Recitation : PETSc

Login to Stampede. Load the PETSc module
```
module load petsc
git clone https://github.com/CaleCC/recitation_petsc.git
cd recitation_petsc
```

Exercise 1

1-This exercise is about the use of vector objects in PETSc. Open vec.c with your preferred editor.
```
Vim vec.c
```

2-Read through the code, compute the inner product of vector x and y.

Hints: VecDot(Vec x, Vec y, PetscScalar *r);

Exercise 2

1- scale x by that inner product,
2- take the 2-norm of the result.

Hints: VecScale(Vec x, PetscScalar a);VecNorm(Vec x,NormType type, double *r);
You can look up the usage of these operation here
http://www.mcs.anl.gov/petsc/petsc-current/docs/manualpages/Vec/index.html
Or google them directly.

Compile and submit the job

1-compile your code
```
make vec
```

2-You can submit your job
```
 sbatch jobscript_vec
```
check result
```
cat vec.stdout
```

Exercise 3

1-This exercise is about the use of KSP solving a system of linear equations
in PETSc. Open ksp.c with your preferred editor.
2-The matrix, the linear solver and all the options are already been set. You need to start the solve process with one line of code.

Hint: KSPSolve(ksp,b,x) and also remember CHKERRQ(ierr);

Compile and submit the job

1-compile your code
`make ksp`

2-You can submit your job
`sbatch jobscript_ksp`
Check result
`cat ksp.stdout`

For further explanation, check out link here
http://www.mcs.anl.gov/petsc/petsc-3.7-atpesc2016/src/ksp/ksp/examples/tutorials/ex1.c.html
you explore the usage of each function by clicking on it.