

Create CUDA Project For CSC3150 Tut.5 and Assignment 3

2020.10.24

Environment:

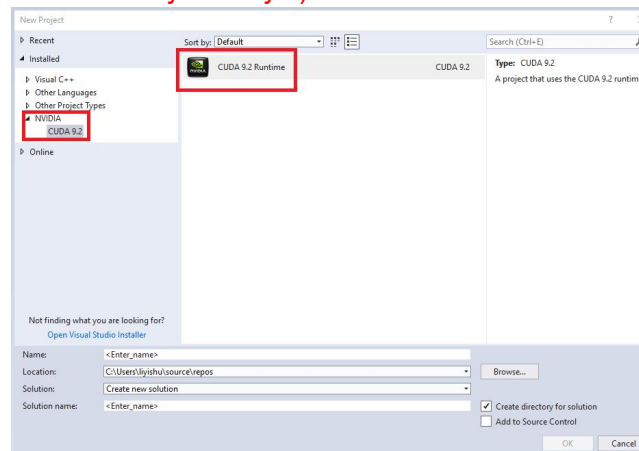
- Win 10
- VS2017
- CUDA 9.2
- NVIDIA Geforce GTX 1060
- Compute capacity: 6.1

Configuration steps:

1. Launch VS2017

2. Create CUDA project

(If you're using PCs in TC301, change the project storing location in this step.
Please ensure storing your CUDA project in D disk, rather than C disk, where will auto delete users' data every 30 days.)

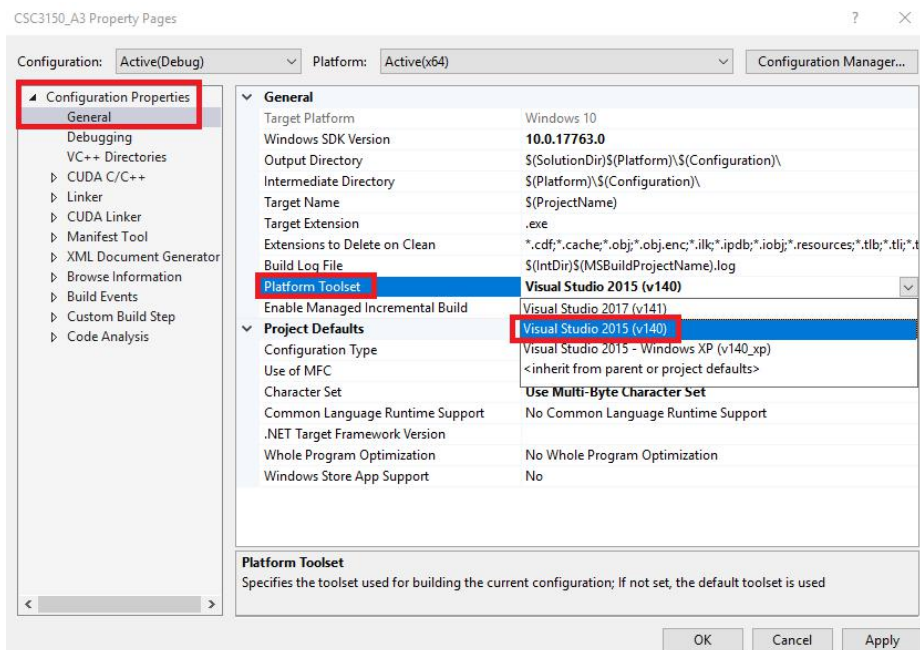
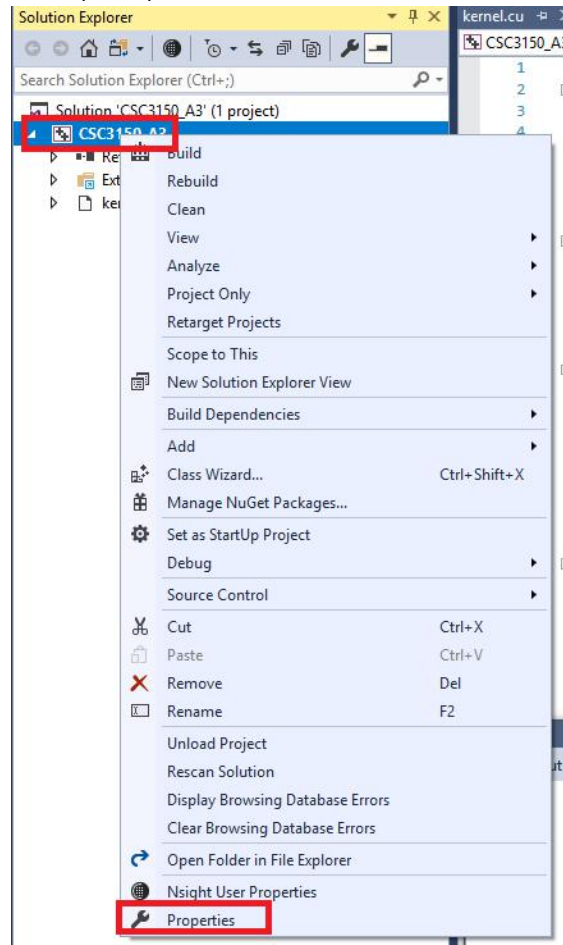


