Homework GPU programming

Use the power method to find the largest eigenvalue and the corresponding eigenvector of a symmetric matrix A.
The matrix A is initially 0, and filled in the following way:

```
do i=1,n-1
   j=i+1
   a(i,j)= 1.0d0
   a(j,i)= 1.0d0
enddo
```

Let v_1 be an eigenvector of matrix A with eigenvalue λ_1. Then $\mathbf{A}v_1 = \lambda_1 v_1$. The set eigenvectors v_i form a complete set, thus any vector b can be written as $\mathrm{b} = \sum_i c_i\, v_i$. Hence, multiplying matrix **A** with a random vector **b** results in a vector **c** which can be written as $\mathrm{c} = \sum_i c_i \lambda_i v_i$. Multiplying the matrix with this vector **c** gives $\mathrm{c} = \sum_i c_i \lambda_i^2 v_i$, thus repeating this process *n* times leads to a vector $\mathrm{c} = \sum_i c_i \lambda_i^n v_i$, thus the vector **c** converges to the eigenvector of **A** with the largest eigenvalue.

Your program prints at the end the converged eigenvalue.

Run your program on the CPU and GPU, and report the timings for different dimensions of matrix A. Explain how you ported your program to the GPU.