CSCE 452 Project #1   TAMU – PaintBot

Project description: TAMU PaintBot is a RRR robot as illustrated in Figure 1. We are going to build a simulation system for the robot. For convenience, all length units are in pixels (You can choose any other units depending on your programming tool). Link 1 has a length of 150 pixels. Link 2 has a length of 100 pixels. The distance between the paint brush and axis 3 is 75 pixels.
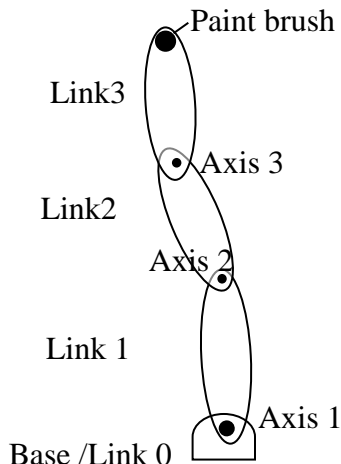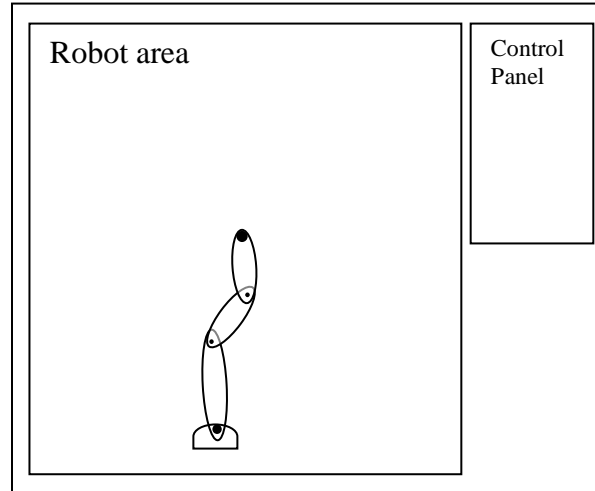

Figure 1. TAMU PaintBot   Figure 2. Simulation system interface

Figure 2 illustrates a sample interface layout. You can choose any language that you feel comfortable with. Due to the resolution limit of the projector in class, it is recommended that the interface is less than the projector resolution.

Functionalities required in the control panel are,

1. Joint control buttons: each joint has two buttons: counterclockwise and clockwise. For example, if the clockwise rotation button is clicked, the corresponding joint rotates clockwise by 1 degree.
2. Paint brush control button. If the paint brush button is clicked, it paints a filled circle co-centered with the brush. The diameter of the circle is 10 pixels.

Each group needs to submit a project report before the due date. The simulated robot system will be demonstrated in class. Grading is based on project website (20pts), in class demonstration (40pts) and peer review (40pts). There will be a paint-job competition in class to test your PaintBot. The wining team will get 5pts additional bonus point. The requirements for the project are,

1. Team management: Create a project team with three or four students. If you cannot find a team or a teammate in/after class, you post comments in google classroom to reach other students. Note that each team can have up to 5 members in total. PLEASE FIND YOUR TEAMMATES ASAP!

2. Each team should create a team website. Please send me your website URL via email if you have not done so. Please track the following items on your team website for grading purpose (20pts):

    a. Create sub directories for each project. You will work on five projects during the semester.
    b. Team member task allocation for current project (5pts).
    c. Team meeting log for current project (5pts).
    d. Source code for current project and instructions for compiling (5pts).
    e. Screenshot of the software interface (jpeg or png format) of the current project (5pts).

3. Peer Review (40 pts): You will be able to find a peer review form URL in our google classroom website. The filled form should be submitted via googleclass room as well. Do not evaluate yourself. The deadline for turning in your peer review form is the same as the project deadline. Failure to submit peer review form in time will cause you 5pts for each day passed deadline as a penalty. In the peer review form, there are two main parts: personal evaluation (20 pts) and technical evaluation (20 pts).

4. For in-class demo (40pts), each team shows the functionality of the system. No formal presentation is required.