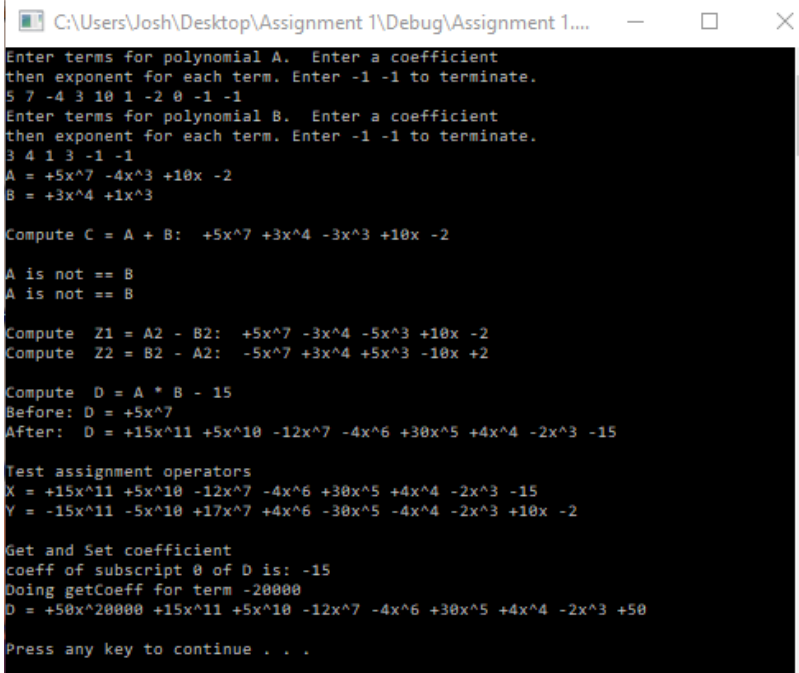
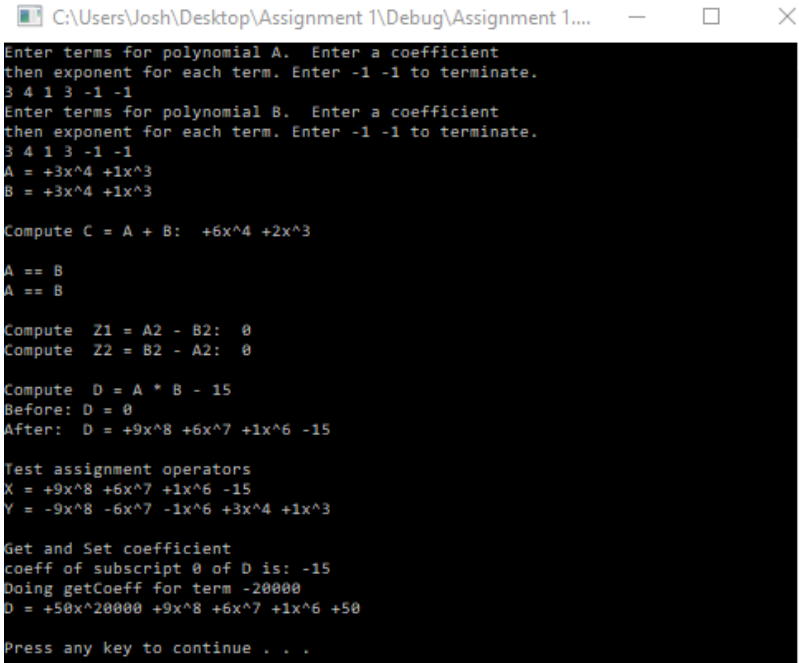


**Table 1: Assignment 1 Test Matrix**

Test Case	Rational	Output + Notes	Picture
Provided input A Input: 5 7 -4 3 10 1 -2 0 -1 -1 B input: 3 4 1 3 -1 -1	Output should match the one provided in the output file.	All test cases match, perform as expected.	 <pre> C:\Users\Josh\Desktop\Assignment 1\Debug\Assignment 1... Enter terms for polynomial A. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 5 7 -4 3 10 1 -2 0 -1 -1 Enter terms for polynomial B. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 3 4 1 3 -1 -1 A = +5x^7 -4x^3 +10x -2 B = +3x^4 +1x^3  Compute C = A + B: +5x^7 +3x^4 -3x^3 +10x -2  A is not == B A is not == B  Compute Z1 = A2 - B2: +5x^7 -3x^4 -5x^3 +10x -2 Compute Z2 = B2 - A2: -5x^7 +3x^4 +5x^3 -10x +2  Compute D = A * B - 15 Before: D = +5x^7 After: D = +15x^11 +5x^10 -12x^7 -4x^6 +30x^5 +4x^4 -2x^3 -15  Test assignment operators X = +15x^11 +5x^10 -12x^7 -4x^6 +30x^5 +4x^4 -2x^3 -15 Y = -15x^11 -5x^10 +17x^7 +4x^6 -30x^5 -4x^4 -2x^3 +10x -2  Get and Set coefficient coeff of subscript 0 of D is: -15 Doing getCoeff for term -20000 D = +50x^20000 +15x^11 +5x^10 -12x^7 -4x^6 +30x^5 +4x^4 -2x^3 +50  Press any key to continue . . . </pre>
Equal Polynomials A input: 3 4 1 3 -1 -1 B input: 3 4 1 3 -1 -1 NOTE: Initialization of A with A(5,7) was removed for testing. D(A) got initialized to empty.	Polynomials are equal so the relationships should be equal.	Equality performed as expected. D was initialized to an empty A so the 0 result was expected.	 <pre> C:\Users\Josh\Desktop\Assignment 1\Debug\Assignment 1... Enter terms for polynomial A. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 3 4 1 3 -1 -1 Enter terms for polynomial B. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 3 4 1 3 -1 -1 A = +3x^4 +1x^3 B = +3x^4 +1x^3  Compute C = A + B: +6x^4 +2x^3  A == B A == B  Compute Z1 = A2 - B2: 0 Compute Z2 = B2 - A2: 0  Compute D = A * B - 15 Before: D = 0 After: D = +9x^8 +6x^7 +1x^6 -15  Test assignment operators X = +9x^8 +6x^7 +1x^6 -15 Y = -9x^8 -6x^7 -1x^6 +3x^4 +1x^3  Get and Set coefficient coeff of subscript 0 of D is: -15 Doing getCoeff for term -20000 D = +50x^20000 +9x^8 +6x^7 +1x^6 +50  Press any key to continue . . . </pre>

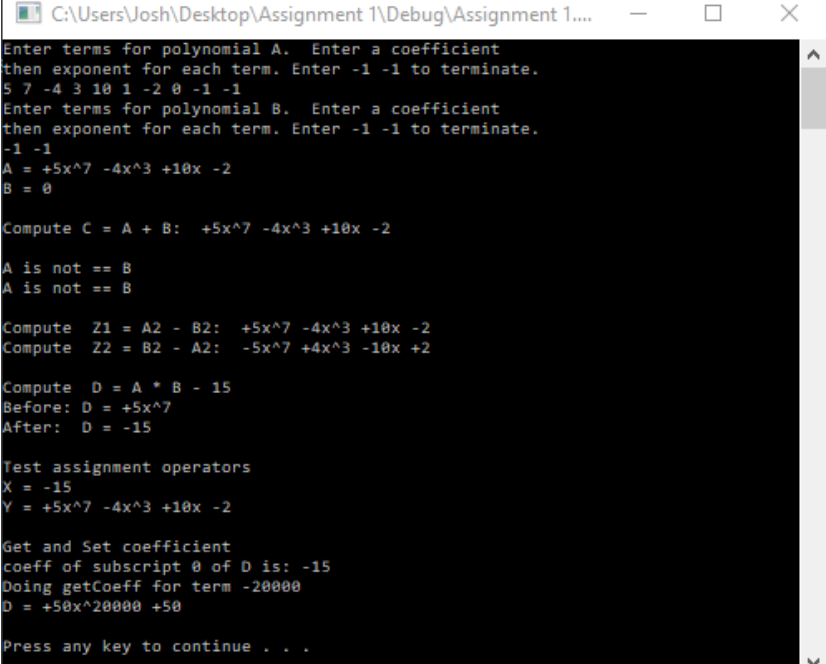
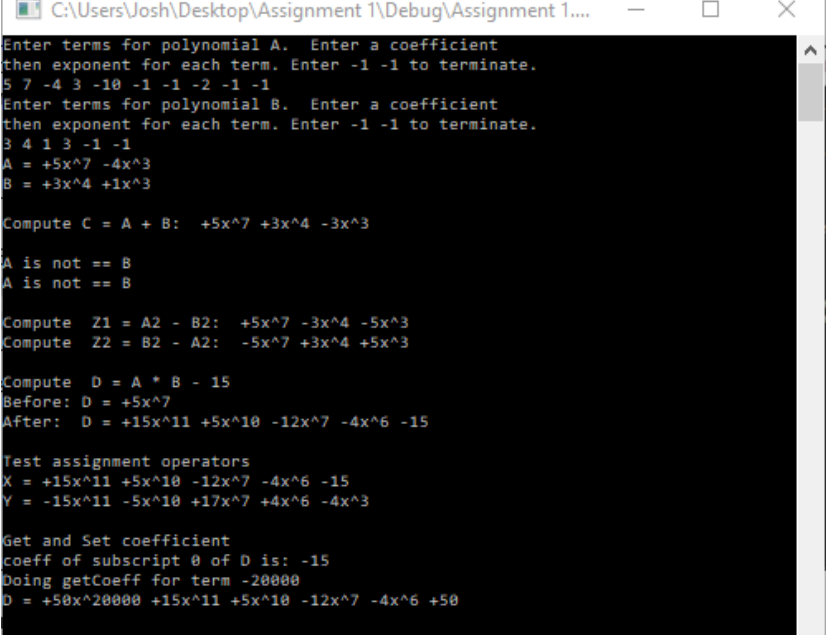
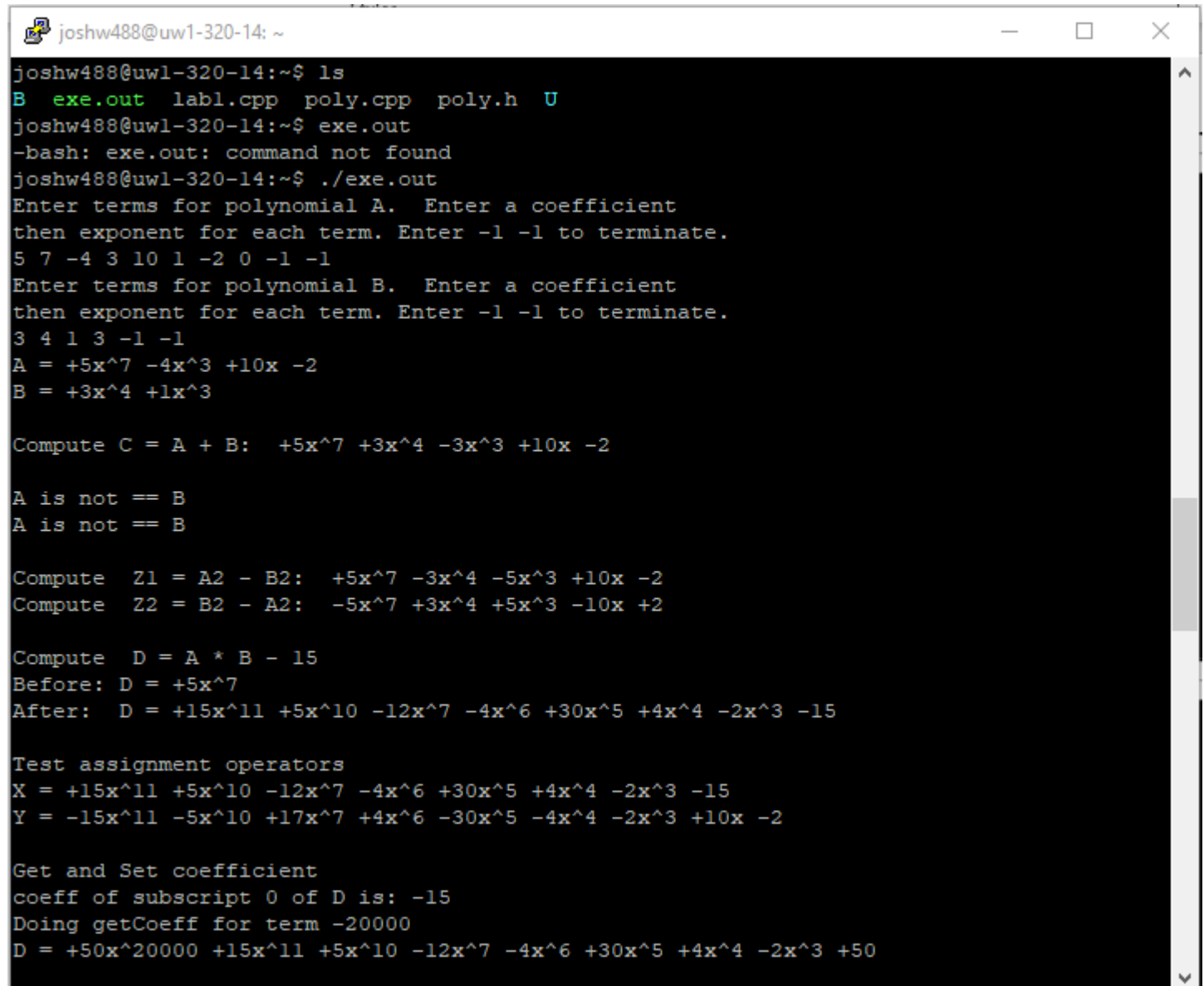
<p>Empty Polynomial A input: 5 7 -4 3 10 1 -2 0 -1 -1 B input: -1 -1 NOTE: Initialization of B with B(3,4) was removed for testing.</p>	<p>The program should not crash because B is empty, it should be initialized and displayed as 0.</p>	<p>0 is displayed for the value of B. ASSUMPTION: Empty B should be treated as 0 polynomial for all arithmetic. Poly * 0 = 0.</p>	 <pre> C:\Users\Josh\Desktop\Assignment 1\Debug\Assignment 1.... Enter terms for polynomial A. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 5 7 -4 3 10 1 -2 0 -1 -1 Enter terms for polynomial B. