# Debugging Code

**LAB 4**

**SECTION 6**

**Kenneth Schueman**

**SUBMISSION DATE:**

**9/30/2021**

**9/23/2021**

## Problem: Compiler Errors

1. Now do the same for **`lab04-1_2.c`**, **`lab04-1_3.c`**, **`lab04-1_4.c`,** and **`lab04-1_5.c`.** Take a look at the output from the compilation errors and try to fix the issues.

## Analysis

Various types of compiler errors that are easy to make when you don't check your code often.

## Design

Find the code and fix it.

## Testing

Testing one line at a time, corrections can be seen below.

## Comments

The final few gave me issues and program 4 had an arithmetic error.

## Screen Shots

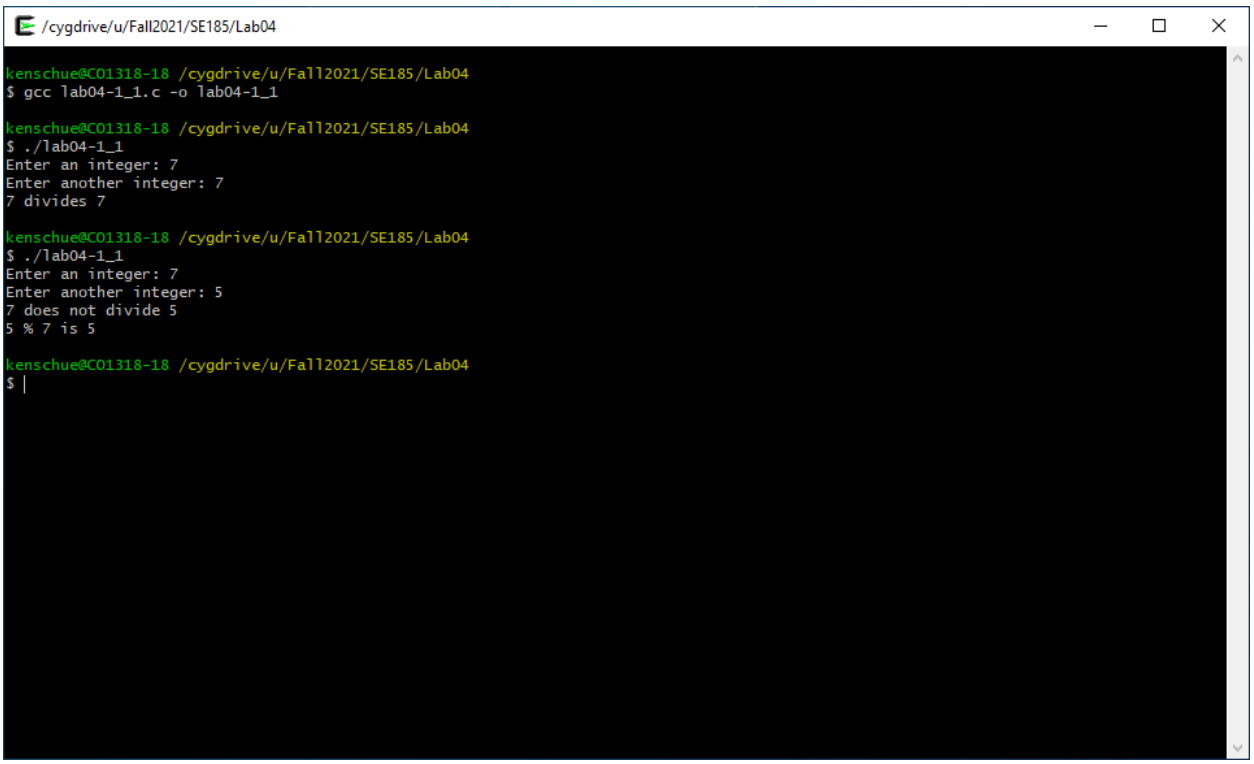


*Figure 1*

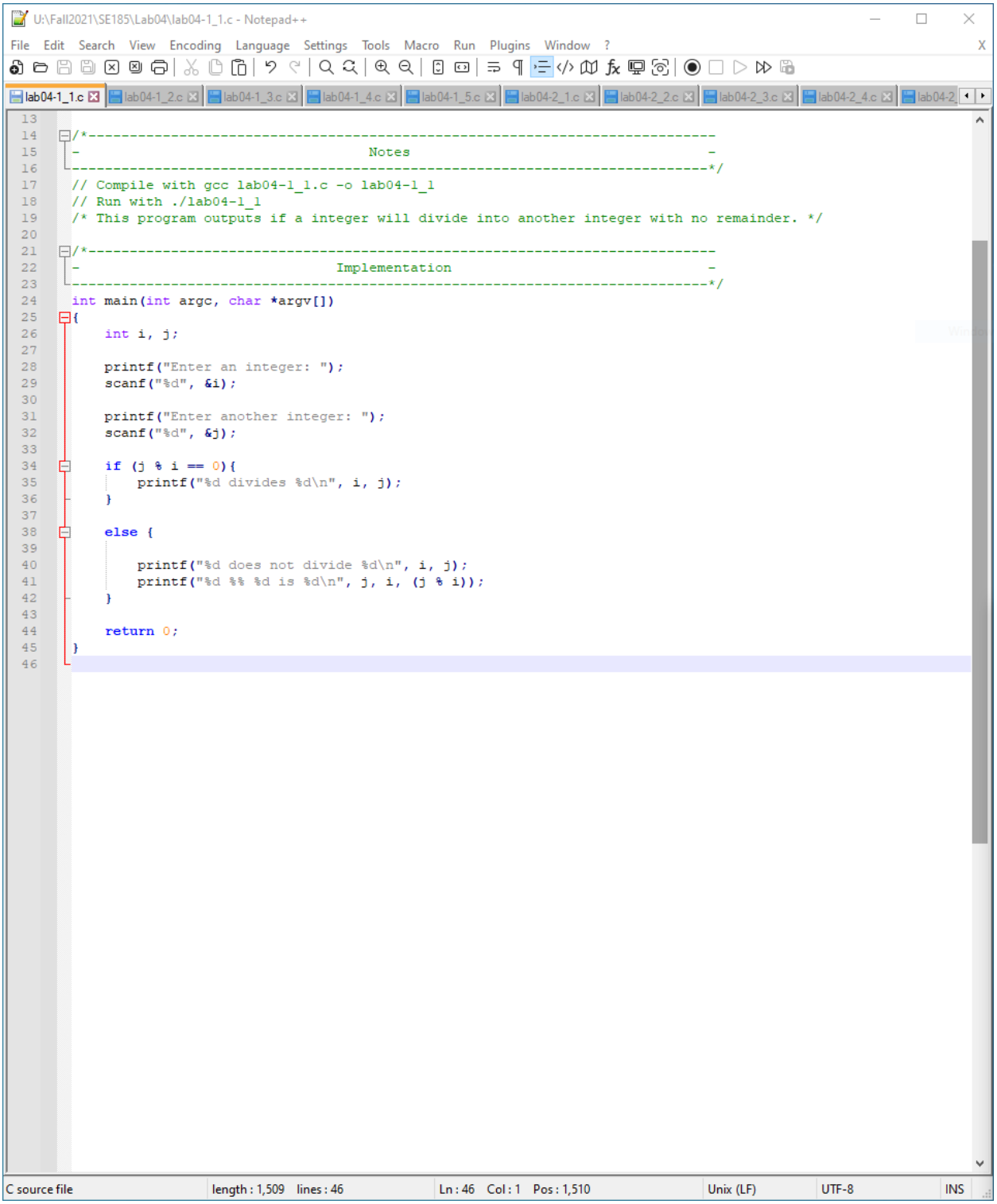
U:\Fall2021\SE185\Lab04\lab04-1_1.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-1_1.c
lab04-1_2.c
lab04-1_3.c
lab04-1_4.c
lab04-1_5.c
lab04-2_1.c
lab04-2_2.c
lab04-2_3.c
lab04-2_4.c
13
14 /*--------------------------------------------------------------------------
15 - Notes -
16 --------------------------------------------------------------------------*/
17 // Compile with gcc lab04-1_1.c -o lab04-1_1
18 // Run with ./lab04-1_1
19 /* This program outputs if a integer will divide into another integer with no remainder. */
20
21 /*--------------------------------------------------------------------------
22 - Implementation -
23 --------------------------------------------------------------------------*/
24 int main(int argc, char *argv[])
25 {
26 int i, j;
27
28 printf("Enter an integer: ");
29 scanf("%d", &i);
30
31 printf("Enter another integer: ");
32 scanf("%d", &j);
33
34 if (j % i == 0){
35 printf("%d divides %d\n", i, j);
36 }
37
38 else {
39
40 printf("%d does not divide %d\n", i, j);
41 printf("%d %% %d is %d\n", j, i, (j % i));
42 }
43
44 return 0;
45 }
46
C source file
length : 1,509 lines : 46
Ln : 46 Col : 1 Pos : 1,510
Unix (LF)
UTF-8
INS

*Figure 2*

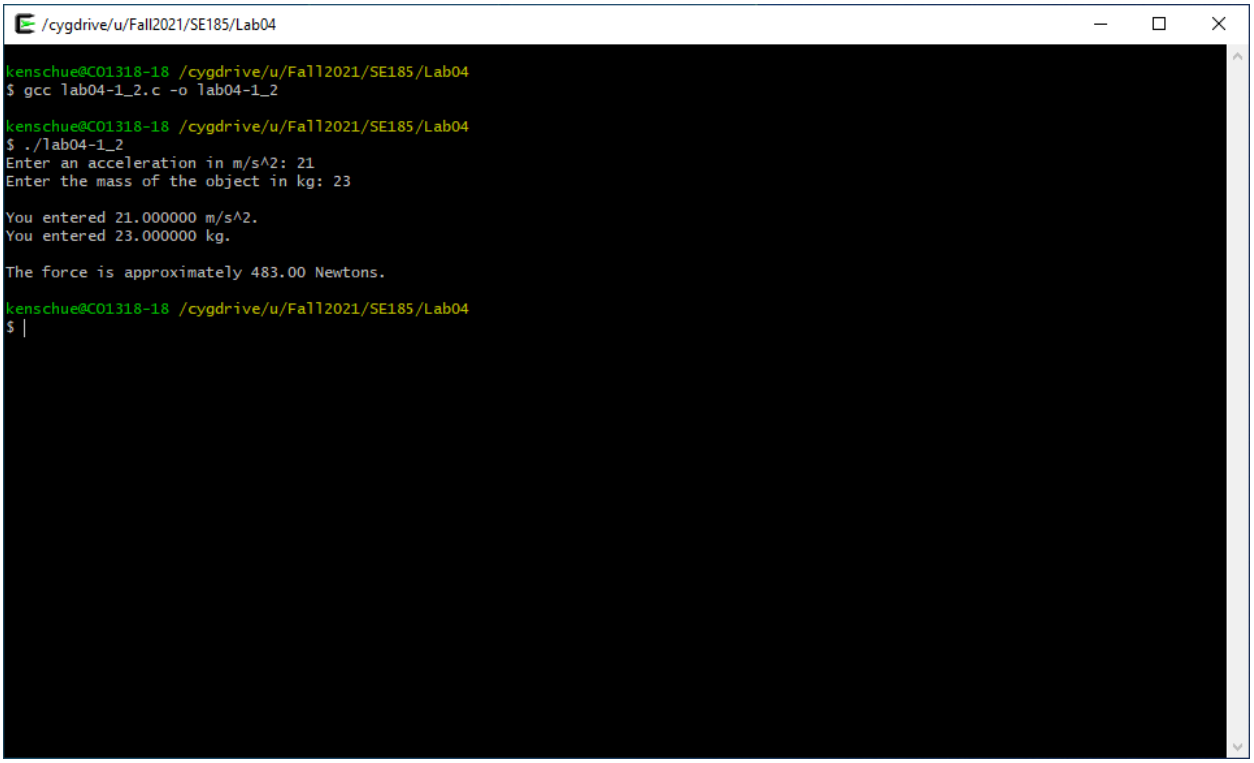
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2.c -o lab04-1_2
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_2
Enter an acceleration in m/s^2: 21
Enter the mass of the object in kg: 23
You entered 21.000000 m/s^2.
You entered 23.000000 kg.
The force is approximately 483.00 Newtons.
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 3*

