Goals

• Describe classical and quantum circuits
• Analyze a quantum circuit
• Understand importance of superposition and phase in quantum speed-ups.
Classical query complexity

- What is the classical query complexity of even/odd problem?
Analyze the following circuits

Show the output state is $(-1)^{f(x)} |x\rangle |\rightarrow\rangle$.
(Assume $x = 0$ or 1)