many ways to describe an atom
e.g. Carbon (6 electrons)

1) Energy Levels
   - \( n = 1, l = 0 \)
   - \( n = 2, l = 0 \)
   - \( n = 2, l = 1 \)

2) List quantum numbers
   - \( n = 2, l = 1, m_l = -1, m_s = -1/2 \)

3) Electron Configuration
   - \( 1s^2 \ 2s^2 \ 2p^4 \)

Exclusion Principle: No two electrons can be in the same quantum state

RULES
- Fill orbitals with the same \( n \) but lower \( l \) first
- Within a subshell, fill one electron into each orbital first.

Orbitals with same \( n \) \( \rightarrow \) Shell
Orbitals with same \( l \) \( \rightarrow \) Subshell