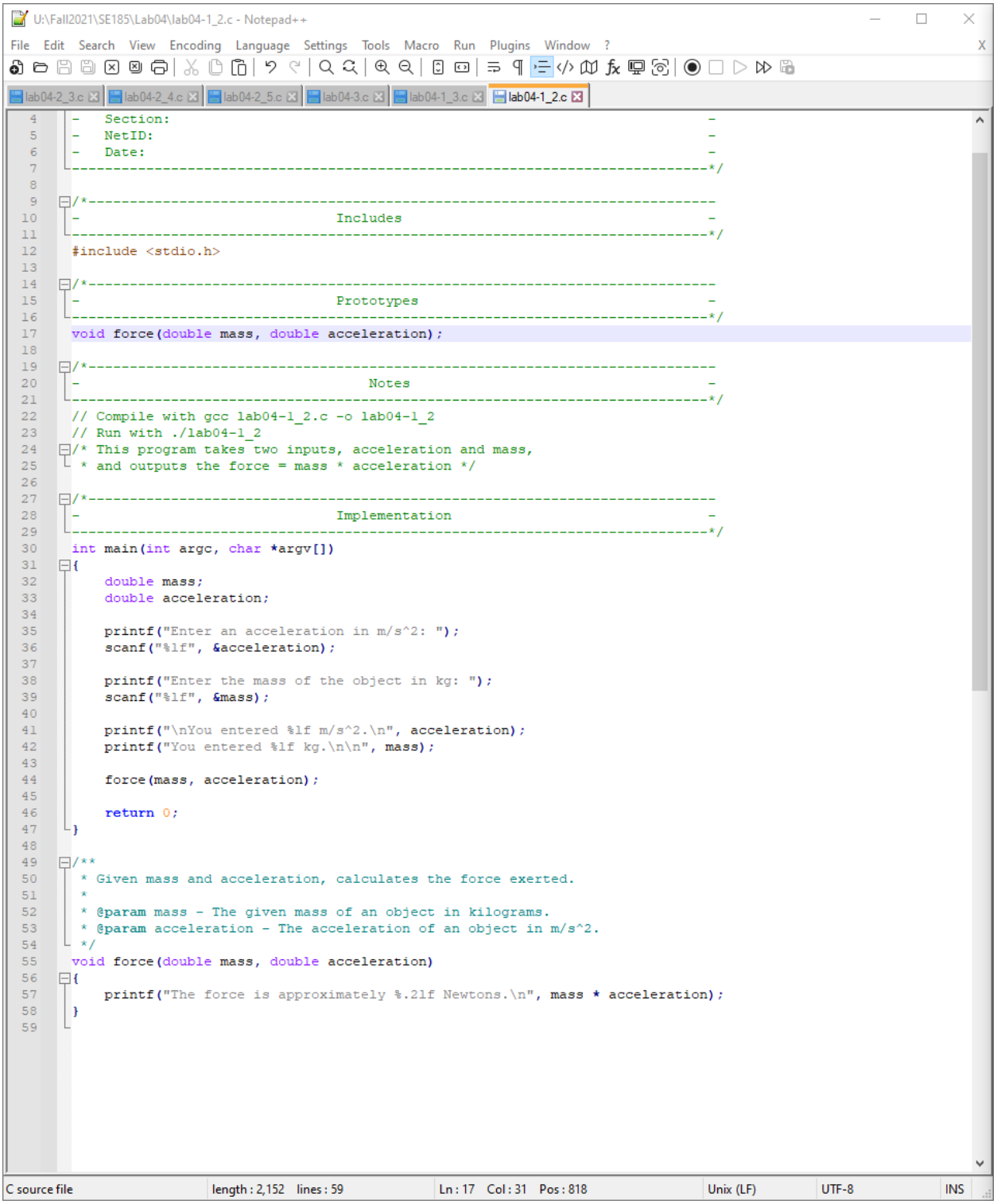
U:\Fall2021\SE185\Lab04\lab04-1_2.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-2_3.c lab04-2_4.c lab04-2_5.c lab04-3.c lab04-1_3.c lab04-1_2.c
4 - Section: -
5 - NetID: -
6 - Date: -
7 -----*/
8
9 /*----------
10 - Includes -
11 -----*/
12 #include <stdio.h>
13
14 /*----------
15 - Prototypes -
16 -----*/
17 void force(double mass, double acceleration);
18
19 /*----------
20 - Notes -
21 -----*/
22 // Compile with gcc lab04-1_2.c -o lab04-1_2
23 // Run with ./lab04-1_2
24 /* This program takes two inputs, acceleration and mass,
25 * and outputs the force = mass * acceleration */
26
27 /*----------
28 - Implementation -
29 -----*/
30 int main(int argc, char *argv[])
31 {
32 double mass;
33 double acceleration;
34
35 printf("Enter an acceleration in m/s^2: ");
36 scanf("%lf", &acceleration);
37
38 printf("Enter the mass of the object in kg: ");
39 scanf("%lf", &mass);
40
41 printf("\nYou entered %lf m/s^2.\n", acceleration);
42 printf("You entered %lf kg.\n\n", mass);
43
44 force(mass, acceleration);
45
46 return 0;
47 }
48
49 /**
50 * Given mass and acceleration, calculates the force exerted.
51 *
52 * @param mass - The given mass of an object in kilograms.
53 * @param acceleration - The acceleration of an object in m/s^2.
54 */
55 void force(double mass, double acceleration)
56 {
57 printf("The force is approximately %.2lf Newtons.\n", mass * acceleration);
58 }
59
C source file length : 2,152 lines : 59 Ln : 17 Col : 31 Pos : 818 Unix (LF) UTF-8 INS

*Figure 4*

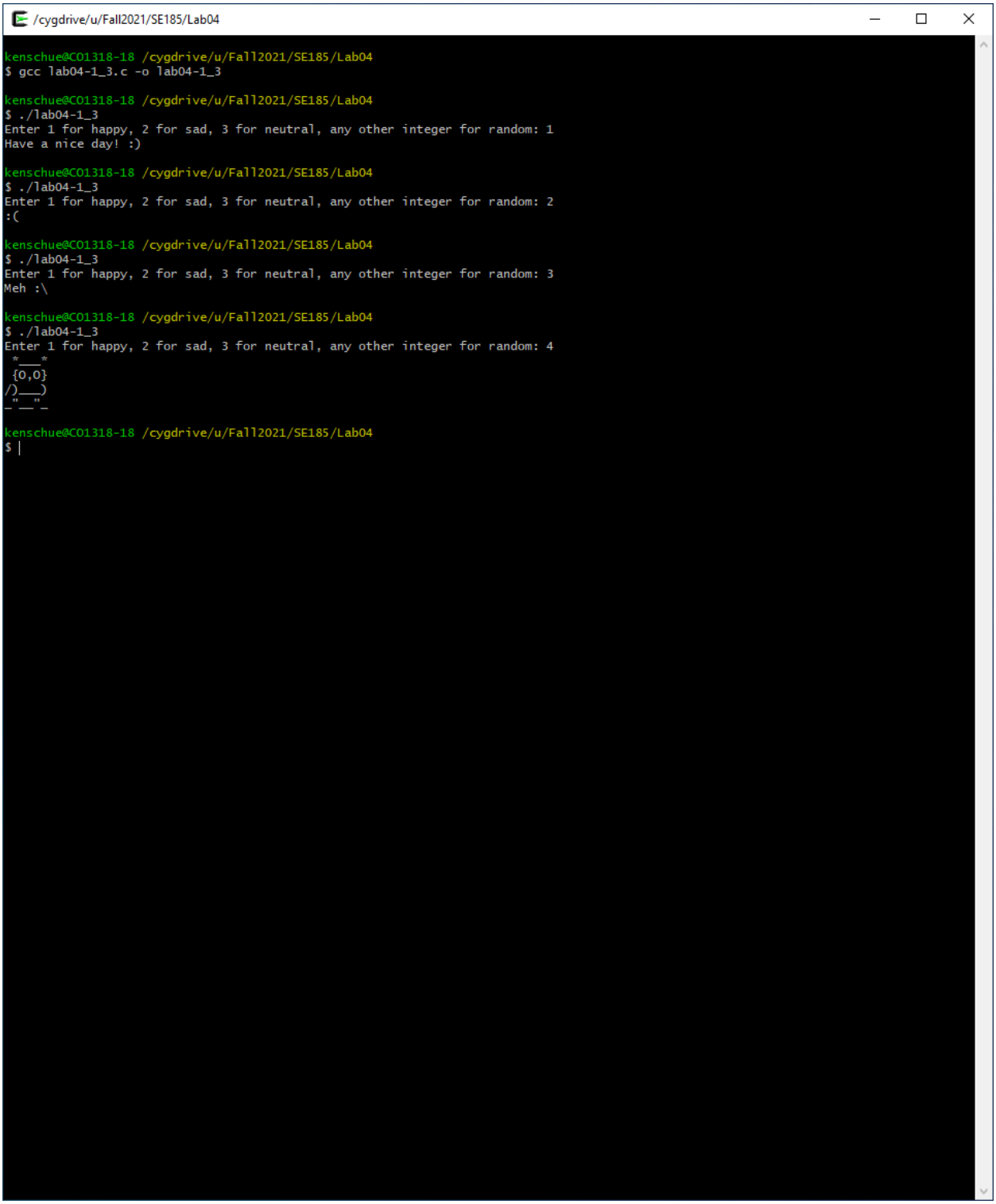
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_3.c -o lab04-1_3
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_3
Enter 1 for happy, 2 for sad, 3 for neutral, any other integer for random: 1
Have a nice day! :)
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_3
Enter 1 for happy, 2 for sad, 3 for neutral, any other integer for random: 2
:(
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_3
Enter 1 for happy, 2 for sad, 3 for neutral, any other integer for random: 3
Meh :\
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_3
Enter 1 for happy, 2 for sad, 3 for neutral, any other integer for random: 4
*___*
{O,O}
/)___)
" __ "
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 5*

