Source task and conventions

Construct the NFA for $a^*(a \mid b)aa$ and convert it by the source's subset algorithm.

Conventional solution and proof

State	Outgoing labelled transitions
0	none
1	$a\to 0$
2	$a\to 1$
3	$\varepsilon\to 5$, $\varepsilon\to 6$
4	$\varepsilon\to 2$
5	$a\to 4$
6	$b\to 4$
7	$\varepsilon\to 3$, $\varepsilon\to 8$
8	$a\to 7$

The NFA starts at state 7 and accepts only at state 0.

DFA	NFA subset	a	b	Accepts