

HOMEWORK 1

This problem is in addition to problems assigned on the Course Calendar.

Problem 1: In this problem, you will modify an Arcade model that includes two nodes so that the force systems acting on the nodes are equivalent. The detailed steps are described below:

- **Get the File:**
 - Find the file *particle-problem-1.rcd* from the following directory on Olmsted/Classes:

```
Arch324-Martini-SP06\homework_files\hw_01
```
 - Copy the file to an area where you can work on it.
- **Open the file and modify it:**
 - Open the file with Arcade (if Arcade is not installed, go to the table of contents of the course web site and download it).
There are two nodes in the model, one labeled *A* and one labeled *B*. A node is an infinitely small particle with associated mass.
 - Start the simulation.
Observe that the two nodes move differently
 - Stop the simulation and click *Build > Loads*.
A table showing loads on the nodes will appear above the Build View.
 - Look at the values of *X* and *Y* components in the table. Determine the *X* and *Y* components of a third force on node *B* that will make the resultant on node *B* the same as that on *A*.
 - To the left of the Build View, enter the *X* and *Y* components you want to use for the third force, and then click on node *B*.
The force will appear in the build view.
 - Run the simulation. If the nodes move in parallel, then your answer is correct.
 - Check your answer as follows:
 - While the simulation is running and before the nodes move off the screen, click *Simulation > Pause* (or click the Pause button in the upper left of the tool bar).
 - Click *General > Show info*. In the left window, check *Displacement* in the Node Info area
Displacement is the distance that the node has moved from its original position.
 - Click on each node.
A popup window will appear for each node, showing the *X* and *Y* displacement. The displacements should be equal.

- **Submit the file and a printout.**
 - **Creating and submitting hard copy.**
 - Hit the *Print Screen* key while the popup windows showing displacement are visible. This puts an image of the screen in the clipboard.
 - Start *Photoshop* and create a new document.
 - Click *Edit > Paste*. The screen image will appear.
 - Click *Image > Image Size...*
 - Turn off the check box labeled *Resample Image*.
 - Set the Width to 8 inches.
 - Click OK in the dialog box.
 - Print the document and write your name on it. Attach it to the other solutions you submit with homework 1.
 - Close Photoshop (there is no need to save the Photoshop file).
 - **Creating and submitting the file.**
 - Save your modified Arcade file and exit Arcade.
 - Copy the file to the following directory on Classes:

Arch324-Martini-SP06\submit\hw_01\YOURNAME_EMAILID

Where *YOURNAME_EMAILID* corresponds to a combination of your last name and email id, i.e. MARTINI_KM6E.