Current version:

In this version, the final state will contain the desired GCD in x ***and the correct values of*** s ***and*** t ***stored in*** u ***and*** v***. The second-last state will contain the desired GCD in*** y ***and the correct values of*** s ***and*** t***. There will be as many transitions as there are steps using the Euclidean Algorithm.***

$$\begin{aligned} \text{states} &= \mathbb{N}^6 \\ \text{start state} &= (a,b,0,1,1,0) && \text{(where } a \geq b > 0\text{)} \\ \text{transitions} &= (x,y,s,t,u,v) \to \\ & \quad (y,\ \operatorname{rem}(x,y),\ u - sq,\ v - tq,\ s,\ t) && \text{(for } q = \operatorname{qcnt}(x,y), y > 0\text{).} \end{aligned}$$

Alternative 1:

In this version, the final state will contain the desired GCD in x ***and the correct values of*** s ***and*** t***. There will be as many transitions as there are steps using the Euclidean Algorithm.***

$$\begin{aligned} \text{states} &= \mathbb{N}^6 \\ \text{start state} &= (a,b,1,0,0,1) && \text{(where } a \geq b > 0\text{)} \\ \text{transitions} &= (x,y,\boldsymbol{u},\boldsymbol{v},\boldsymbol{s},\boldsymbol{t}) \to \\ & \quad (y,\ \operatorname{rem}(x,y),\ \boldsymbol{s - uq},\ \boldsymbol{t - vq},\ \boldsymbol{u},\ \boldsymbol{v}) && \text{(for } q = \operatorname{qcnt}(x,y), y > 0\text{).} \end{aligned}$$

Alternative 2:

In this version, the final state will contain the desired GCD in y ***and the correct values of*** s ***and*** t***. There will be one transition fewer than there are steps using the Euclidean Algorithm.***

$$\begin{aligned} \text{states} &= \mathbb{N}^6 \\ \text{start state} &= (a,b,0,1,1,0) && \text{(where } a \geq b > 0\text{)} \\ \text{transitions} &= (x,y,u,v,s,t) \to \\ & \quad (y,\ \operatorname{rem}(x,y),\ s - uq,\ t - vq,\ u,\ v) && \text{(for } q = \operatorname{qcnt}(x,y), \mathbf{rem}\,\boldsymbol{(x,y) > 0}\text{).} \end{aligned}$$