Assignment 2

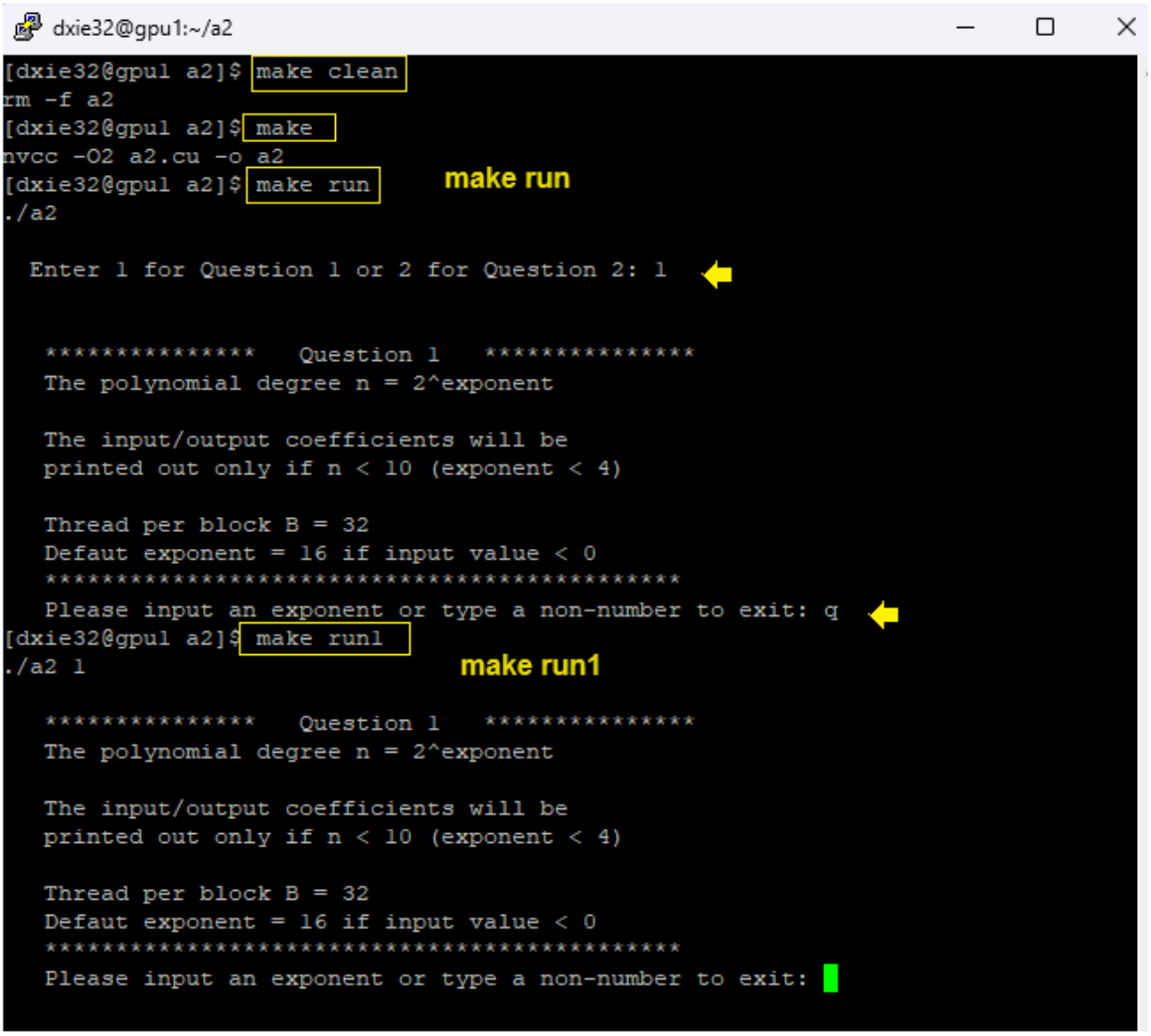
File included:

- a2.cu
- Makefile
- README.md
- a2.pdf

Question 1

- Compile file: **make**

- Run Question 1 testing**:**
  - **make run** and enter **1** OR
  - **make run1**



Testing Cases:

Case 1: B=32, n = 2^{16} (default)

```
Please input an exponent or type a non-number to exit: 16

--------------------------------------------------
Case: B=32 and n=2^16 takes 2138.81 ms

C Function Verification Passed! - takes 5746.35 ms
--------------------------------------------------
```

Case 2: B=32, n = 2^{2}

```
Please input an exponent or type a non-number to exit: 2

--------------------------------------------------
Case: B=32 and n=2^2 takes 3.665 ms

Input array a:
-1    -1    1    1    1
Input array b:
-1    -1    1    1    1

Output array c:
1    2    -1    -4    -3    0    3    2    1
C Function Verification Passed! - takes 0.001 ms
--------------------------------------------------
```

Case 3: B=32, n = 2^{3}

```
Please input an exponent or type a non-number to exit: 3

--------------------------------------------------
Case: B=32 and n=2^3 takes 1.319 ms

Input array a:
1    0    0    1    -1    -1    -1    0    1
Input array b:
1    0    0    1    -1    -1    -1    0    1

Output array c:
1    0    0    2    -2    -2    -1    -2    1    0    3    4    -1    -2    -2    0    1
C Function Verification Passed! - takes 0.002 ms
--------------------------------------------------
```

Case 4: B=32, n = 2^{12}

```
Please input an exponent or type a non-number to exit: 12

--------------------------------------------------
Case: B=32 and n=2^12 takes 2.228 ms

C Function Verification Passed! - takes 22.464 ms
--------------------------------------------------
```

