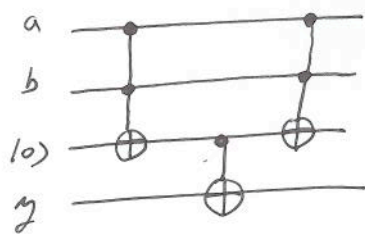


4) Consider the following ~~error~~ circuit



$$a, b, \gamma \in \{0, 1\}$$

a) Describe the action on basis states a, b, γ

$$|a, b, 0, \gamma\rangle \rightarrow |a, b, 0 \oplus ab, \gamma\rangle \rightarrow \dots$$

b) Make sure you understand why the input $|0\rangle$ ended up unmodified, unentangled.

c) Apply the circuit on the state

$$\frac{1}{\sqrt{2}} (|00\rangle + |11\rangle) \otimes |0\rangle \otimes |0\rangle$$