3. There will be a “kernel.cu” automatically created.

```
kernel.cu
CSC3150_A3

1  #include "cuda_runtime.h"
2  #include "device_launch_parameters.h"
3  #include <stdio.h>
4
5  cudaError_t addWithCuda(int *c, const int *a, const int *b, unsigned
6
7  global __void addKernel(int *c, const int *a, const int *b)
8  {
9      int i = threadIdx.x;
10     c[i] = a[i] + b[i];
11 }
12
13 int main()
14 {
15     const int arraySize = 5;
16     const int a[arraySize] = { 1, 2, 3, 4, 5 };
17     const int b[arraySize] = { 10, 20, 30, 40, 50 };
18     int c[arraySize] = { 0 };
19
20     // Add vectors in parallel.
21     cudaError_t cudaStatus = addWithCuda(c, a, b, arraySize);
22     if (cudaStatus != cudaSuccess) {
23         fprintf(stderr, "addWithCuda failed!");
24         return 1;
25     }
26
27     printf("{1,2,3,4,5} + {10,20,30,40,50} = {%d,%d,%d,%d,%d}\n",
28           c[0], c[1], c[2], c[3], c[4]);
29
30 }
```

4. Select and right click the project, open its properties. Update the platform toolkit as 'Visual Studio 2015(v140)'



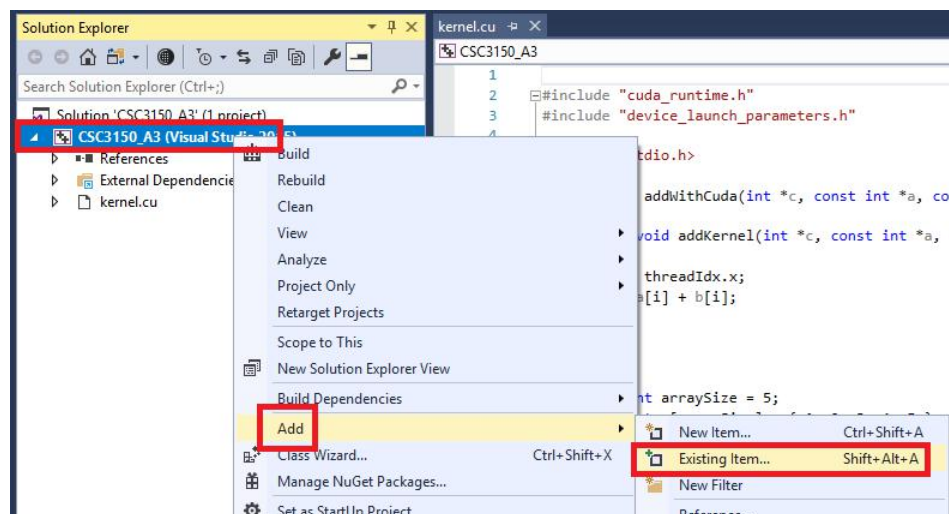
5. Press “Ctrl”+”F5” to run the project. If the calculation results being displayed correctly in console, it means your CUDA project settings is correct.