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. -1 -1 A = +5x^7 -4x^3 +10x -2 B = 0 Compute C = A + B: +5x^7 -4x^3 +10x -2 A is not == B A is not == B Compute Z1 = A2 - B2: +5x^7 -4x^3 +10x -2 Compute Z2 = B2 - A2: -5x^7 +4x^3 -10x +2 Compute D = A * B - 15 Before: D = +5x^7 After: D = -15 Test assignment operators X = -15 Y = +5x^7 -4x^3 +10x -2 Get and Set coefficient coeff of subscript 0 of D is: -15 Doing getCoeff for term -20000 D = +50x^20000 +50 Press any key to continue . . . </pre>
<p>Negative Exponents A input: 5 7 -4 3 -10 -1 -1 -2 -1 -1 B input: 3 4 1 3 -1 -1</p>	<p>The program should not crash and consume (ignore) the inputs with negative exponents.</p>	<p>A is shorter than the input because the negative exponents were not inputted into the poly. Works correctly.</p>	 <pre> C:\Users\Josh\Desktop\Assignment 1\Debug\Assignment 1.... Enter terms for polynomial A. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 5 7 -4 3 -10 -1 -1 -2 -1 -1 Enter terms for polynomial B. Enter a coefficient then exponent for each term. Enter -1 -1 to terminate. 3 4 1 3 -1 -1 A = +5x^7 -4x^3 B = +3x^4 +1x^3 Compute C = A + B: +5x^7 +3x^4 -3x^3 A is not == B A is not == B Compute Z1 = A2 - B2: +5x^7 -3x^4 -5x^3 Compute Z2 = B2 - A2: -5x^7 +3x^4 +5x^3 Compute D = A * B - 15 Before: D = +5x^7 After: D = +15x^11 +5x^10 -12x^7 -4x^6 -15 Test assignment operators X = +15x^11 +5x^10 -12x^7 -4x^6 -15 Y = -15x^11 -5x^10 +17x^7 +4x^6 -4x^3 Get and Set coefficient coeff of subscript 0 of D is: -15 Doing getCoeff for term -20000 D = +50x^20000 +15x^11 +5x^10 -12x^7 -4x^6 +50 </pre>

Figure 1: Program Running on Linux

