

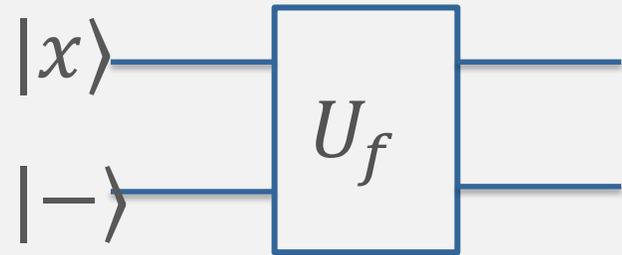
# Goals

- 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  $(-1)^{f(x)} |x\rangle |-\rangle$ .  
(Assume  $x = 0$  or  $1$ )

