Source task and conventions

Construct the NFA and subset DFA for $((a \mid b)(a \mid bb))^*$.

Conventional solution and proof

State	Outgoing labelled transitions
0	none
1	$\varepsilon\to 0$, $\varepsilon\to 7$
2	$\varepsilon\to 4$, $\varepsilon\to 6$
3	$\varepsilon\to 1$
4	$a\to 3$
5	$b\to 3$
6	$b\to 5$
7	$\varepsilon\to 9$, $\varepsilon\to 10$
8	$\varepsilon\to 2$
9	$a\to 8$
10	$b\to 8$

The NFA starts at state 1 and accepts only at state 0.

DFA	NFA subset	a	b	Accepts