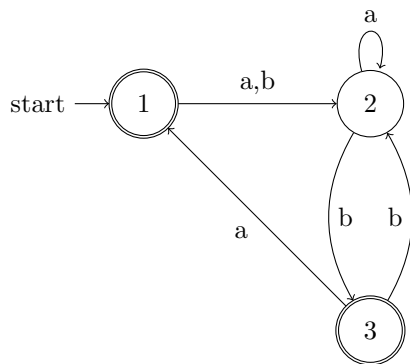


Homework 2

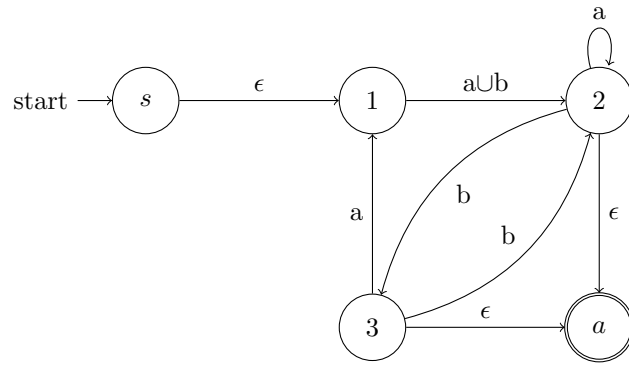
Jose Luiz Magallanes

October 20, 2020

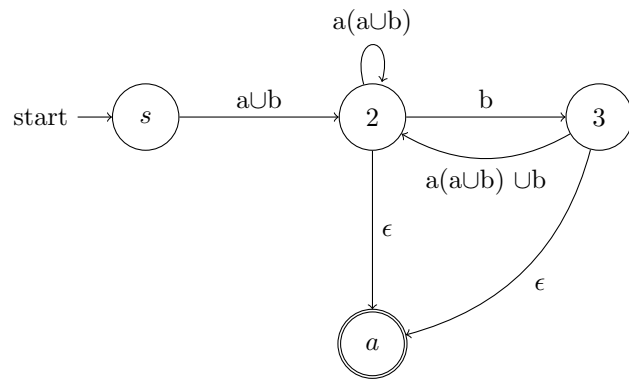
- 1 Give the regular expression for the FA below.
Create a program that generates a regular expression from the language description in the language of your choosing.



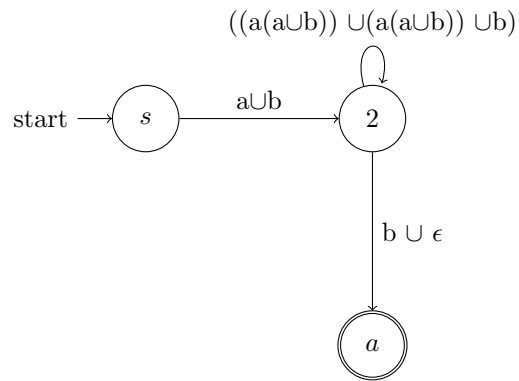
3 state FA



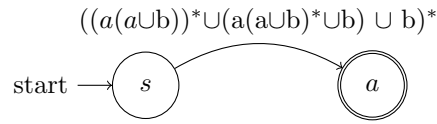
5 state GFA



4 State GFA



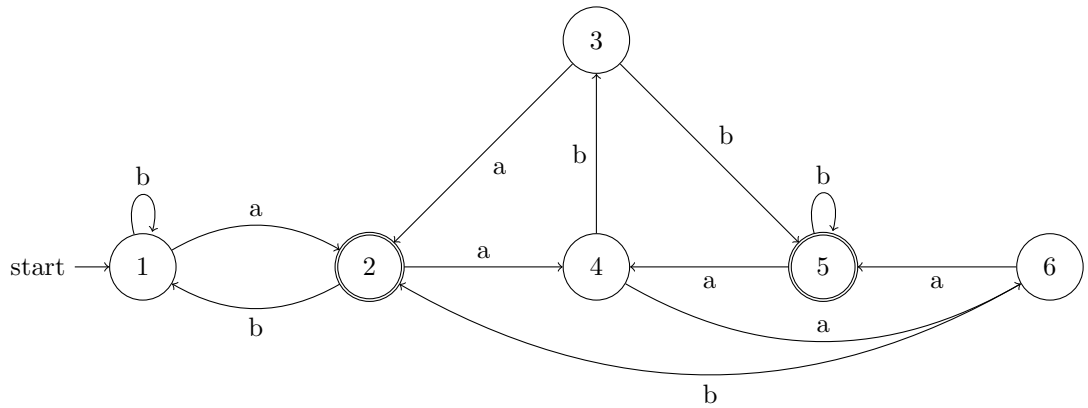
3 State GFA



2 State GFA

1.1 Regular Expression: $((a(a \cup b))^* \cup (a(a \cup b)^* \cup b) \cup b)^*$

2 Minimize the FA:



2.1 State Transition Table

q	$\delta(q, a)$	$\delta(q, b)$
1	2	1
2	4	1
3	2	5
4	6	3
5	4	5
6	5	2

2.2 Let's create sets of the pairs that are distinguishable:

$$P_0 = \{(1, 3, 4, 6), (2, 5)\}$$

$$P_1 = \{(\phi), (\phi), (\phi)\}$$

2.3 All pairs are distinguishable, therefore the DFA cannot be minimized further.