Alexander Harry
Justin Keeling
John Lambrecht

Claim: For set S = $\{\frac{c}{d} : c \in \mathbb{N} \cup \{0\}, d \in \mathbb{Q}, d \neq 0\}$, $S = \mathbb{Q}$

Proof: Need to show $\forall s \in S, s \in \mathbb{Q}$

$Let\ s \in S \Rightarrow s = \frac{c}{d}\ for\ c \in \mathbb{N} \cup \{0\}, d \in \mathbb{Q}, d \neq 0$

$\Rightarrow d = \frac{a}{b}\ where\ a \in \mathbb{Z}, a \neq 0, b \in \mathbb{Z}, b \neq 0$

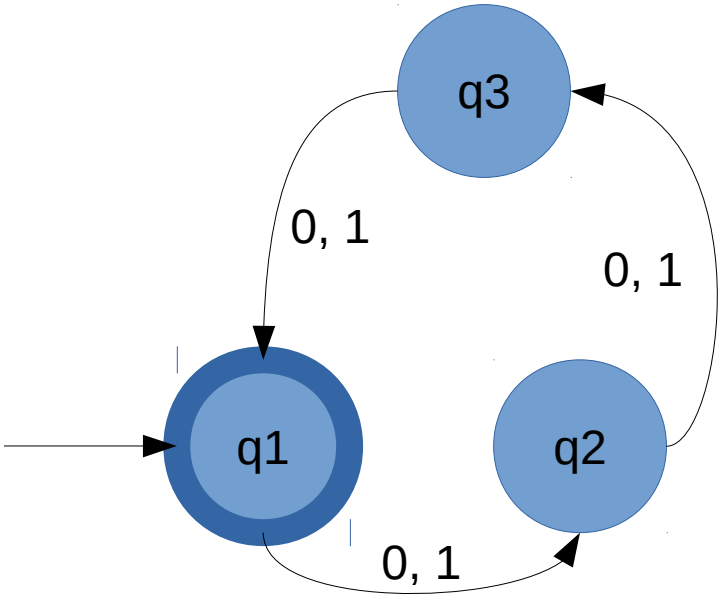
1. $\Rightarrow s = \frac{c}{\frac{a}{b}}$

$\Rightarrow s = \frac{cb}{a}$

$\Rightarrow s \in \mathbb{Q}$

$\therefore S = \mathbb{Q}$

2.



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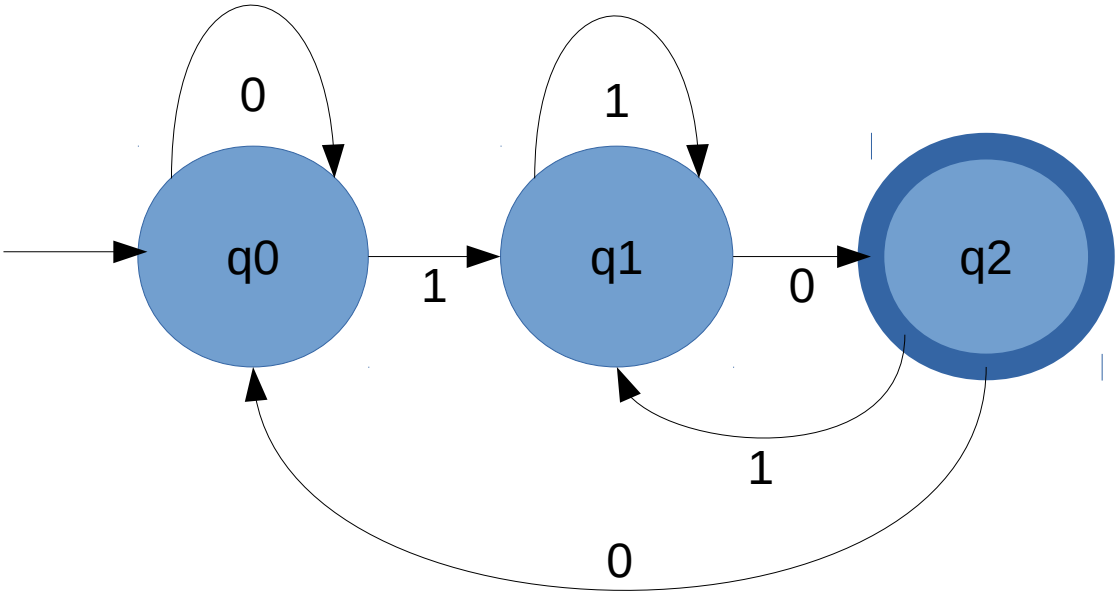
3.



4.

{*w* : *w* starts with sequence 10}