Page 7, 9. What is a compiler? NVCC and MS Visual C / gcc

Page 11. What is a pointer:

A variable that holds the address of another variable.

Referencing a pointer (put the address of a var in a pointer):

int c;

int\* p;

c = 5;

p = &c;

Dereferencing a pointer (get the value of the var whose address the pointer holds):

int n;

n = (\*p);

In C/C++ a pointer also stands for a dynamically allocated array. Do int\* p\_array, than allocate some memory then do p\_array[i].

Page 13. That is what malloc(), free() and memcopy() do.

Pages 14-16. Make a new CUDA project. Compile the example. Add to the main() a printf statement to see the results

Page 15. What is this horrible (void\*\*)&dev\_a parameter type:

The CUDA API passes all values by reference. C does not allow this. So we need to pass by value the address of the variable (&dev\_a) that we want to pass as a parameter explicitly (which is what passing by reference actually does under the hood). But the variable we want to pass (dev\_a) is itself a pointer (i.e. holds the address of another variable). So the type of the thing that we pass as a parameter needs to be an address of an address, i.e. a double pointer (void \*\*)&dev\_a. The void here means that we don’t care about the actual type of the original variable. Why is it ok not to care?

Pages 21,22. Compile this example. Use random\_ints from the repo. Put everything that is in the main() in another function (e.g. calling\_add\_kernel()) and make a main() that just calls that.

Pages 25-27. Compile this (follow the yellow letters, i.e. threadId.x and <<<1,N>>>)

Pages 31-33. As above.

Pages 45-47. As above. Add another helper function (calling\_dot\_kernel()) and call this from the main.

Page 53. The jumble at the bottom should read \*c += sum;

Pages 58-60. Compile this last example

And now for the fun bit. If there is time left go to

http://numba.pydata.org/numba-doc/dev/cuda/index.html

<https://people.duke.edu/~ccc14/sta-663/CUDAPython.html>

<https://docs.continuum.io/numbapro/CUDAJit> (older but good overall example)

Read the numba, CUDA tutorials and try to write the last example in python.