Simulate and Analyze Robotic Arm Kinematics for a Simple Task

Objective:

Please model the **forward and inverse kinematics** of a robotic arm, simulate the motion for a specific task (e.g., picking up and placing an object), and provide a detailed analysis of the trajectory and the robot's joint angles.

Steps:

1. **Robotic Arm Modeling**:
    - Choose a 3-DOF or 6-DOF robotic arm configuration.
    - Develop the kinematic equations for forward and inverse kinematics.
2. **Simulation**:
    - Implement the kinematic model in Python or MATLAB.
    - Simulate a specific task (e.g., pick and place, tracing a trajectory).
    - Perform the simulation on any of these platforms:
        - MoveIt (ROS),
        - Gazebo (ROS),
        - PyBullet,
        - OpenRAVE,
        - V-REP (CoppeliaSim),
        - Blender.
3. **Analysis & Documentation**:
    - Plot and analyze the **joint angles** and **end-effector positions** over time.
    - Highlight key observations, such as how the arm adjusts to complete the task.