

Home Work 2, 2021

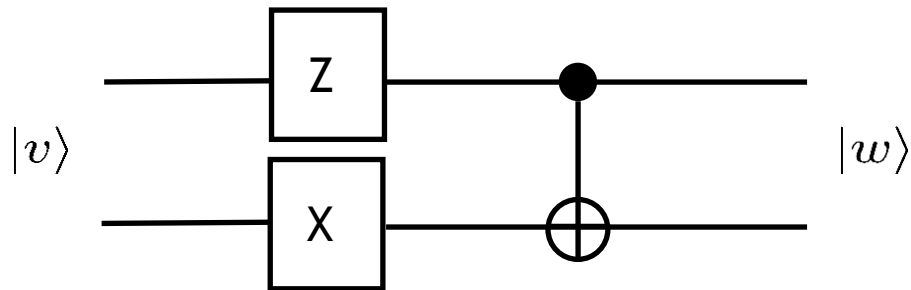
Problem 1 Find the tensor product

$$\begin{pmatrix} 0 & -i \\ i & 0 \end{pmatrix} \otimes \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}.$$

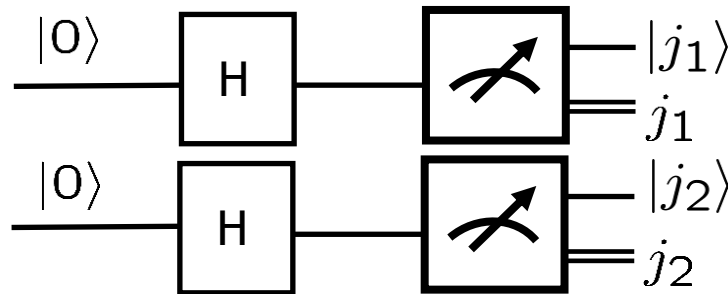
Problem 2 For the input state

$$|v\rangle = \alpha_{00}|00\rangle + \alpha_{01}|01\rangle + \alpha_{10}|10\rangle + \alpha_{11}|11\rangle$$

find the state $|w\rangle$ at the output of the following circuit



Problem 3



Assignment Project Exam Help

Find the classical and quantum outputs and the corresponding probabilities.

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Problem 4 Let we have two qubits in the state

$$\frac{1}{\sqrt{2}}(|01\rangle + |10\rangle)$$

Let we act on the second qubit by the unitary rotation H. Find the new state of these two qubits.