The question of quantum computation gates and quantum dissipation maps[1] generated by means of classical random walks is here addressed in operations involving qubit states. Classical variables determining the manifold of qubit state vectors and density matrices are left to perform a classical random walk formulated algebraically by means of Hopf algebras[2],[3] (such as \( \mathbb{Z}_N \) and \( \mathbb{R} \times \mathbb{R} \)). It is shown that this induces quantum operations on the qubits and density matrices which are further identified with e.g known unitary transformations and completely positive trace preserving maps, depending upon the kind of random walk chosen.

