

## **Kinematics & Dynamics of a Planar Manipulator 2DOF**

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Matrices in the field of mathematics, sciences, and physics is a very important concept. For example, the matrices product is not commutative ( $a \times b \neq b \times a$ ) and the end effector becomes unexpected if the position of the matrices are changed. The purpose of this research project was to clarify and understand one of the applications of matrices (Linear Algebra Course) and to study in a model, the kinematics and dynamics of a Planar Manipulator of 2 DoF. In order to prove the importance of matrices in real life projects, the researchers described the end effector using direct and inverse kinematics. The results obtained were validated by the equation of inverse kinematics. The researchers selected four (4) triangles in the four (4) quadrants and realized that the end effector is in the right position using the joint coordinates. The researcher also found out during the simulation that the calculated joint positions give them the right end effector.