Kinematics Write-up

Thoroughly explain your approach to the **Kinematics Design Challenge** (Robot Arm) worked on in class the past two weeks.

Primary Topics: Joints, Degrees of Freedom (DOF), Workspace, Inverse Kinematics
Secondary Topics: Forward Kinematics

Your focus should be on the design of your robot arm and how you determined the joint angles to move them to the correct locations. How did these two topics influence each other?

Although discussing your team's solutions and relevant concepts is encouraged, each student is to submit an entirely independent report.

You should *minimally* address the following topics:
- Briefly introduce the goals and constraints of the Challenge.
- Describe the hardware (mechanisms) of your solution, including primary design considerations and how they were addressed.
- Describe the software (algorithms) of your solution, including how this solution was intended to control your hardware.
- Discuss the challenges you encountered and your (attempted) solutions to them.
- Report on how successful your solution was in meeting the Challenge. What would you do differently if attempting the Challenge again? What were the keys to success?

Along the way, keep the following in mind:
- Graphical depictions are important; *include diagrams* of your device, of the "playing field," of the algorithm "blocks," or of anything else that helps to communicate your solution.
- Use as much of the material discussed in class as possible: demonstrate knowledge of the robotics vocabulary and various solution techniques. If you chose one of several discussed techniques, why?

Assessment Rubric

	Missing	Weak	Marginal	Strong	Outstanding
Exhibited conceptual understanding of relevant principles					*Indicated, through descriptions of designs and challenges, student has intuitive sense about importance of all topics*
Addressed topics discussed in class, including appropriate technical vocabulary and techniques					*Discussed relevance of all topics (using appropriate technical language) in graphical and textual means*
Explained challenges and how they were (or could be) solved					*Fully explained initial Challenge setup, problems encountered, solutions attempted, results, and other possibilities*
Presented clearly and coherently					*Report is easy to follow, error-free, neat (preferably typed), with careful and detailed illustrations / figures*