Assignment - Manipulators

arrowLocatorManip Plug-in

- **Topics Covered**
  Implement a custom manipulator with MPxManipContainer and MFnDiscManip. It manipulates the attribute "windDirection" on an arrowLocator node, which is implemented as custom locator from last asssignment. This Plug-in demonstrates how to set up affecting relationship between base manipulators and plugs on nodes.

- **Overview**
  In this Plug-in, we will create a custom manipulator called "arrowLocatorManip", user can use this manipulator to change the value of the "windDirection" attribute on a arrowLocator node.

- **Exercises**
  - 1. Double click on arrowLocatorManip.py, the skeleton of the arrowLocatorManip has already been provided.
  - 2. In arrowLocatorManip.py, register your custom manipulator
    Relevant classes and methods:
    MFnPlugin::registerNode()

    Please note that the name of your manipulator has to follow the name of your locator, otherwise Maya will not know how to connect them.

  - 3. Double click on arrowLocatorManip.py, go into arrowLocator::initialize() function, add one line to make connection between your custom node and your custom manipulator
    Relevant classes and methods:
    MPxManipContainer::addToManipConnectTable()
  - 4. Implement arrowLocatorManip.py, in arrowLocatorManip::createChildren() , create a base disc manip and add it into this manip container,
    In arrowLocatorManip::connectToDependNode(), connect the "windDirection" plug on the locator node with the disc manip
    Relevant classes and methods:
    MPxManipContainer:: addDiscManip()

MFnDiscManip::connectToAnglePlug()

- **Result**

  Load the arrowLocatorManip.py in Maya, in script editor, execute:
  createNode arrowLocator,
  the arrow locator is created in Maya viewport, then click on the "Show Manipulator Tool" on the toolbar, you will see a disc manip created at the center of the locator, rotating the disc manip will be changing the value of "windDirection" and the arrow locator will be rotating correspondingly.

- **Bonus section**

  In this example, if you move your locator in Maya viewport and then show the manipulator, the manipulator stays at the original location. But if you uncomment the code in connectToDependNode() where it registers a plug to manip conversion callback , and also uncomment the callback function, and build the code and load in Maya again, you will see whenever the locator moves, the center position of the manipulator moves with it. You can remove the callback function code and try to implement it by yourself.