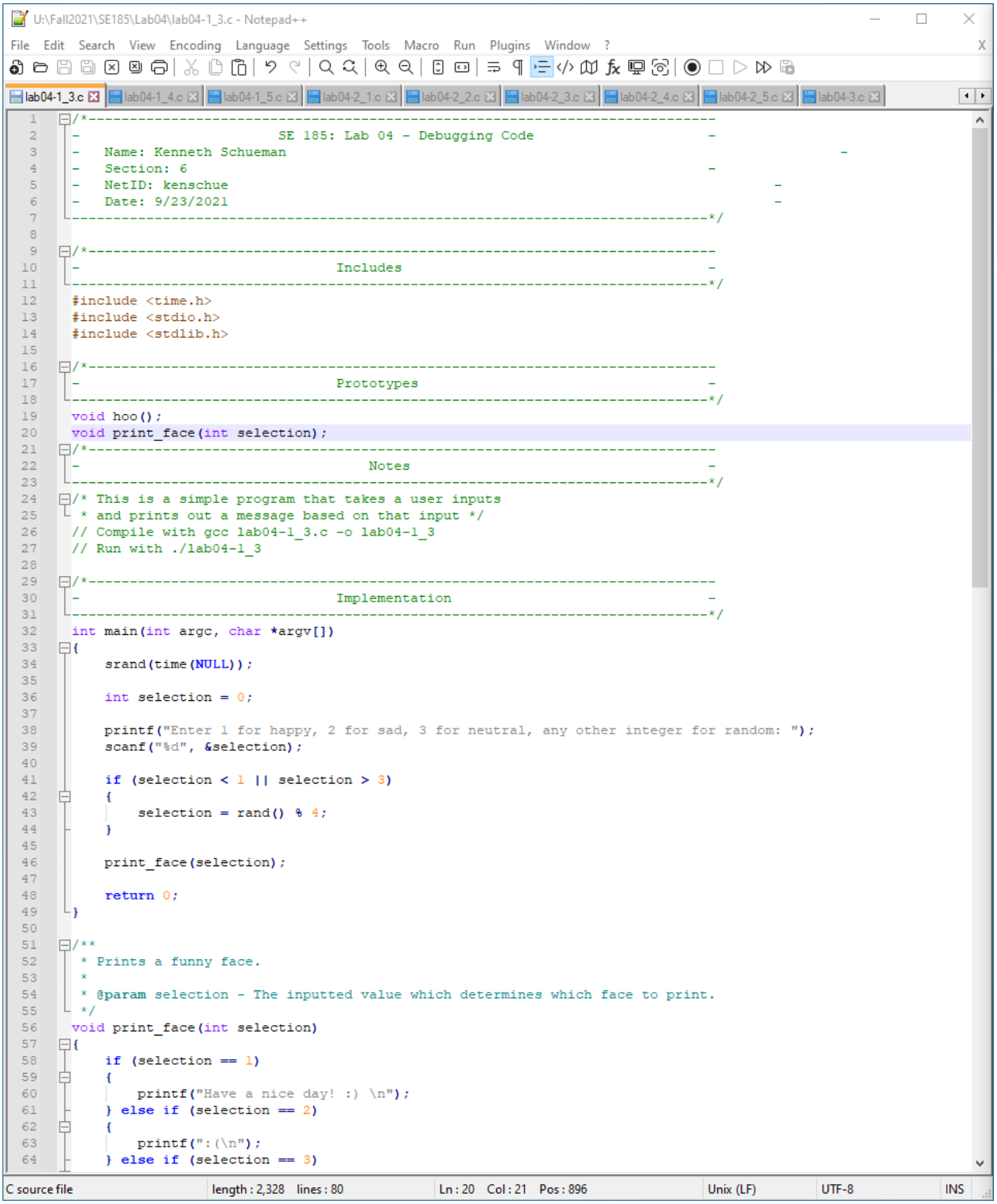
U:\Fall2021\SE185\Lab04\lab04-1_3.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-1_3.c
lab04-1_4.c
lab04-1_5.c
lab04-2_1.c
lab04-2_2.c
lab04-2_3.c
lab04-2_4.c
lab04-2_5.c
lab04-3.c
/*--------------------------------------------------------------------------------
- SE 185: Lab 04 - Debugging Code -
- Name: Kenneth Schueman -
- Section: 6 -
- NetID: kenschue -
- Date: 9/23/2021 -
--------------------------------------------------------------------------------*/
/*--------------------------------------------------------------------------------
- Includes -
--------------------------------------------------------------------------------*/
#include <time.h>
#include <stdio.h>
#include <stdlib.h>
/*--------------------------------------------------------------------------------
- Prototypes -
--------------------------------------------------------------------------------*/
void hoo();
void print_face(int selection);
/*--------------------------------------------------------------------------------
- Notes -
--------------------------------------------------------------------------------*/
/* This is a simple program that takes a user inputs
* and prints out a message based on that input */
// Compile with gcc lab04-1_3.c -o lab04-1_3
// Run with ./lab04-1_3
/*--------------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
srand(time(NULL));
int selection = 0;
printf("Enter 1 for happy, 2 for sad, 3 for neutral, any other integer for random: ");
scanf("%d", &selection);
if (selection < 1 || selection > 3)
{
selection = rand() % 4;
}
print_face(selection);
return 0;
}
/**
* Prints a funny face.
*
* @param selection - The inputted value which determines which face to print.
*/
void print_face(int selection)
{
if (selection == 1)
{
printf("Have a nice day! :) \n");
} else if (selection == 2)
{
printf(":(\n");
} else if (selection == 3)
C source file
length : 2,328 lines : 80
Ln : 20 Col : 21 Pos : 896
Unix (LF)
UTF-8
INS

*Figure 6*

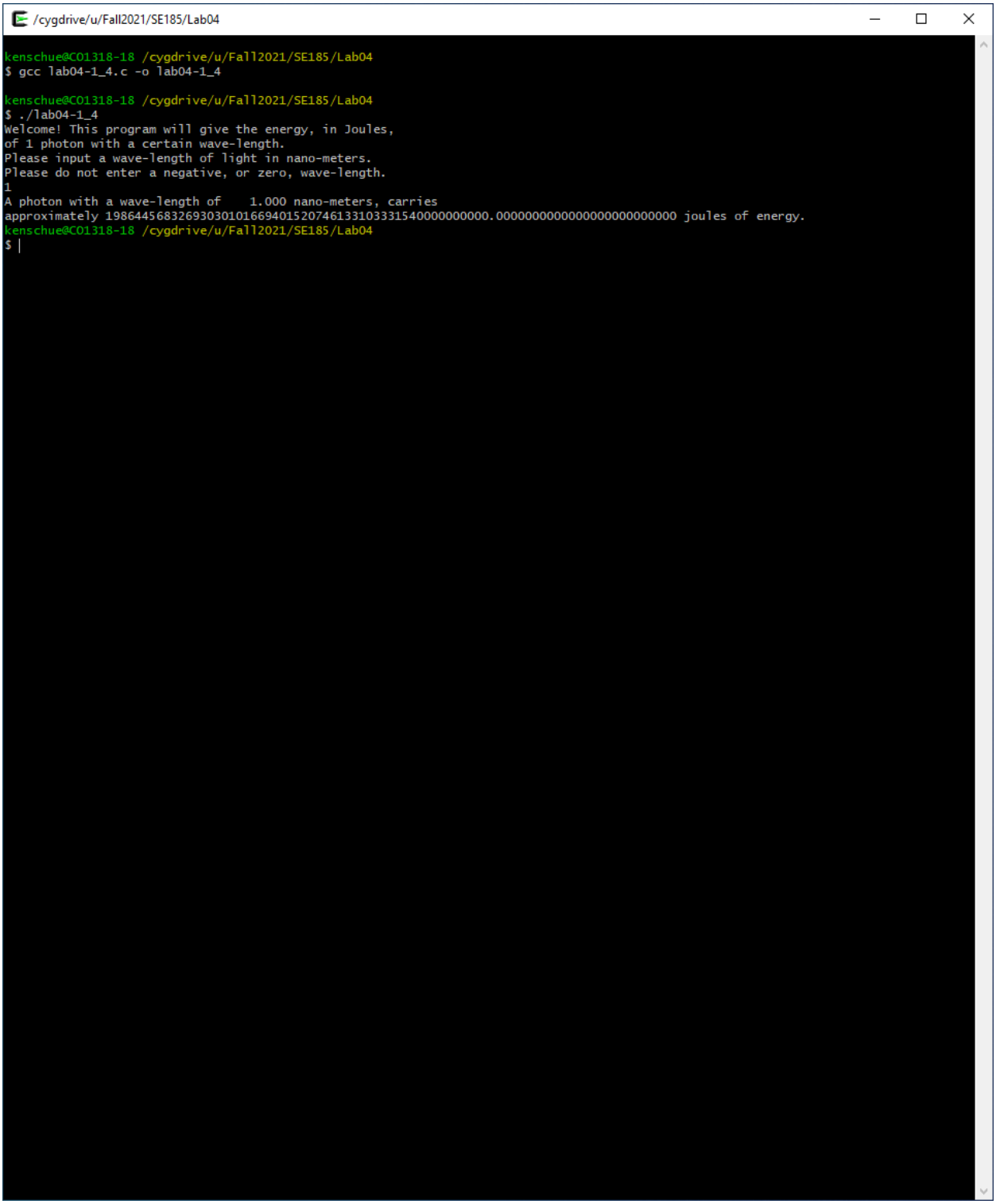
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_4.c -o lab04-1_4
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_4
Welcome! This program will give the energy, in Joules,
of 1 photon with a certain wave-length.
Please input a wave-length of light in nano-meters.
Please do not enter a negative, or zero, wave-length.
1
A photon with a wave-length of 1.000 nano-meters, carries
approximately 19864456832693030101669401520746133103331540000000000.000000000000000000000000 joules of energy.
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 7*

