Quantum computing is a new type of computing that uses the principles of quantum mechanics to perform calculations and solve problems that are impractical or impossible for classical computers. It is based on the ability of subatomic particles, such as electrons and photons, to exist in multiple states at the same time, a phenomenon known as superposition. In classical computing, information is stored and processed in binary digits, or bits, which have a value of either 0 or 1. In quantum computing, information is stored and processed using quantum bits, or qubits