sigma states	a	b	c
1,2,5,6,7	1,2,3,5,6,7,8	1,2,5,6,7,8	∅
1,2,3,5,6,7,8	1,2,3,5,6,7,8	1,2,5,6,7,8	4
1,2,5,6,7,8	1,2,3,5,6,7,8	1,2,5,6,7,8	∅
4	∅	∅	∅

① What is my initial state?

  1, where can I get to from 1 with ε ? → 2,5,6,7

  ↳ So my initial states are : 1,2,5,6,7

② Where can i get to from 1,2,5,6,7 with "a"

  See where you can get to with an "a", then explore all the epsilons

  1 → ∅ (don't account for epsilons, we need to "jump" with an "a".

  2 → 3

  5 → ∅

  6 → 8, now explore ε trans. from 8 : 1, 2(from 1), 5(from 1), 6,7(from 5)] 1,2,5,6,7,8

  7 → ∅

  Total from [1,2,5,6,7] with an "a" → 1,2,3,5,6,7,8

③ Where can i get to from 1,2,5,6,7 with "b"

  See where you can get to with an "b", then explore all the epsilons

  1 → ∅ (don't account for epsilons, we need to "jump" with an "b".

  2 → ∅

  5 → ∅

  6 → ∅

  7 → 8, 1,2,5,6,7

  Total from [1,2,5,6,7] with an "b" → 1,2,5,6,7,8

④ Where can i get to from 1,2,5,6,7 with "c"

  Nowhere !

→ Now I have two new set of states that I need to explore

Let's do [1,2,3,5,6,7,8] first

⑤ Where can i get to from 1,2,3,5,6,7,8 with "a"

  See where you can get to with an "a", then explore all the epsilons

  1 → ∅ (don't account for epsilons, we need to "jump" with an "a".

  2 → 3

  3 → ∅

  5 → ∅

  6 → 8, (now look at all epsilons from 8 and states we can get to from 8): 1,2,5,6,7

  7 → ∅

  8 → ∅

  Total from [1,2,3,5,6,7,8] with "a" → [1,2,3,5,6,7,8] (so to itself!)

(6) Where can i get to from 1,2,3,5,6,7,8 with "b"

1 → ∅
2 → ∅
3 → ∅
5 → ∅
6 → ∅
7 → 8, something again: 1,2,5,6,7
8 → ∅

Total: [1,2,5,6,7,8]

(7) Where can i get to from 1,2,3,5,6,7,8 with "c"

only to 4, from 3!

Now, new set of states! [1,2,5,6,7,8]

(8) Where can i get to from 1,2,5,6,7,8 with "a"

See where you can get to with an "a", then explore all the epsilons

1 → ∅ (don't account for epsilons, we need to "jump" with an "a".
2 → 3
5 → ∅
6 → 8, now explore ε trans. from 8: 1, 2(from 1), 5(from 1), 6,7(from 5) } 1,2,5,6,7,8
7 → ∅
8 →)

Total from [1,2,5,6,7,8] with a "a" → 1,2,3,5,6,7,8

(9) Where can i get to from 1,2,5,6,7,8 with "b"

See where you can get to with an "b", then explore all the epsilons

1 → ∅ (don't account for epsilons, we need to "jump" with an "a".
2 → ∅
5 → a
6 → ∅
7 → 8, the whole thing again, 1,2,5,6,7
8 → ∅

Total from [1,2,5,6,7,8] with a "b" → 1,2,5,6,7,8

(10) Where can i get to from 1,2,5,6,7,8 with "c"

nowhere!

New set of state! [4]

(11) Where can i get to from 4 with "a", "b", or "c"

nowhere!

So let's draw the final dfa:

Sigma States	a	b	c
1,2,5,6,7	1,2,3,5,6,7,8	1,2,5,6,7,8	∅
1,2,3,5,6,7,8	1,2,3,5,6,7,8	1,2,5,6,7,8	4
1,2,5,6,7,8	1,2,3,5,6,7,8	1,2,5,6,7,8	∅
4	∅	∅	∅

4 sets of states! Any set containing 4 needs to be also a final state!