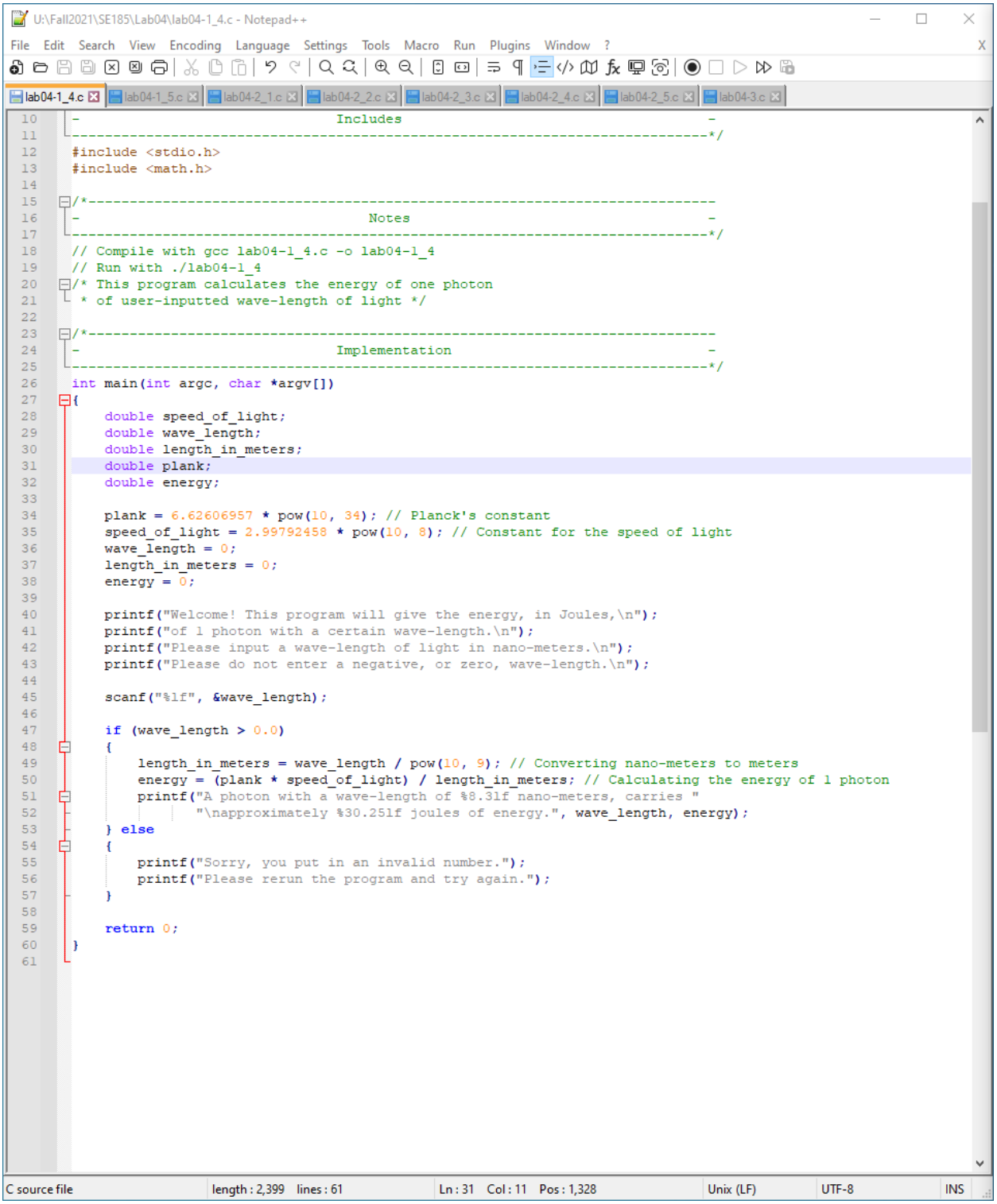
U:\Fall2021\SE185\Lab04\lab04-1_4.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-1_4.c
lab04-1_5.c
lab04-2_1.c
lab04-2_2.c
lab04-2_3.c
lab04-2_4.c
lab04-2_5.c
lab04-3.c
10 /*-------------------------------------------------------------------------
11 -                              Includes                                   -
12 -------------------------------------------------------------------------*/
13 #include <stdio.h>
14 #include <math.h>
15
16 /*-------------------------------------------------------------------------
17 -                                Notes                                    -
18 -------------------------------------------------------------------------*/
19 // Compile with gcc lab04-1_4.c -o lab04-1_4
20 // Run with ./lab04-1_4
21 /* This program calculates the energy of one photon
22  * of user-inputted wave-length of light */
23
24 /*-------------------------------------------------------------------------
25 -                              Implementation                             -
26 -------------------------------------------------------------------------*/
27 int main(int argc, char *argv[])
28 {
29     double speed_of_light;
30     double wave_length;
31     double length_in_meters;
32     double plank;
33     double energy;
34
35     plank = 6.62606957 * pow(10, 34); // Planck's constant
36     speed_of_light = 2.99792458 * pow(10, 8); // Constant for the speed of light
37     wave_length = 0;
38     length_in_meters = 0;
39     energy = 0;
40
41     printf("Welcome! This program will give the energy, in Joules,\n");
42     printf("of 1 photon with a certain wave-length.\n");
43     printf("Please input a wave-length of light in nano-meters.\n");
44     printf("Please do not enter a negative, or zero, wave-length.\n");
45
46     scanf("%lf", &wave_length);
47
48     if (wave_length > 0.0)
49     {
50         length_in_meters = wave_length / pow(10, 9); // Converting nano-meters to meters
51         energy = (plank * speed_of_light) / length_in_meters; // Calculating the energy of 1 photon
52         printf("A photon with a wave-length of %8.3lf nano-meters, carries "
53                "\napproximately %30.25lf joules of energy.", wave_length, energy);
54     } else
55     {
56         printf("Sorry, you put in an invalid number.");
57         printf("Please rerun the program and try again.");
58     }
59
60     return 0;
61 }
C source file
length : 2,399 lines : 61
Ln : 31 Col : 11 Pos : 1,328
Unix (LF)
UTF-8
INS

*Figure 8*

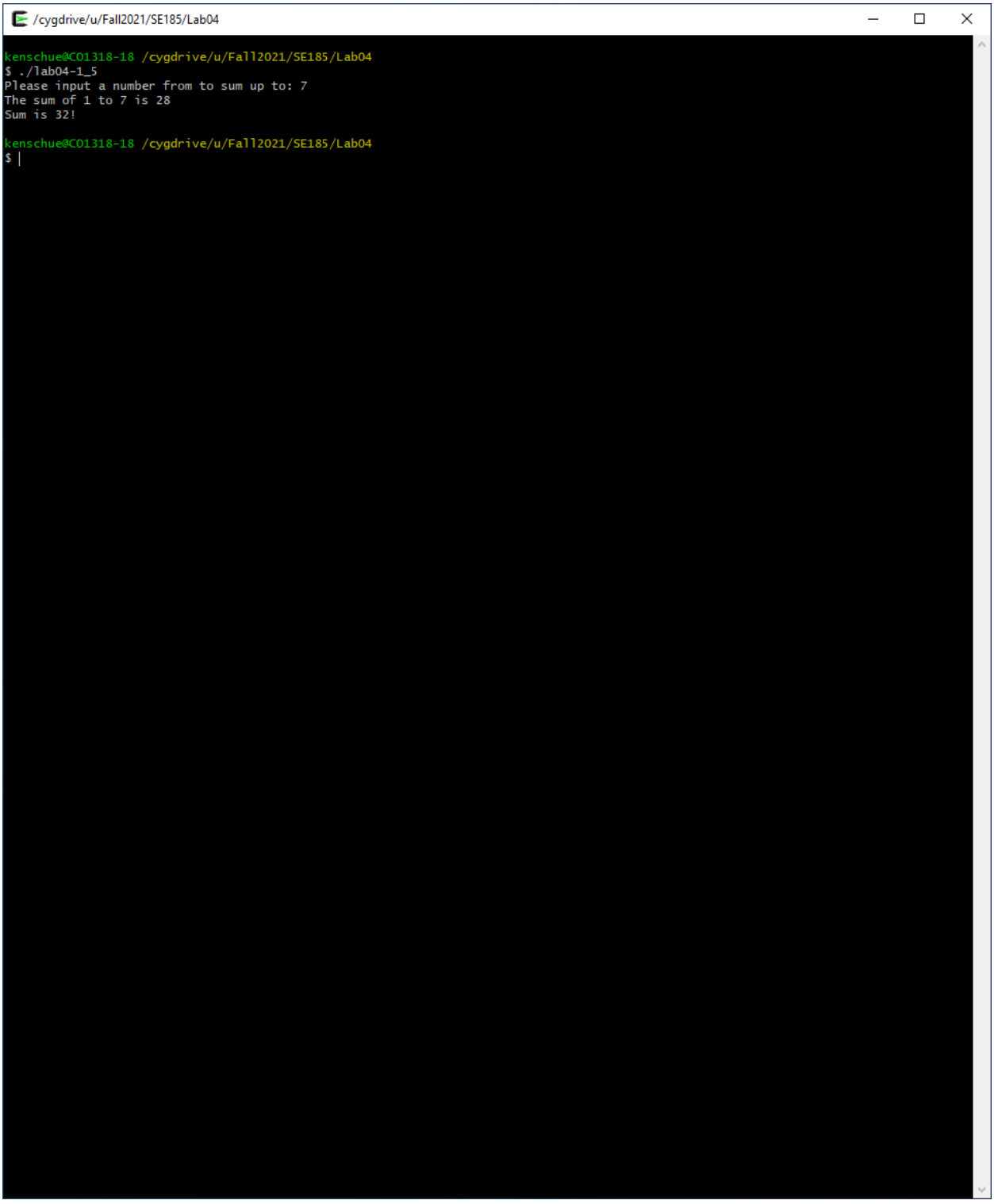
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-1_5
Please input a number from to sum up to: 7
The sum of 1 to 7 is 28
Sum is 32!
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 9*