Case 5: B=32, n = 2^{14}

```
Please input an exponent or type a non-number to exit: 14

--------------------------------------------------
Case: B=32 and n=2^14 takes 9.408 ms

C Function Verification Passed! - takes 347.578 ms
--------------------------------------------------
```

Case 6: B=32, n = 2^{18}

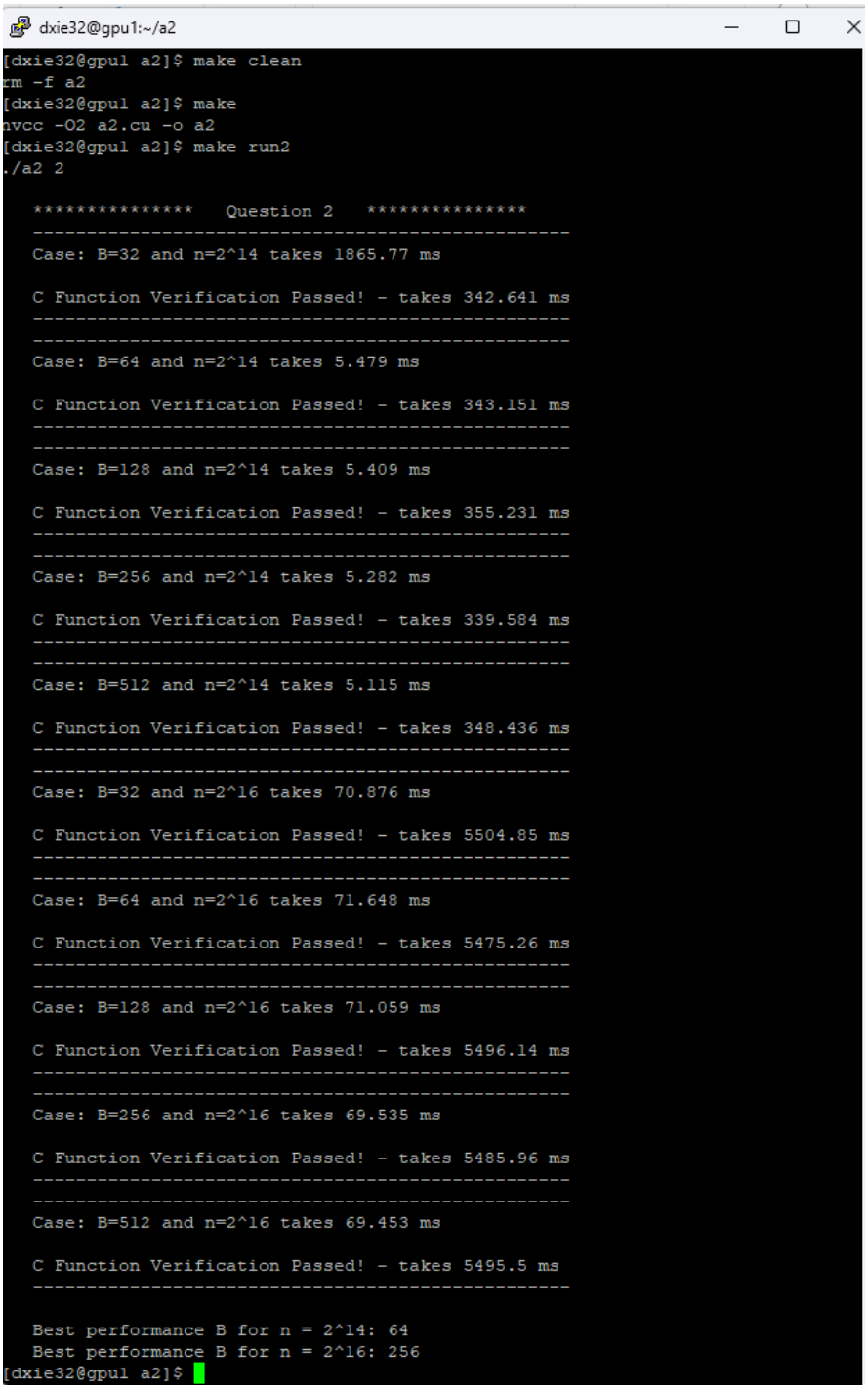
```
Please input an exponent or type a non-number to exit: 18

--------------------------------------------------
Case: B=32 and n=2^18 takes 1036.13 ms

C Function Verification Passed! - takes 89346.9 ms
--------------------------------------------------
Please input an exponent or type a non-number to exit:
```

Question 2

- Compile file: **make**
- Run Question 2 testing**:**
  - **make run** and enter **2** OR
  - **make run2**



CUDA & Serial Runtime in ms

		2^{14}	2^{16}
B = 32	CUDA	1865.77	70.876
	Serial (c function)	342.641	5504.85
B = 64	CUDA	5.479	71.648
	Serial (c function)	343.151	5475.26
B = 128	CUDA	5.409	71.059
	Serial (c function)	355.231	5496.14
B = 256	CUDA	5.282	69.535
	Serial (c function)	339.584	5485.96
B = 512	CUDA	5.115	69.453
	Serial (c function)	348.336	5495.5
Best	CUDA	64	512

README

Makefile

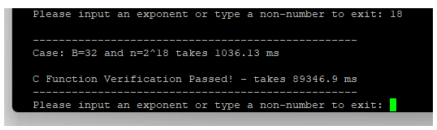
Using Makefile to run programing:

- **make** to compile the application.
- **make clean** to remove all object and output files.
- **make run** to run the application without arguments.
- **make run1** to run the application with argument **1**.
- **make run2** to run the application with argument **2**.

C verification function

C verification function takes longer time for large input number. If you see the cursor (in red circle) means the programing is still running

C function for verification is still running



Its done.