6. Copy provided source code into your project folder.
(‘main.cu’, ‘user_program.cu’, ‘virtual_memory.cu’, ‘virtual_memory.h’, ‘data.bin’)

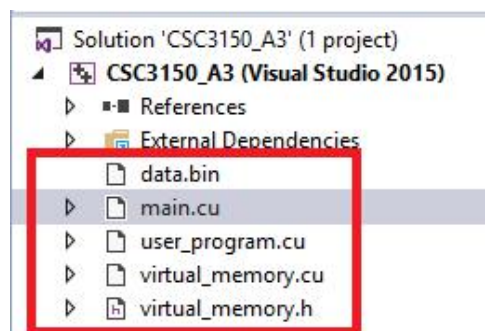
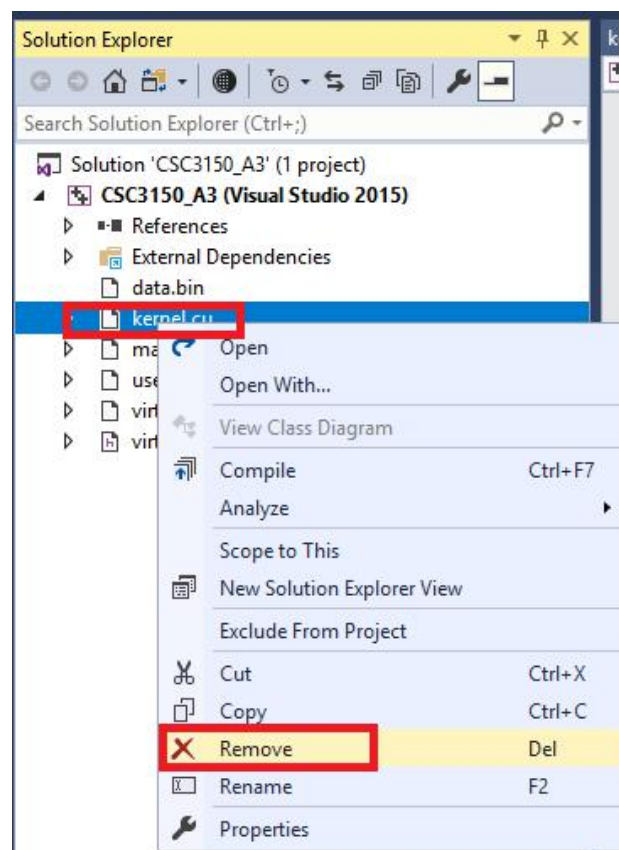
shu (SSE) > source > repos > CSC3150_A3 > CSC3150_A3

Name	Date modified	Type	Size
x64	10/10/2019 1:45 PM	File folder	
CSC3150_A3	10/10/2019 1:45 PM	VCXPROJ File	5 KB
CSC3150_A3.vcxproj.user	10/10/2019 1:41 PM	Per-User Project O...	1 KB
data.bin	11/6/2014 6:15 PM	BIN File	128 KB
kernel	10/10/2019 1:41 PM	CU File	4 KB
main	10/8/2019 8:10 PM	CU File	4 KB
user_program	10/8/2019 8:04 PM	CU File	1 KB
virtual_memory	10/8/2019 8:11 PM	CU File	2 KB
virtual_memory.h	10/8/2019 8:11 PM	C/C++ Header	1 KB