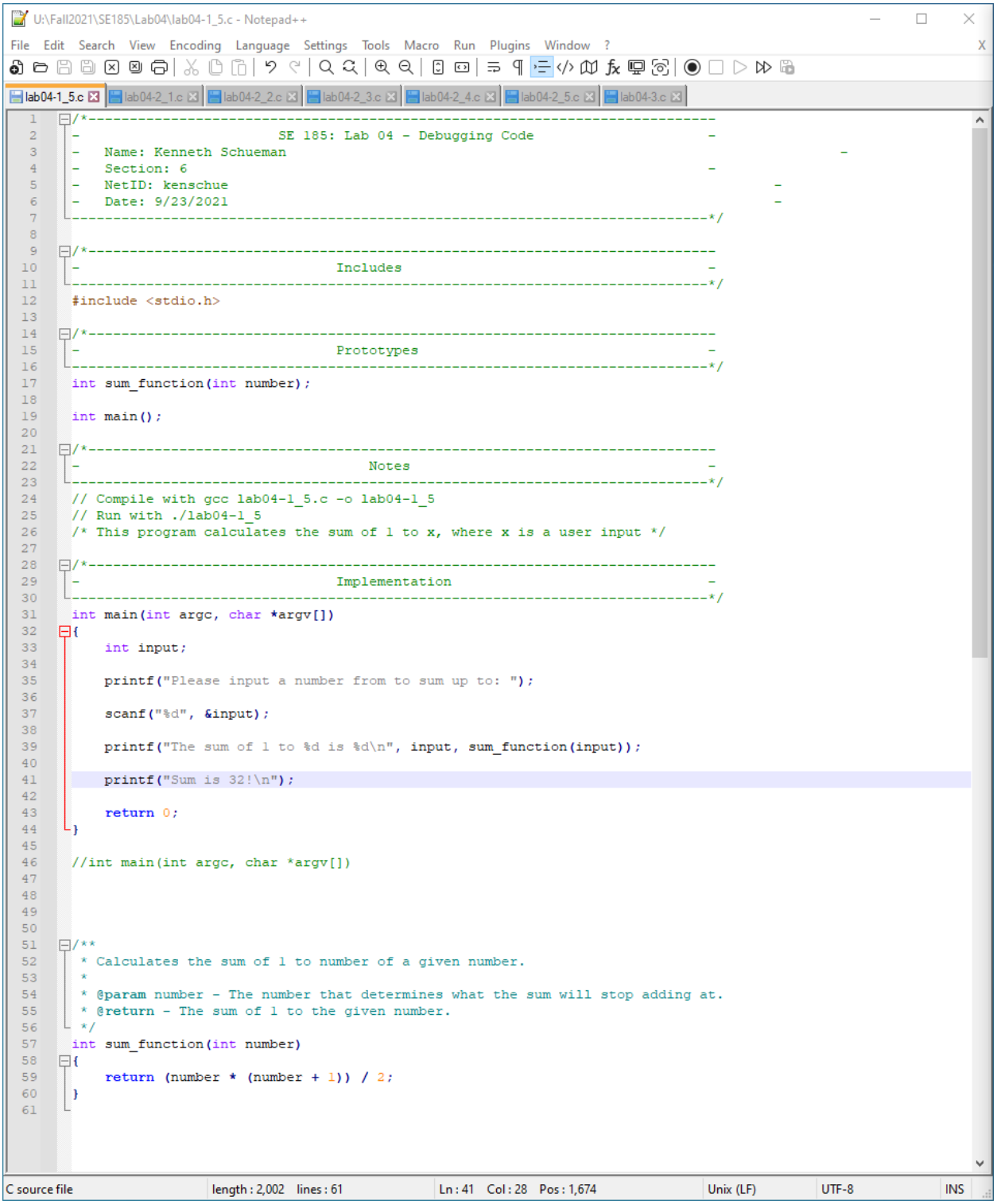
U:\Fall2021\SE185\Lab04\lab04-1_5.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-1_5.c
lab04-2_1.c
lab04-2_2.c
lab04-2_3.c
lab04-2_4.c
lab04-2_5.c
lab04-3.c
/*--------------------------------------------------------------------------
- SE 185: Lab 04 - Debugging Code -
- Name: Kenneth Schueman -
- Section: 6 -
- NetID: kenschue -
- Date: 9/23/2021 -
--------------------------------------------------------------------------*/
/*--------------------------------------------------------------------------
- Includes -
--------------------------------------------------------------------------*/
#include <stdio.h>
/*--------------------------------------------------------------------------
- Prototypes -
--------------------------------------------------------------------------*/
int sum_function(int number);
int main();
/*--------------------------------------------------------------------------
- Notes -
--------------------------------------------------------------------------*/
// Compile with gcc lab04-1_5.c -o lab04-1_5
// Run with ./lab04-1_5
/* This program calculates the sum of 1 to x, where x is a user input */
/*--------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
int input;
printf("Please input a number from to sum up to: ");
scanf("%d", &input);
printf("The sum of 1 to %d is %d\n", input, sum_function(input));
printf("Sum is 32!\n");
return 0;
}
//int main(int argc, char *argv[])
/**
* Calculates the sum of 1 to number of a given number.
*
* @param number - The number that determines what the sum will stop adding at.
* @return - The sum of 1 to the given number.
*/
int sum_function(int number)
{
return (number * (number + 1)) / 2;
}
C source file
length : 2,002 lines : 61
Ln : 41 Col : 28 Pos : 1,674
Unix (LF)
UTF-8
INS

*Figure 10*

## Problem: Unintended Results

1. Sometimes your program will compile successfully, but it doesn't behave or give you the output you may expect. These kind of problems are a bit more difficult to find and fix.

2. Compile and run **`lab04-2_1.c`**. If you run it a few times, you may notice the output isn't always correct for the number you input. Open **`lab04-2_1.c`** and try to find where the problem is coming from. Once you find the problem(s), comment out the line and add the corrected line of code below the commented line. Compile, run, and make sure the program has been corrected.

3. Do the same for **`lab04-2_2.c`**, **`lab04-2_3.c`**, **`lab04-2_4.c`**, and **`lab04-2_5.c`**. There are comments at the top of each program that describe what the program should do.

## Analysis

These set of problems were much more difficult then the first set but once the error was found it was only a matter of testing to make sure the math checks out.

## Design

Most problems only had one error hence only one test and math check.

## Testing

Compile and check the math.

## Comments

The final few gave me issues and but one of TA's was able to help.

## Screen Shots

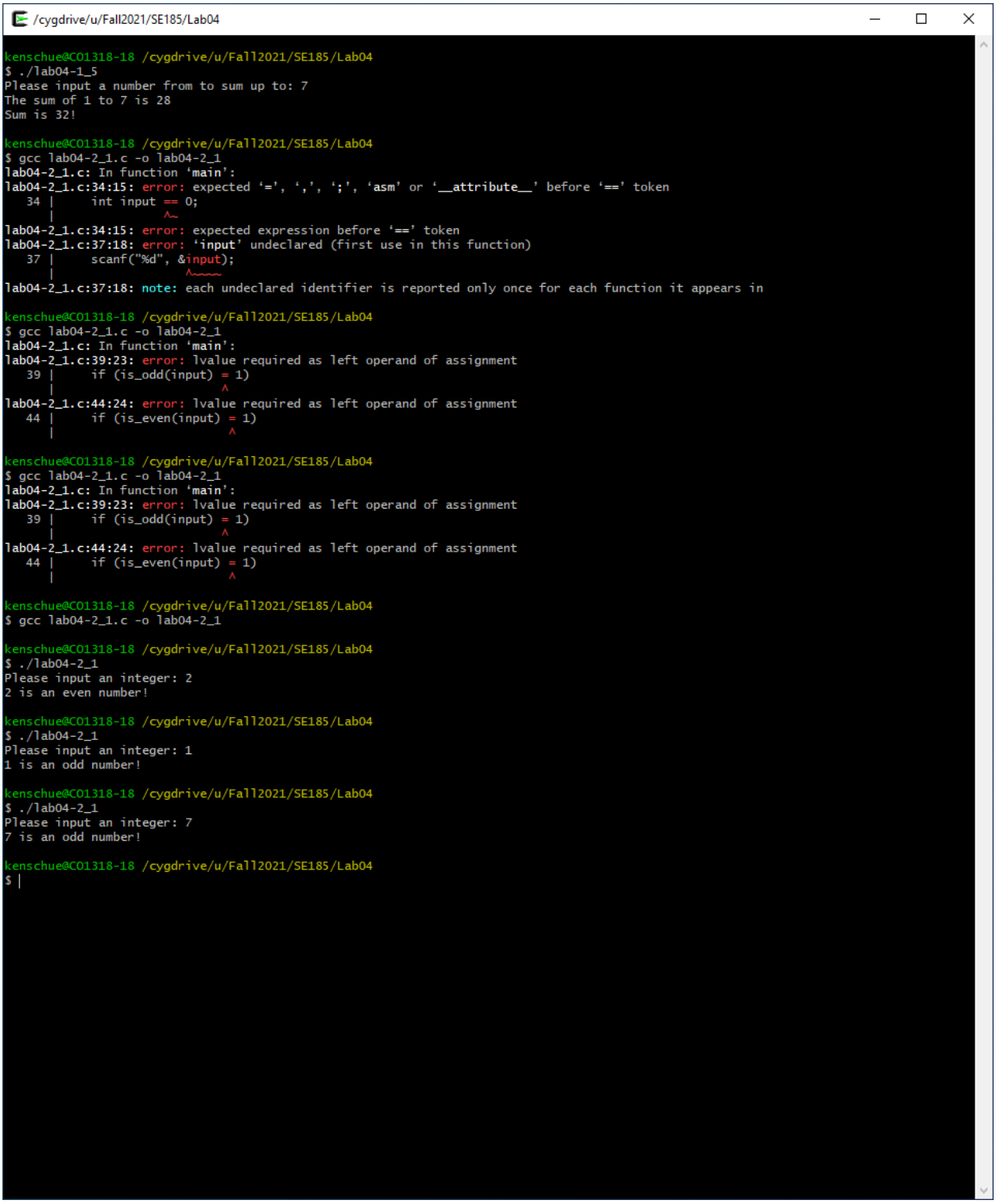


*Figure 11*

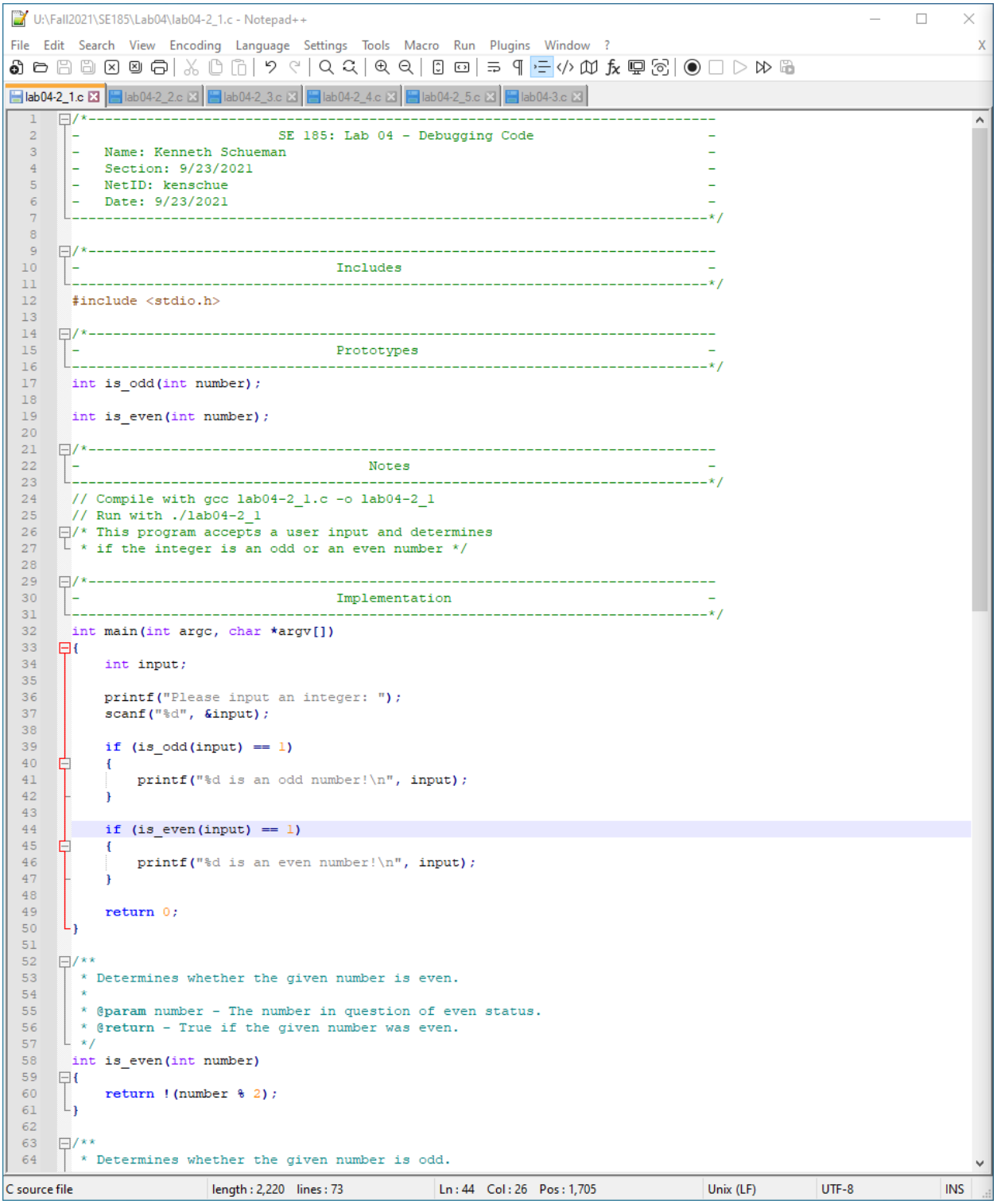
U:\Fall2021\SE185\Lab04\lab04-2_1.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-2_1.c
lab04-2_2.c
lab04-2_3.c
lab04-2_4.c
lab04-2_5.c
lab04-3.c
/*--------------------------------------------------------------------------------
- SE 185: Lab 04 - Debugging Code -
- Name: Kenneth Schueman -
- Section: 9/23/2021 -
- NetID: kenschue -
- Date: 9/23/2021 -
--------------------------------------------------------------------------------*/
/*--------------------------------------------------------------------------------
- Includes -
--------------------------------------------------------------------------------*/
#include <stdio.h>
/*--------------------------------------------------------------------------------
- Prototypes -
--------------------------------------------------------------------------------*/
int is_odd(int number);
int is_even(int number);
/*--------------------------------------------------------------------------------
- Notes -
--------------------------------------------------------------------------------*/
// Compile with gcc lab04-2_1.c -o lab04-2_1
// Run with ./lab04-2_1
/* This program accepts a user input and determines
* if the integer is an odd or an even number */
/*--------------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
int input;
printf("Please input an integer: ");
scanf("%d", &input);
if (is_odd(input) == 1)
{
printf("%d is an odd number!\n", input);
}
if (is_even(input) == 1)
{
printf("%d is an even number!\n", input);
}
return 0;
}
/**
* Determines whether the given number is even.
*
* @param number - The number in question of even status.
* @return - True if the given number was even.
*/
int is_even(int number)
{
return !(number % 2);
}
/**
* Determines whether the given number is odd.
C source file
length : 2,220 lines : 73
Ln : 44 Col : 26 Pos : 1,705
Unix (LF)
UTF-8
INS

