In [3]:

```
%matplotlib inline
from matplotlib import pyplot as plt
```

In [4]:

```
#Importing CUDA for Python
import pycuda
import pycuda.compiler as cuda_compiler
import pycuda.driver as cuda_driver
```

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-4-e01e294fc63a> in <module>()
      1 #Importing CUDA for Python
----> 2 import pycuda

ModuleNotFoundError: No module named 'pycuda'
```

In [5]:

```
cuda_driver.init()
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-5-e6c81a677ee6> in <module>()
----> 1 cuda_driver.init()

NameError: name 'cuda_driver' is not defined
```

In [6]:

```
cuda_device = cuda_driver.Driver(0)
print("Using '{:s}'".format(cuda_device.name()))
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-6-898f54f1fda6> in <module>()
----> 1 cuda_device = cuda_driver.Driver(0)
      2 print("Using '{:s}'".format(cuda_device.name()))

NameError: name 'cuda_driver' is not defined
```

In [7]:

```
context = cuda_device.make_context()
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-7-ea5581d19974> in <module>()
----> 1 context = cuda_device.make_context()

NameError: name 'cuda_device' is not defined
```

In [8]:

```
print(cuda_device.name())
print("Total memory is " + str(cuda_device.total_memory()/(1024*1024))
```

```
  File "<ipython-input-8-5978337f2a6d>", line 2
    print("Total memory is " + str(cuda_device.total_memory()/(1024*1024))
                                                                          ^
SyntaxError: unexpected EOF while parsing
```

In [9]:

```
cuda_sourcecode = """
__global__void addVectors(float* c,const float* a,const float* b){
    int thread_index = blocIdx.x*blockDim.x + threadIdx.x;

    int k = thread_index;
    c[k] = a[k] + b[k];
}
"""

__global__void addMatrices(float* c,const float* a,const float* b,int cols,int rows) {

}

kernel_module = cuda_compiler.SourceModule(cuda_sourcecode)
```

```
  File "<ipython-input-9-919b17d048d6>", line 10
    __global__void addMatrices(float* c,const float* a,const float* b,int co
ls,int rows) {
                            ^
SyntaxError: invalid syntax
```

In [10]:

```
kernel_function = kernel_module.get_function("addVectors")
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-10-833f49e90c12> in <module>()
----> 1 kernel_function = kernel_module.get_function("addVectors")

NameError: name 'kernel_module' is not defined
```

In [12]:

```
import numpy as np
```

In [18]:

```
problem_size = 32
a = np.random.random((problem_size,1)).astype(np.float32)
b = np.random.random((problem_size,1)).astype(np.float32)
```

In [17]:

```
print(a.dtype)
```

```
float64
```

In [15]:

```
from pycuda import gpuarray
```

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-15-7216df8ab340> in <module>()
----> 1 from pycuda import gpuarray

ModuleNotFoundError: No module named 'pycuda'
```

In [16]:

```
a_gpu = gpuarray.GPUArray(a.shape,np.float32)
b_gpu = gpuarray.GPUArray(b.shape,np.float32)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-16-3f791ce2c24d> in <module>()
----> 1 a_gpu = gpuarray.GPUArray(a.shape,np.float32)
      2 b_gpu = gpuarray.GPUArray(b.shape,np.float32)

NameError: name 'gpuarray' is not defined
```

In [19]:

```
a_gpu.set(a)
b_gpu.set(b)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-19-0817f8507f9c> in <module>()
----> 1 a_gpu.set(a)
      2 b_gpu.set(b)

NameError: name 'a_gpu' is not defined
```

In [20]:

```
##Specifiy block size and grid size
block_size = (32,1,1)
grid_size = (problem_size/block_size[0],1,1)
```

```
  File "<ipython-input-20-8a217a4b2858>", line 2
    blo<ck_size = (32,1,1)
                ^
SyntaxError: can't assign to comparison
```

In [21]:

```
#Run the kernel
c_gpu = gpuarray.GPUArray(a.shape,np.float32)

#Important that the arguments match the function
kernel_function(c_gpu.gpudata,a_gpu.gpudata,b_gpu.gpudata,block=block_size,grid=grid_size)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-21-a3197ac5309e> in <module>()
      1 #Run the kernel
----> 2 c_gpu = gpuarray.GPUArray(a.shape,np.float32)
      3
      4 #Important that the arguments match the function
      5 kernel_function(c_gpu.gpudata,a_gpu.gpudata,b_gpu.gpudata,block=bloc
k_size,grid=grid_size)

NameError: name 'gpuarray' is not defined
```

In [ ]:

```
```