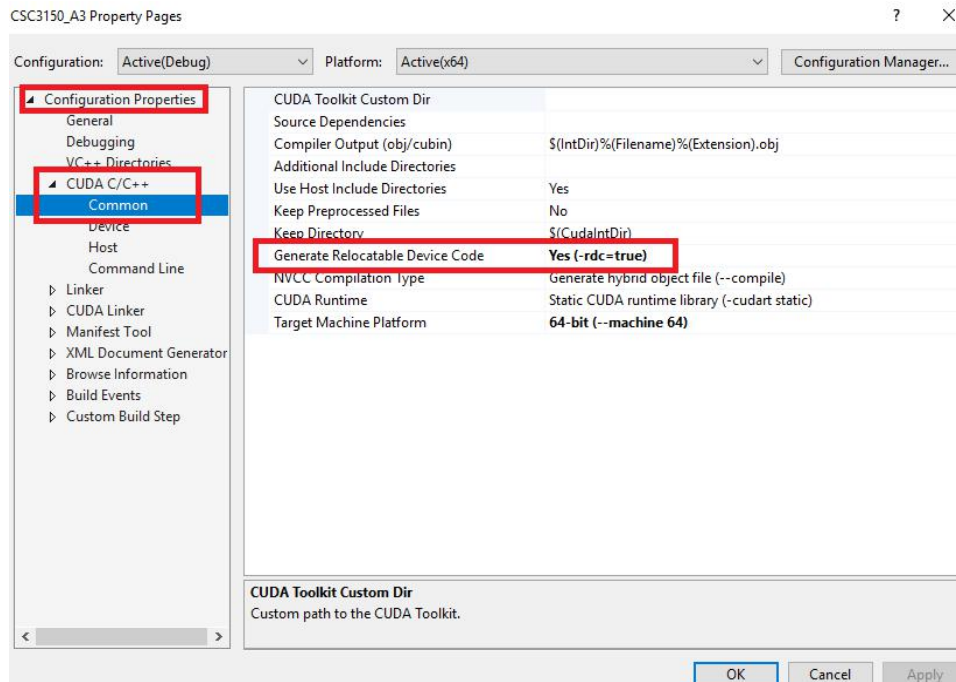
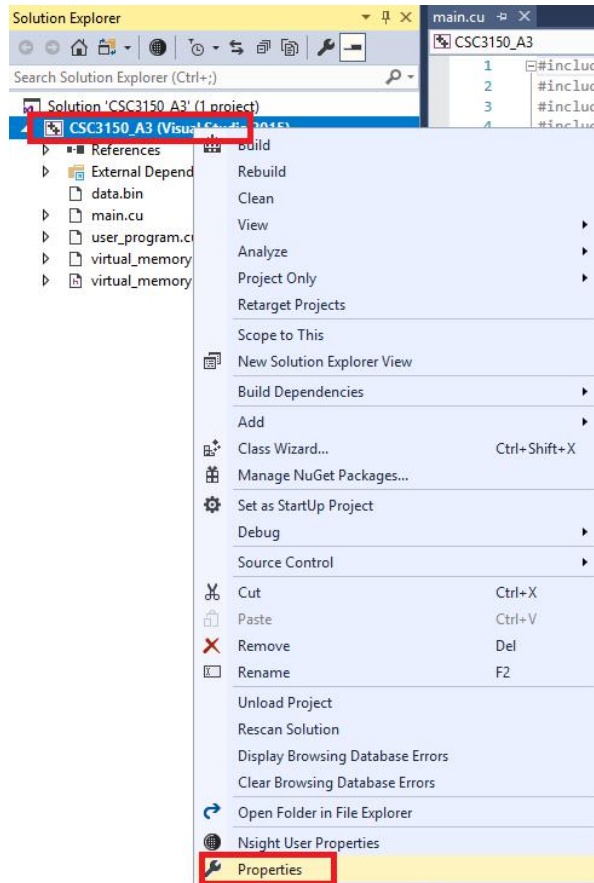
7. In Visual Studio, select and right click your project, add exiting items (the source codes) into your project. And remove the ‘kernel.cu’ from your project.



Name	Date modified
x64	10/10/2019 2:17 PM
CSC3150_A3	10/10/2019 2:17 PM
CSC3150_A3.vcxproj.user	10/10/2019 2:17 PM
data.bin	11/6/2014 6:15 PM
kernel	10/10/2019 2:17 PM
main	10/8/2019 8:10 PM
user_program	10/8/2019 8:04 PM
virtual_memory	10/8/2019 8:11 PM
virtual_memory.h	10/8/2019 8:11 PM



