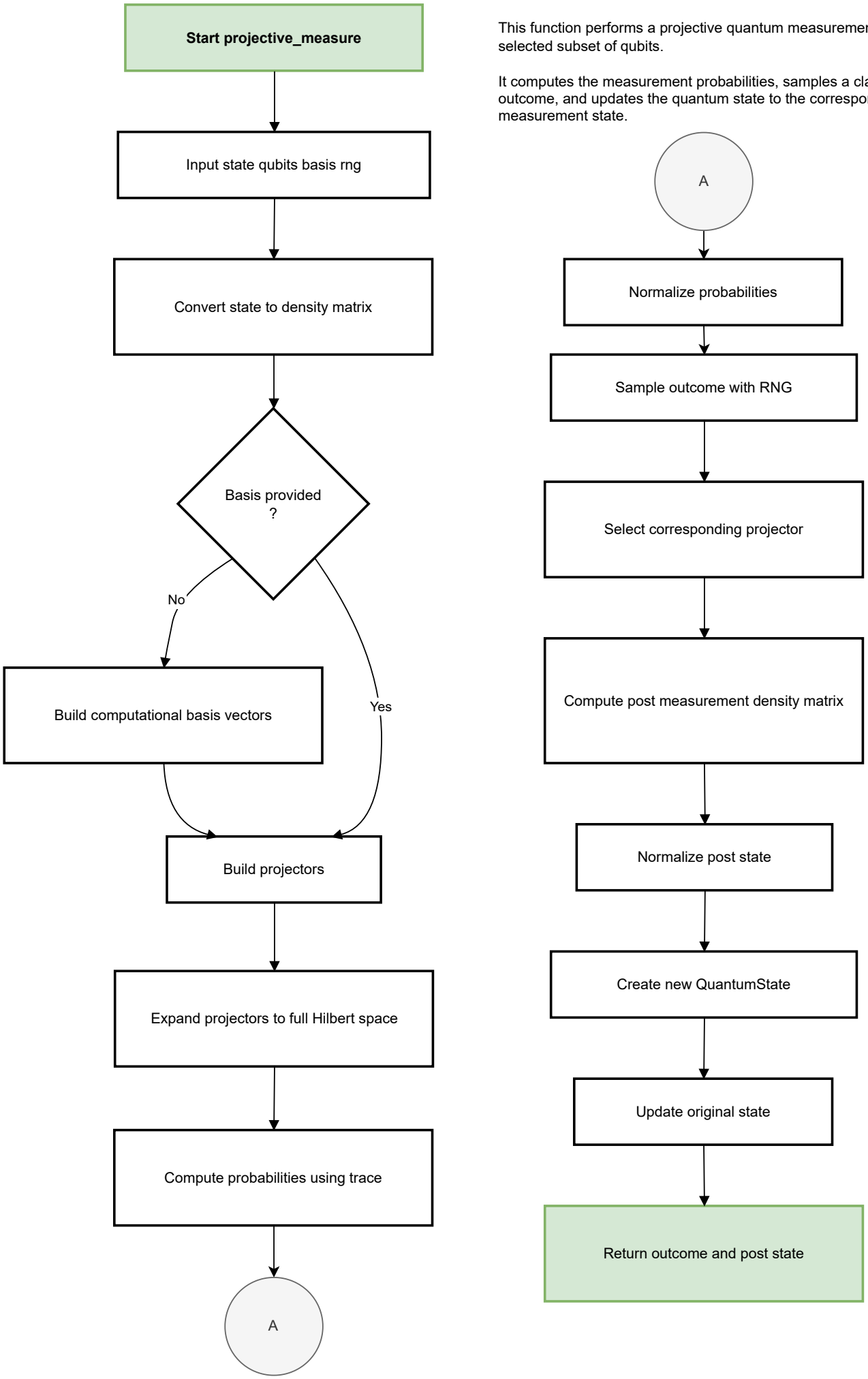
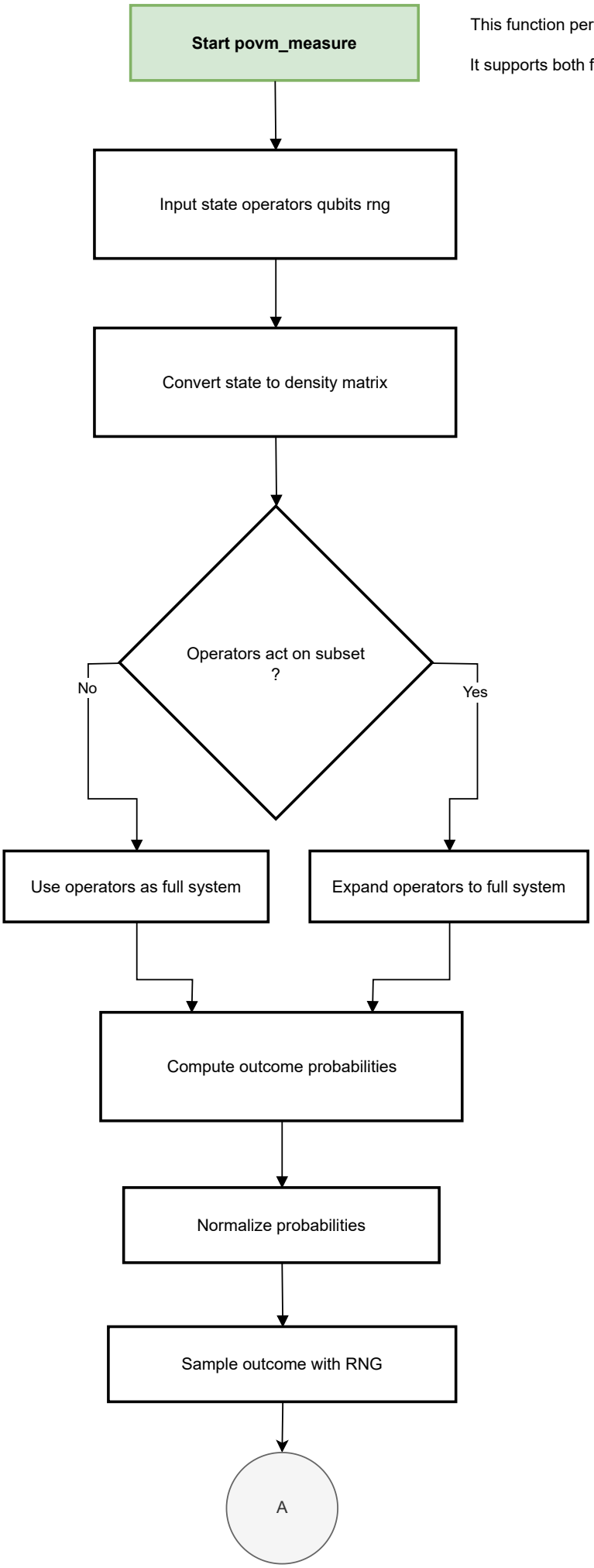
This function performs a projective quantum measurement on a selected subset of qubits.