*Figure 12*

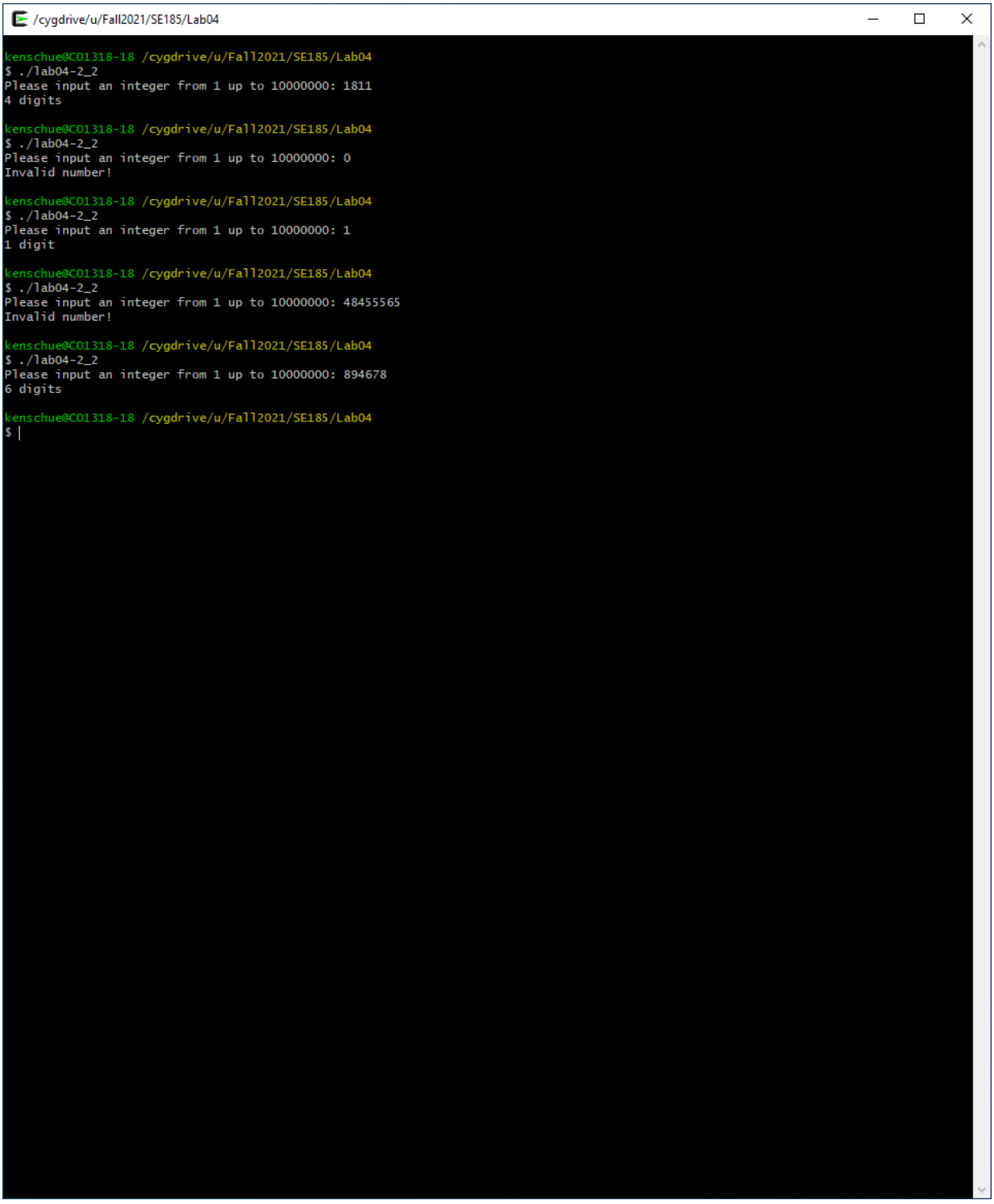
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_2
Please input an integer from 1 up to 10000000: 1811
4 digits
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_2
Please input an integer from 1 up to 10000000: 0
Invalid number!
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_2
Please input an integer from 1 up to 10000000: 1
1 digit
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_2
Please input an integer from 1 up to 10000000: 48455565
Invalid number!
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_2
Please input an integer from 1 up to 10000000: 894678
6 digits
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 13*

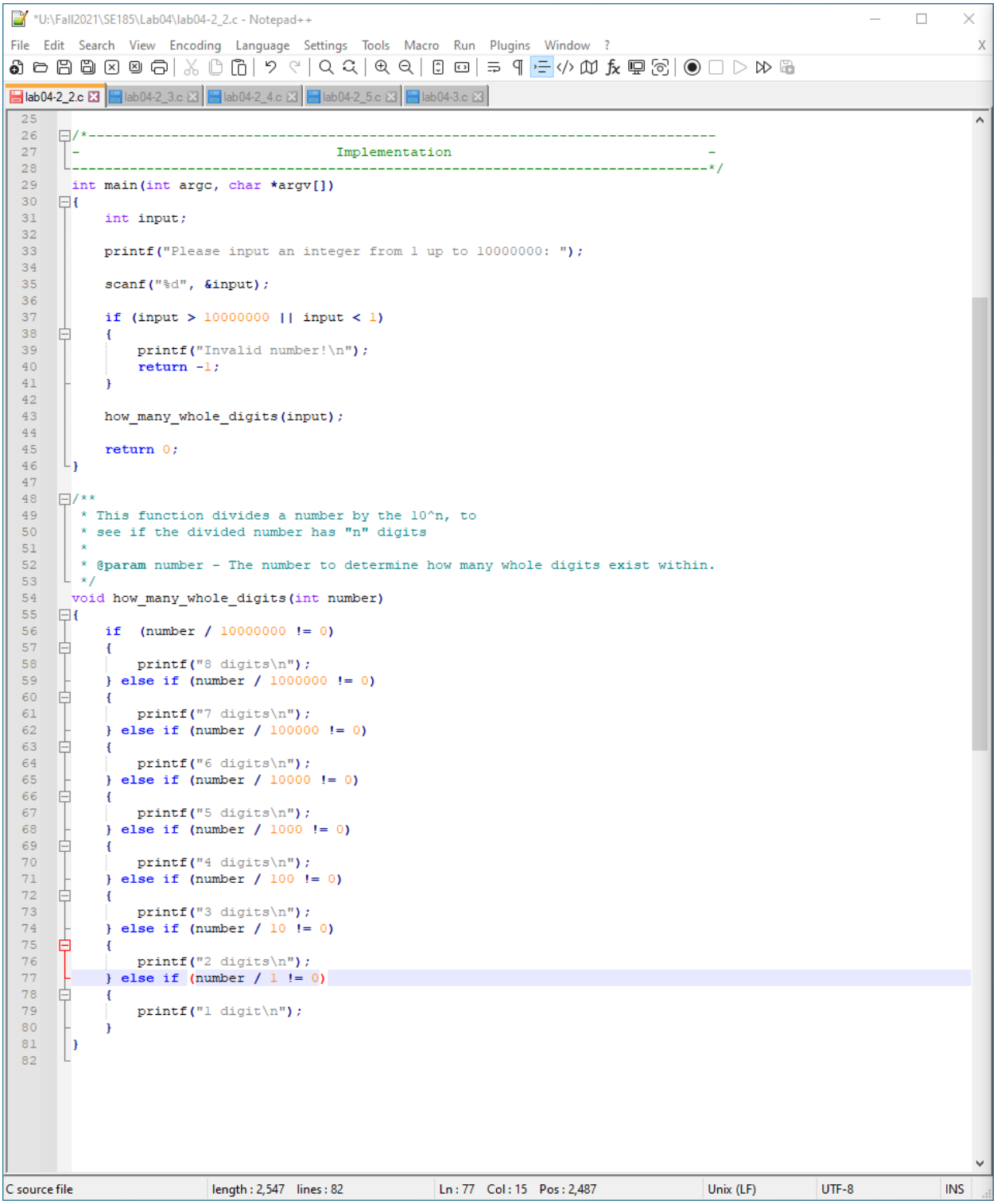
*U:\Fall2021\SE185\Lab04\lab04-2_2.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-2_2.c
lab04-2_3.c
lab04-2_4.c
lab04-2_5.c
lab04-3.c
/*--------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
int input;
printf("Please input an integer from 1 up to 10000000: ");
scanf("%d", &input);
if (input > 10000000 || input < 1)
{
printf("Invalid number!\n");
return -1;
}
how_many_whole_digits(input);
return 0;
}
/**
* This function divides a number by the 10^n, to
* see if the divided number has "n" digits
*
* @param number - The number to determine how many whole digits exist within.
*/
void how_many_whole_digits(int number)
{
if (number / 10000000 != 0)
{
printf("8 digits\n");
} else if (number / 1000000 != 0)
{
printf("7 digits\n");
} else if (number / 100000 != 0)
{
printf("6 digits\n");
} else if (number / 10000 != 0)
{
printf("5 digits\n");
} else if (number / 1000 != 0)
{
printf("4 digits\n");
} else if (number / 100 != 0)
{
printf("3 digits\n");
} else if (number / 10 != 0)
{
printf("2 digits\n");
} else if (number / 1 != 0)
{
printf("1 digit\n");
}
}
C source file
length : 2,547 lines : 82
Ln : 77 Col : 15 Pos : 2,487
Unix (LF)
UTF-8
INS