8. Select the project and right click it. Open its properties, allow the CUDA files to generate relocatable device code.



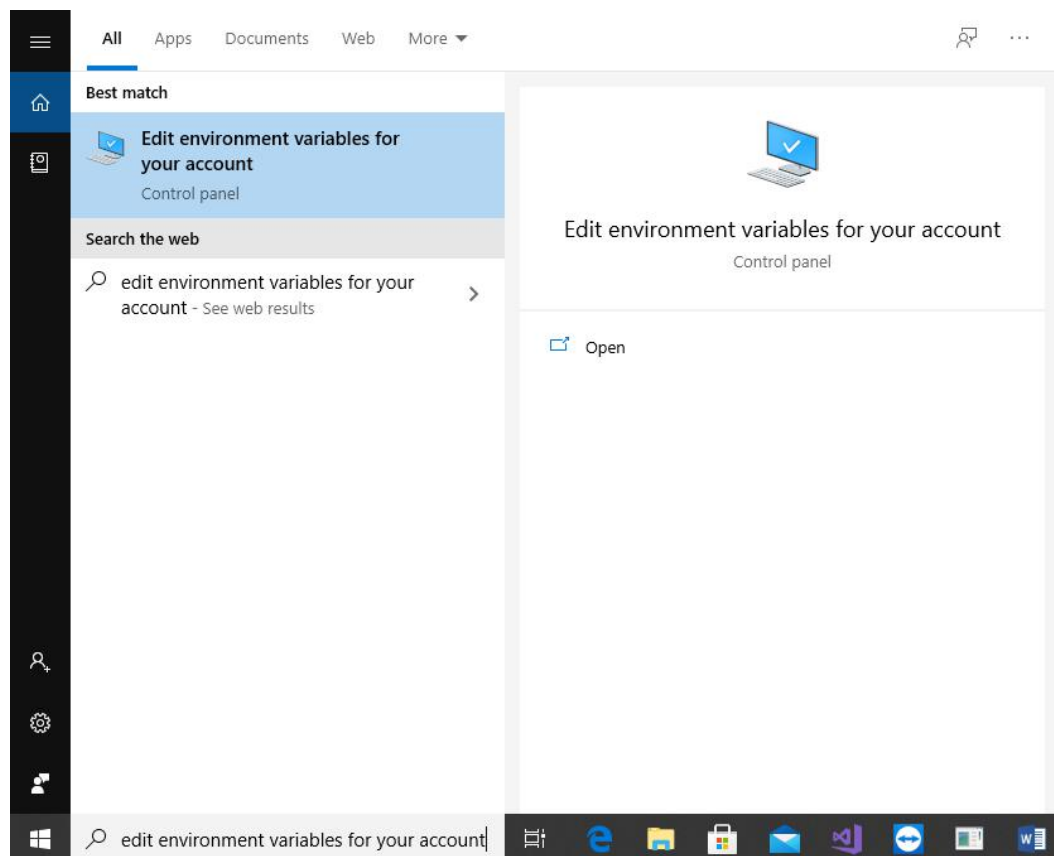
9. For those three cuda files (.cu), right click to compile them. (Or use 'Ctrl'+ 'F7'). Then press "Ctrl"+ "F5" to run your program. For the provided template, you will get output as below:

```
Microsoft Visual Studio Debug Console
input size: 131072
pagefault number is 0
C:\Users\liyishu\source\repos\CSC3150_A3\x64\Debug\CSC3150_A3.exe (process 8116) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

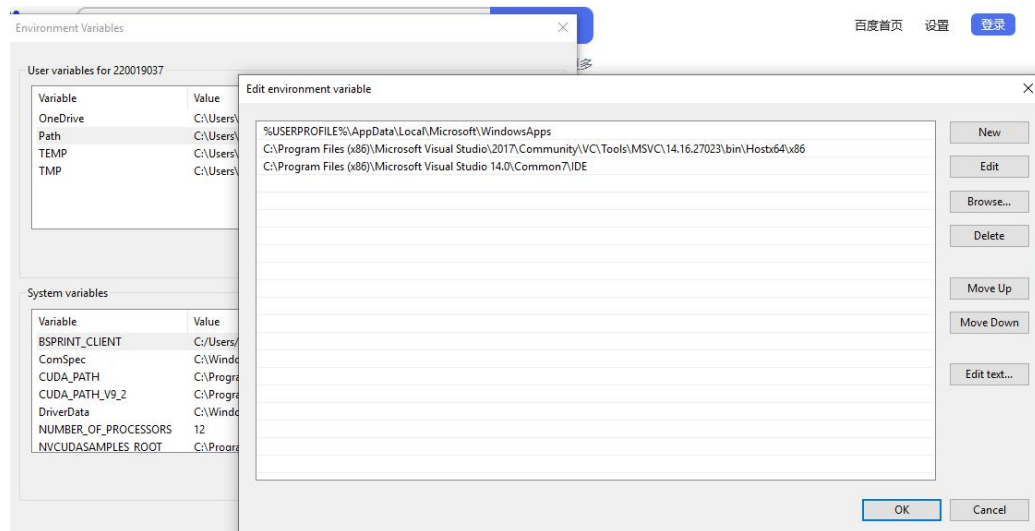
10. In "virtual_memory.cu", start your programming.

Hint:

When "Ctrl"+ "F5" to run the program, an error "nvcc fatal : Cannot find compiler 'cl.exe' in PATH" may come up.



This means the NVCC compiler cannot find the program cl.exe, so we need to add its directory path to the system environment variable. Since we don't have the administration permission, we can only edit the environment variables for our own account.



Edit the PATH, and new two items, which are

1. C:\Program Files (x86)\Microsoft Visual Studio\2017\Community\VC\Tools\MSVC\14.16.27023\bin\Hostx64\x86
2. C:\Program Files (x86)\Microsoft Visual Studio 14.0\Common7\IDE

Please note that, add them before check whether the path of cl.exe is the same as 1.

Then reboot your computer.