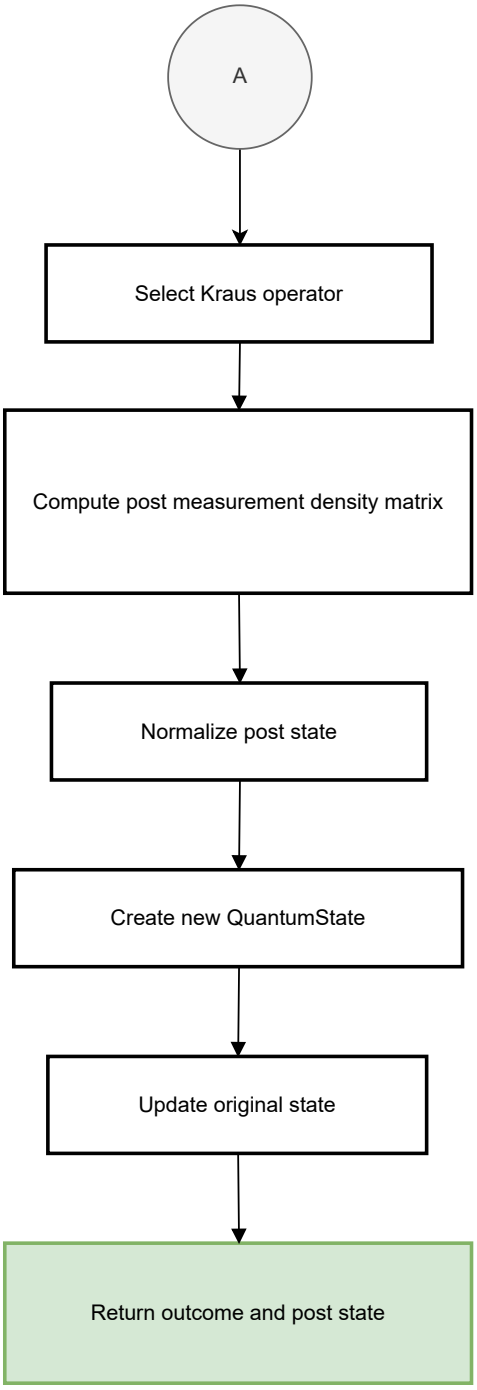
It computes the measurement probabilities, samples a classical outcome, and updates the quantum state to the corresponding post-measurement state.

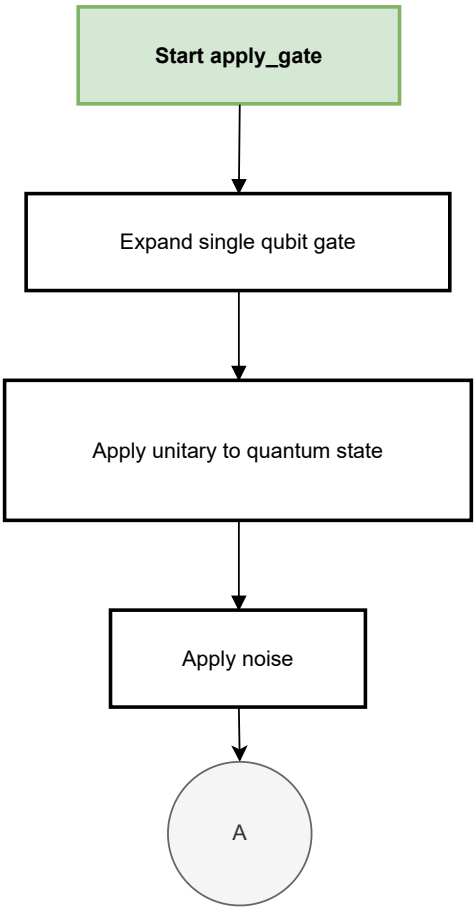


This function performs a generalized quantum measurement using POVM operators.

It supports both full-system and subsystem measurements and updates the quantum state based on the selected Kraus operator.







This method applies a single-qubit gate to the quantum state and optionally applies noise channels.

It models both ideal and noisy quantum evolution.