*Figure 14*

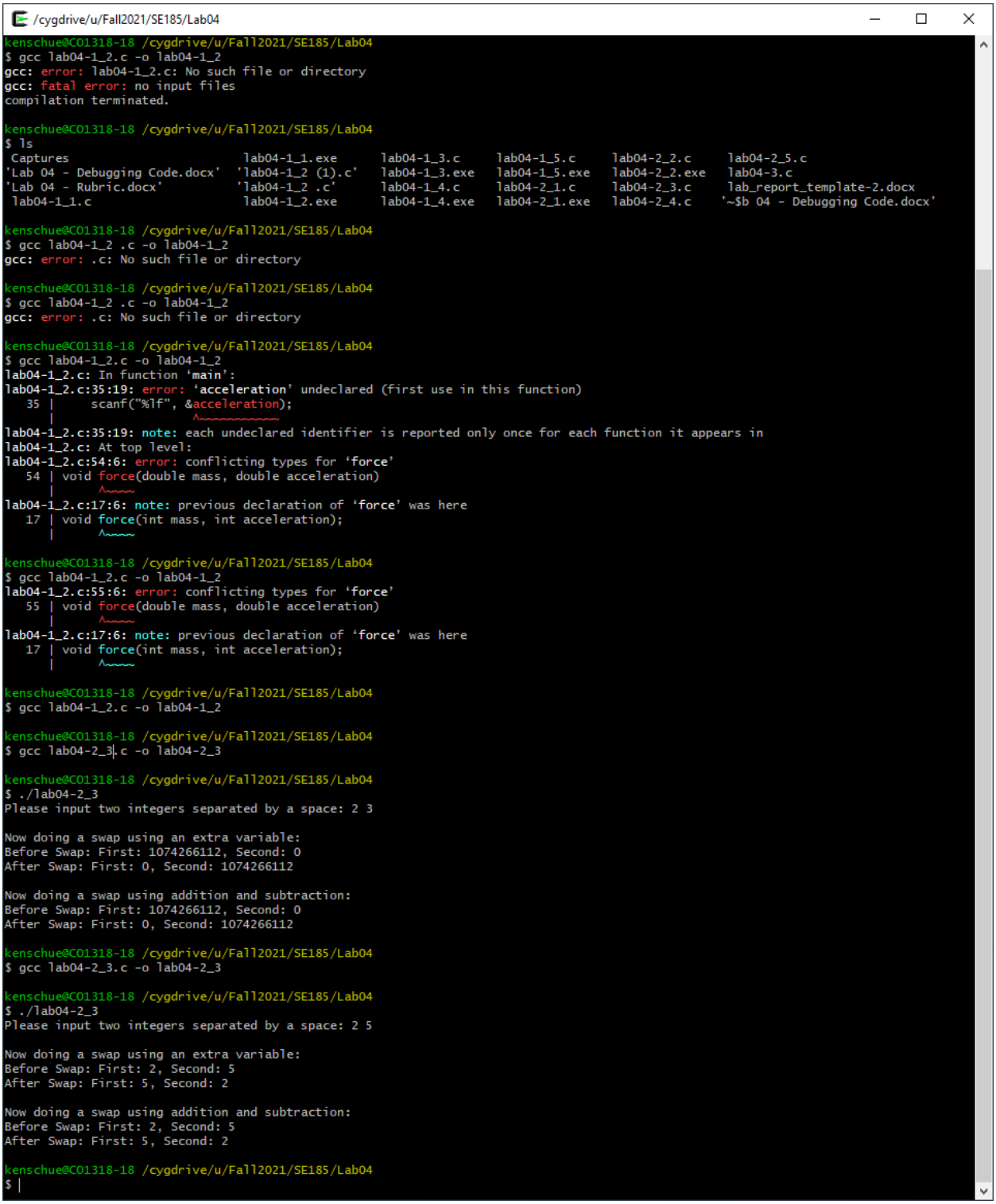
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2.c -o lab04-1_2
gcc: error: lab04-1_2.c: No such file or directory
gcc: fatal error: no input files
compilation terminated.
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ls
Captures lab04-1_1.exe lab04-1_3.c lab04-1_5.c lab04-2_2.c lab04-2_5.c
'Lab 04 - Debugging Code.docx' 'lab04-1_2 (1).c' lab04-1_3.exe lab04-1_5.exe lab04-2_2.exe lab04-3.c
'Lab 04 - Rubric.docx' 'lab04-1_2 .c' lab04-1_4.c lab04-2_1.c lab04-2_3.c lab_report_template-2.docx
lab04-1_1.c lab04-1_2.exe lab04-1_4.exe lab04-2_1.exe lab04-2_4.c '~$b 04 - Debugging Code.docx'
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2 .c -o lab04-1_2
gcc: error: .c: No such file or directory
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2 .c -o lab04-1_2
gcc: error: .c: No such file or directory
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2.c -o lab04-1_2
lab04-1_2.c: In function 'main':
lab04-1_2.c:35:19: error: 'acceleration' undeclared (first use in this function)
35 | scanf("%lf", &acceleration);
| ^~~~~~~~~~~~
lab04-1_2.c:35:19: note: each undeclared identifier is reported only once for each function it appears in
lab04-1_2.c: At top level:
lab04-1_2.c:54:6: error: conflicting types for 'force'
54 | void force(double mass, double acceleration)
| ^~~~~
lab04-1_2.c:17:6: note: previous declaration of 'force' was here
17 | void force(int mass, int acceleration);
| ^~~~~
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2.c -o lab04-1_2
lab04-1_2.c:55:6: error: conflicting types for 'force'
55 | void force(double mass, double acceleration)
| ^~~~~
lab04-1_2.c:17:6: note: previous declaration of 'force' was here
17 | void force(int mass, int acceleration);
| ^~~~~
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-1_2.c -o lab04-1_2
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-2_3.c -o lab04-2_3
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_3
Please input two integers separated by a space: 2 3
Now doing a swap using an extra variable:
Before Swap: First: 1074266112, Second: 0
After Swap: First: 0, Second: 1074266112
Now doing a swap using addition and subtraction:
Before Swap: First: 1074266112, Second: 0
After Swap: First: 0, Second: 1074266112
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-2_3.c -o lab04-2_3
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_3
Please input two integers separated by a space: 2 5
Now doing a swap using an extra variable:
Before Swap: First: 2, Second: 5
After Swap: First: 5, Second: 2
Now doing a swap using addition and subtraction:
Before Swap: First: 2, Second: 5
After Swap: First: 5, Second: 2
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 15*

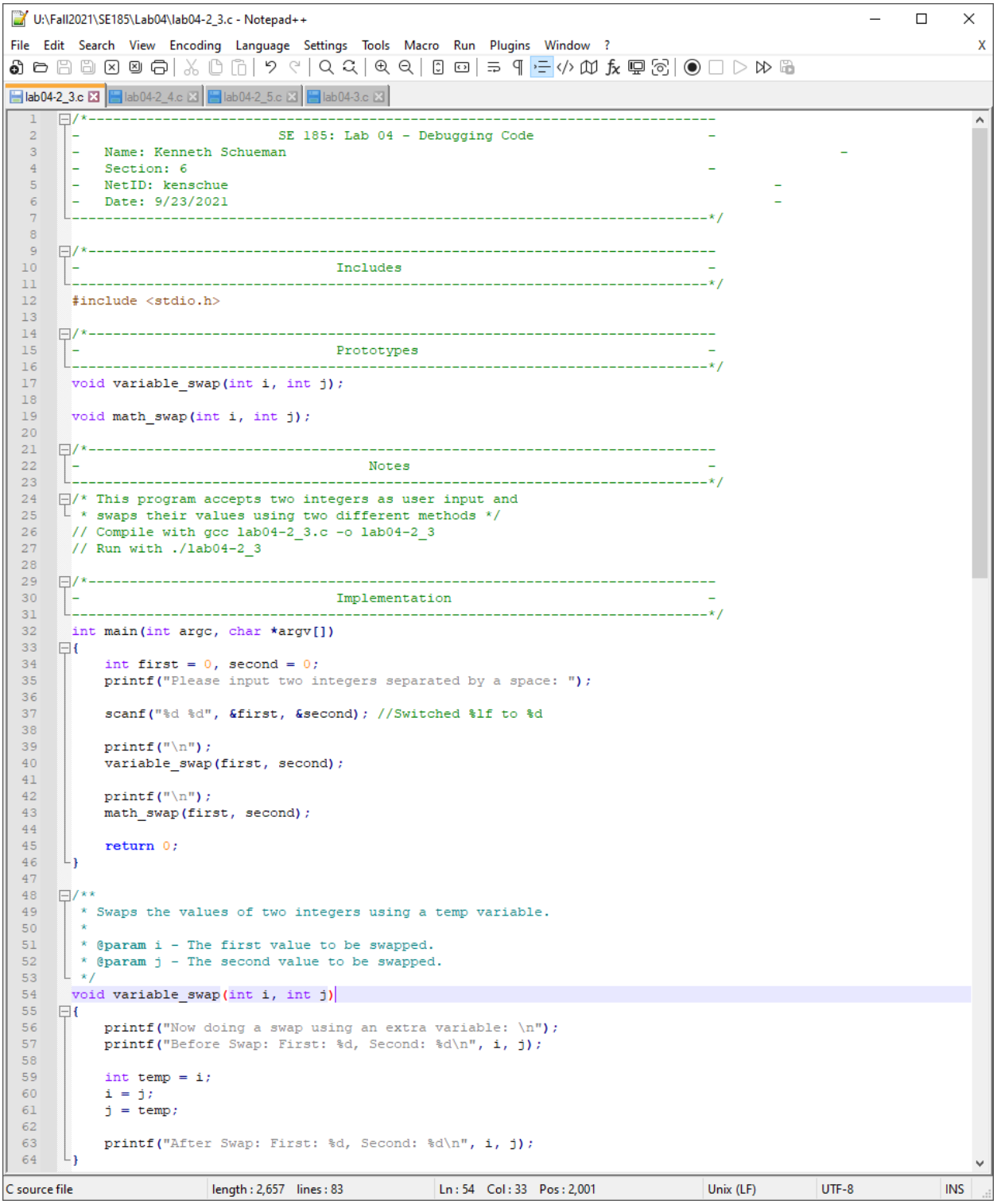
U:\Fall2021\SE185\Lab04\lab04-2_3.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-2_3.c
lab04-2_4.c
lab04-2_5.c
lab04-3.c
/*--------------------------------------------------------------------------------
- SE 185: Lab 04 - Debugging Code -
- Name: Kenneth Schueman -
- Section: 6 -
- NetID: kenschue -
- Date: 9/23/2021 -
--------------------------------------------------------------------------------*/
/*--------------------------------------------------------------------------------
- Includes -
--------------------------------------------------------------------------------*/
#include <stdio.h>
/*--------------------------------------------------------------------------------
- Prototypes -
--------------------------------------------------------------------------------*/
void variable_swap(int i, int j);
void math_swap(int i, int j);
/*--------------------------------------------------------------------------------
- Notes -
--------------------------------------------------------------------------------*/
/* This program accepts two integers as user input and
* swaps their values using two different methods */
// Compile with gcc lab04-2_3.c -o lab04-2_3
// Run with ./lab04-2_3
/*--------------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
int first = 0, second = 0;
printf("Please input two integers separated by a space: ");
scanf("%d %d", &first, &second); //Switched %lf to %d
printf("\n");
variable_swap(first, second);
printf("\n");
math_swap(first, second);
return 0;
}
/**
* Swaps the values of two integers using a temp variable.
*
* @param i - The first value to be swapped.
* @param j - The second value to be swapped.
*/
void variable_swap(int i, int j)
{
printf("Now doing a swap using an extra variable: \n");
printf("Before Swap: First: %d, Second: %d\n", i, j);
int temp = i;
i = j;
j = temp;
printf("After Swap: First: %d, Second: %d\n", i, j);
}
C source file
length : 2,657 lines : 83
Ln : 54 Col : 33 Pos : 2,001
Unix (LF)
UTF-8
INS

