;1;2/3/4/5/7/9;4/5/6/7/9/10;4/5/7/8/9#a;b#-1,a,-1;-1,b,-1;
1,a,-1;1,b,2/3/4/5/7/9;2/3/4/5/7/9,a,4/5/6/7/9/10;
2/3/4/5/7/9,b,4/5/7/8/9;4/5/6/7/9/10,a,4/5/6/7/9/10;
4/5/6/7/9/10,b,4/5/7/8/9;4/5/7/8/9,a,4/5/6/7/9/10;
4/5/7/8/9,b,4/5/7/8/9#1#4/5/6/7/9/10
  
```