

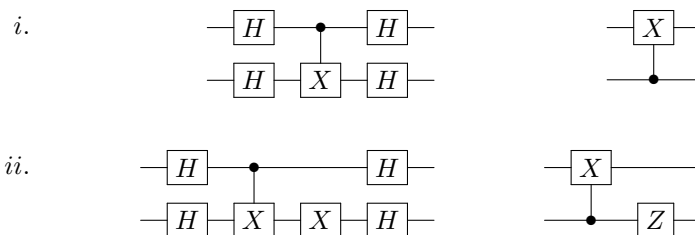
Introduction to Quantum Computing

Exercise Sheet 2

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Exercise 1. For each of the following pairs, show that the two quantum circuits compute the same unitary operator. *[Suggestion: show that the two circuits have the same behavior over basic states, and use linearity to conclude.]*



Exercise 2. Modify the circuit of the Deutsch algorithm in such a way that the final measurement, which must yield 0 with probability 1 if f is constant, and 1 with probability 1 if f is non constant, is *not* a measurement of the first qubit in the computational basis, but a parity measurement of the string composed by the two qubits.