

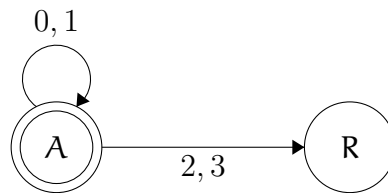
CSE 311 Quiz 9

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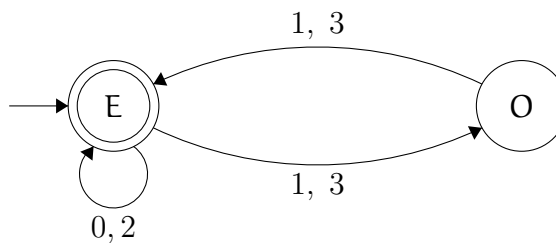
1. (a) It is not transitive, not reflexive, not symmetric, and vacuously anti-symmetric (there will never be the case where $x = y + 1$ and $y = x + 1$).
- (b) Given an arbitrary $x \in \mathbb{R}$, clearly $x^2 = x^2$, so $(x, x) \in S$. Given arbitrary $a, b, c \in \mathbb{R}$, if $(a, b) \in S$, and $(b, c) \in S$, then $a^2 = b^2$, and $b^2 = c^2$. Because equality is transitive, we see that $a^2 = c^2$, which shows that $(a, c) \in S$. Given arbitrary $x, y \in \mathbb{R}$, if $(x, y) \in S$, then $x^2 = y^2$. Because equality is symmetric, $y^2 = x^2$, which shows that $(y, x) \in S$, which means that S is symmetric.

3. (a)

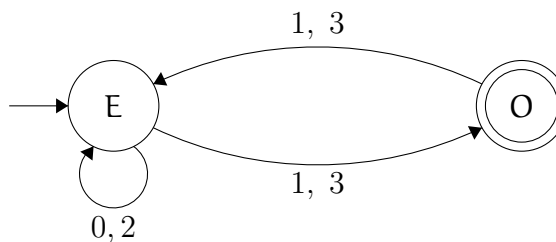


The start arrow should've pointed at A, but I forgot to add it.

- (b)



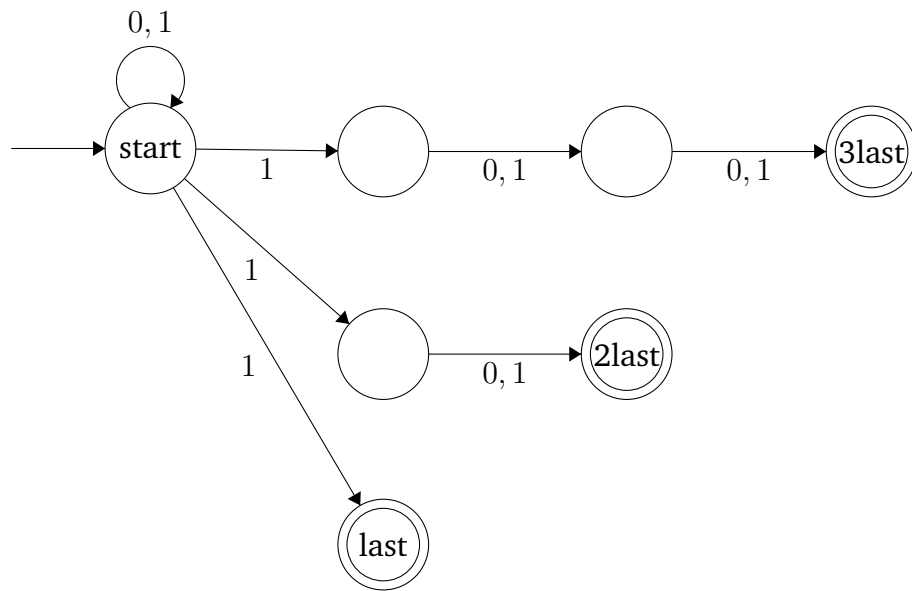
- (c)



This one was pretty nice. I answered two questions but only had to think one time.

(a) It seems to accept $(0)^*1(0)^*$.

(b)



4 (b)