A terminal window titled 'joshw488@uw1-320-14: ~' with standard window controls. The terminal shows the execution of a program. The user runs 'ls' and lists files: 'exe.out', 'lab1.cpp', 'poly.cpp', 'poly.h', and 'U'. Then they run 'exe.out' and get an error. They then run './exe.out' and follow prompts to enter coefficients for two polynomials, A and B. The program then computes C = A + B, checks if A equals B, computes Z1 = A2 - B2 and Z2 = B2 - A2, computes D = A \* B - 15, and finally tests assignment operators by setting X and Y to different polynomial expressions. It also demonstrates getting and setting coefficients for polynomial D.

```
joshw488@uw1-320-14:~$ ls
B  exe.out  lab1.cpp  poly.cpp  poly.h  U
joshw488@uw1-320-14:~$ exe.out
-bash: exe.out: command not found
joshw488@uw1-320-14:~$ ./exe.out
Enter terms for polynomial A. Enter a coefficient
then exponent for each term. Enter -1 -1 to terminate.
5 7 -4 3 10 1 -2 0 -1 -1
Enter terms for polynomial B. Enter a coefficient
then exponent for each term. Enter -1 -1 to terminate.
3 4 1 3 -1 -1
A = +5x^7 -4x^3 +10x -2
B = +3x^4 +1x^3

Compute C = A + B:  +5x^7 +3x^4 -3x^3 +10x -2

A is not == B
A is not == B

Compute  Z1 = A2 - B2:  +5x^7 -3x^4 -5x^3 +10x -2
Compute  Z2 = B2 - A2:  -5x^7 +3x^4 +5x^3 -10x +2

Compute  D = A * B - 15
Before: D = +5x^7
After:  D = +15x^11 +5x^10 -12x^7 -4x^6 +30x^5 +4x^4 -2x^3 -15

Test assignment operators
X = +15x^11 +5x^10 -12x^7 -4x^6 +30x^5 +4x^4 -2x^3 -15
Y = -15x^11 -5x^10 +17x^7 +4x^6 -30x^5 -4x^4 -2x^3 +10x -2

Get and Set coefficient
coeff of subscript 0 of D is: -15
Doing getCoeff for term -20000
D = +50x^20000 +15x^11 +5x^10 -12x^7 -4x^6 +30x^5 +4x^4 -2x^3 +50
```