Table of Contents for Math 4610 Projects:

1. **Getting Started Projects** These projects allow the reader to get a start into projects using multicore and GPU programming. Also, projects that use a Java multithreaded approach to High Performance Programming (HPC).

   (a) **OpenMP/Multicore Initial Projects**
   - **Hello World**
   - **Basic Loop Structure**
   - **Asynchronos External Processesing**

   (b) **OpenACC/GPU Initial Projects**
   - **Hello World**
   - **Basic Loop Structure**
   - **Asynchronos External Processesing**

   (c) **Java/Multithread Initial Projects**
   - **Hello World**
   - **Basic Loop Structure**
   - **Asynchronos External Processesing**

2. **OpenMP/Multicore Programming Projects)** This is a group of basic project that leverages multicore computers to perform more work using parallel algorithms for linear algebra operations.
   - **Matrix Addition Project using CPU/Multicore**
   - **Matrix-vector Multiplication Project using CPU/Multicore**
   - **Matrix-matrix Multiplication Project using CPU/Multicore**

3. **OpenACC/GPU Programming Projects)** This is a group of basic project that leverage Graphics Processing Units (GPUs) in most computers to perform more work using parallel algorithms for linear algebra operations.
   - **Matrix Addition Project using CPU/Multicore**
   - **Matrix-vector Multiplication Project using GPUs**
   - **Matrix-matrix Multiplication Project using GPUs**

4. **Java Multithread Programming Projects)** This is a group of basic project that leverages multicore computers to perform more work using parallel algorithms for linear algebra operations.
   - **Matrix Addition Project using CPU/Multicore**
   - **Matrix-vector Multiplication Project**
   - **Matrix-matrix Multiplication Project using CPU/Multicore**

5. **Solving Linear Systems using Multicore Programming** The projects in this section are dedicated to direct and iterative methods for solving linear systems of equations.
   - **Jacobi Iteration for Solving Linear Systems of Equations**
   - **Gauss-Seidel Iteration for Solving Linear Systems of Equations**
   - **Cholesky Factorization**