Lab 1: Data Creation, Manipulation, and Visualization with SCIRun

1. Create a network that:
   a. Generates a 16x16x16 volume of data
      i. SCIRun::FieldsCreate::SampleLattice
   b. Shows the bounding box of that volume
      i. SCIRun::FieldsOther::FieldCage
         ii. Change UI: X Size, Y Size and Z Size to 4
      iii. SCIRun::Render::Viewer
   c. Assigns data values over that volume
      i. SCIRun::FieldsData::TransformData
         ii. Change UI: result = sqrt(x*x+y*y+z*z);
   d. Shows an isosurface of that volume
      i. SCIRun::Visualization::Isosurface
         ii. Change UI: Isovalue to 0.5, Update to Auto
   e. Colors the isosurface based on the isovalue
      i. SCIRun::Visualization::GenStandardColorMaps
         ii. SCIRun::Visualization::RescaleColorMap

2. Add slice visualization to the network:
   a. Show a slice of the volume
      i. SCIRun::FieldsCreate::FieldSlicer
         ii. Change UI: k-axis value to 8
      iii. SCIRun::Visualization::ShowField
3. Add clipping and boundary extraction to the network:
   a. Boundary of a clipped subset of the volume
      i. First, have to Unstructure the geometry:
         1. SCIRun::FieldsGeometry::Unstructure
      ii. Next, Clip it by a function:
         1. SCIRun::FieldsCreate::ClipByFunction
            2. Change UI: Location to All Nodes
            3. Change UI: Function to v<1 || x>0
      iii. Look at the boundary
         1. SCIRun::FieldsCreate::FieldBoundary
            2. SCIRun::Visualization::ShowField
      iv. Map data values from original Fields onto Boundary surface
         1. SCIRun::FieldsData::ApplyingMappingMatrix
         2. (Make two.)

4. Extra Credit
   a. Experiment with changing the resolution from SampleLattice
   b. Try saving a movie with ViewWindow->File->RecordMovie…

Intermediate results from Parts 1-3 can be downloaded from:
http://www.sci.utah.edu/~dmw/NU/

More information about the Viewer and the ViewWindow can be found at:

General SCIRun installation and setup information available at:
http://software.sci.utah.edu/doc/