**Blue Waters Petascale Semester Curriculum v1.0**

**Unit 10: Productivity and Visualization**

**Lesson 3: Visualization 1**

**Exercise Instructions for Students**

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Write a simple random matrix serial code in C and Fortran.

* Add directive to the code that defines the variable for size of the matrices
* Define arrays for each matrix and allocate required memory
* Write for loop(s) to initialize the matrix arrays with some numbers, you could use random number generators. Then place rows/columns of constant values in this array.
* Write loops to convert to ARGB pixels and write to a file for ImageMagik.
* Convert pixels file to a .png file using the display/convert commands.
* Display .png file with ImageMagik.

Build a simple movie file name generation program.

* File name generation in a program needs to be tested by simple code examples in Fortran and C.