* Classical: data representation – binary (0/1)
* Quantum: a single bit -> qubit
  + A quibit -> superposition of two states (additional of state vectors)
  + Alpha |0> + beta |1>
  + Complex number: (alpha)^2 + (beta)^2
  + Superposition at both states |1> and |0 at the same time
    - Computation based on the probability of the state before measurement
* Advantages: deal with multiple inputs, factor large numbers, solve NP problems
* Shor’s algorithm: QC - capable of factoring large numbers in polynomial time
* Limitation: hardware – unable to maintain coherence and return correct answers
  + Robust error correction -> large-scale computation
    - 100X more qbit for guarantee reliability
* Current status
  + Google: 72-qbit
  + Neven’s law: quantum comp -> gaining computational power at doubly exponential rate (2^2^2 -> 2^2^3 -> 2^2^4 …)
* Related fields