*Figure 16*

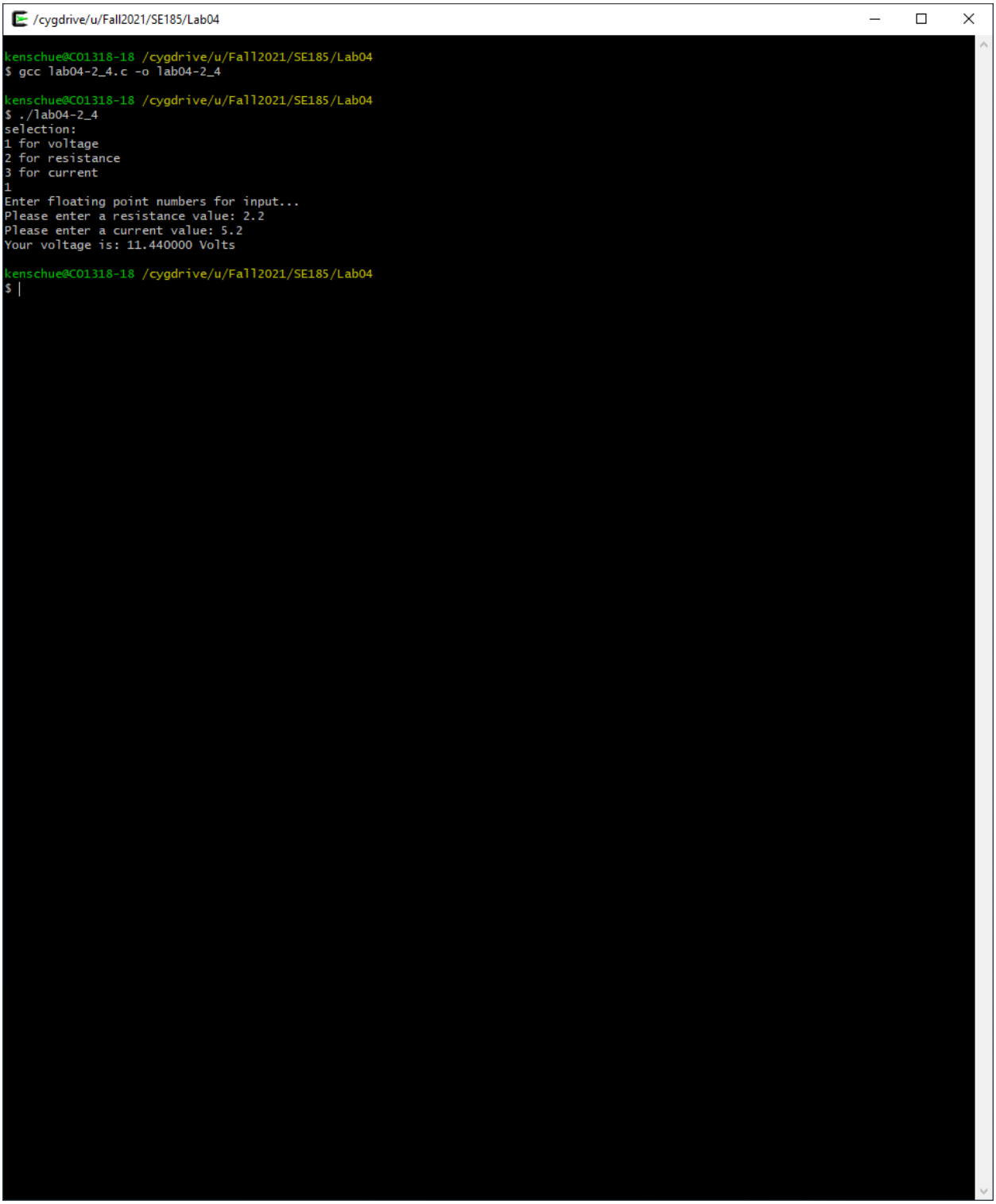
/cygdrive/u/Fall2021/SE185/Lab04
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ gcc lab04-2_4.c -o lab04-2_4
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$ ./lab04-2_4
selection:
1 for voltage
2 for resistance
3 for current
1
Enter floating point numbers for input...
Please enter a resistance value: 2.2
Please enter a current value: 5.2
Your voltage is: 11.440000 Volts
kenschue@CO1318-18 /cygdrive/u/Fall2021/SE185/Lab04
$

*Figure 17*

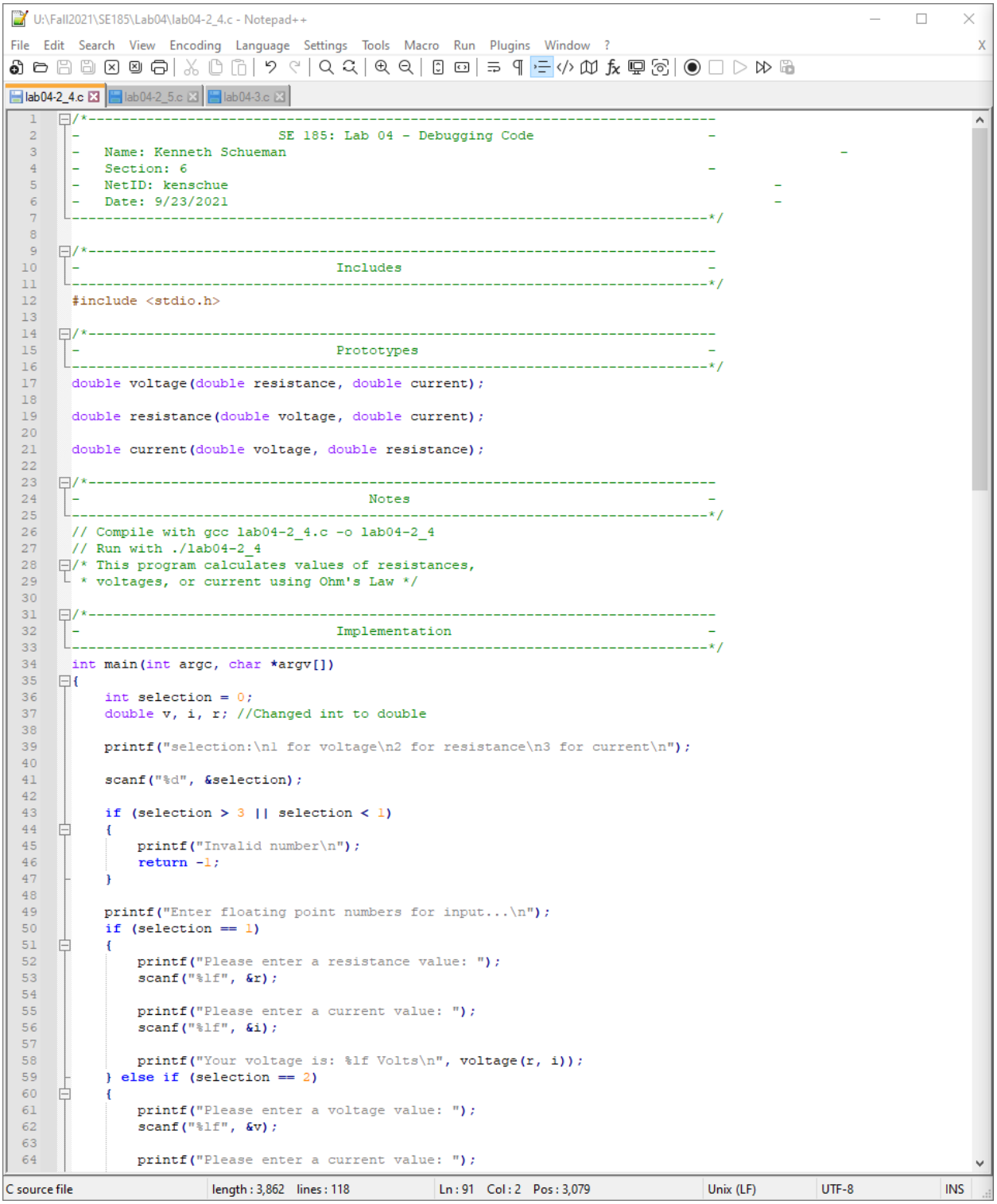
U:\Fall2021\SE185\Lab04\lab04-2_4.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-2_4.c
lab04-2_5.c
lab04-3.c
/*--------------------------------------------------------------------------------
- SE 185: Lab 04 - Debugging Code -
- Name: Kenneth Schueman -
- Section: 6 -
- NetID: kenschue -
- Date: 9/23/2021 -
--------------------------------------------------------------------------------*/
/*--------------------------------------------------------------------------------
- Includes -
--------------------------------------------------------------------------------*/
#include <stdio.h>
/*--------------------------------------------------------------------------------
- Prototypes -
--------------------------------------------------------------------------------*/
double voltage(double resistance, double current);
double resistance(double voltage, double current);
double current(double voltage, double resistance);
/*--------------------------------------------------------------------------------
- Notes -
--------------------------------------------------------------------------------*/
// Compile with gcc lab04-2_4.c -o lab04-2_4
// Run with ./lab04-2_4
/* This program calculates values of resistances,
* voltages, or current using Ohm's Law */
/*--------------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
int selection = 0;
double v, i, r; //Changed int to double
printf("selection:\n1 for voltage\n2 for resistance\n3 for current\n");
scanf("%d", &selection);
if (selection > 3 || selection < 1)
{
printf("Invalid number\n");
return -1;
}
printf("Enter floating point numbers for input...\n");
if (selection == 1)
{
printf("Please enter a resistance value: ");
scanf("%lf", &r);
printf("Please enter a current value: ");
scanf("%lf", &i);
printf("Your voltage is: %lf Volts\n", voltage(r, i));
} else if (selection == 2)
{
printf("Please enter a voltage value: ");
scanf("%lf", &v);
printf("Please enter a current value: ");
C source file
length : 3,862 lines : 118
Ln : 91 Col : 2 Pos : 3,079
Unix (LF)
UTF-8
INS

*Figure 18*

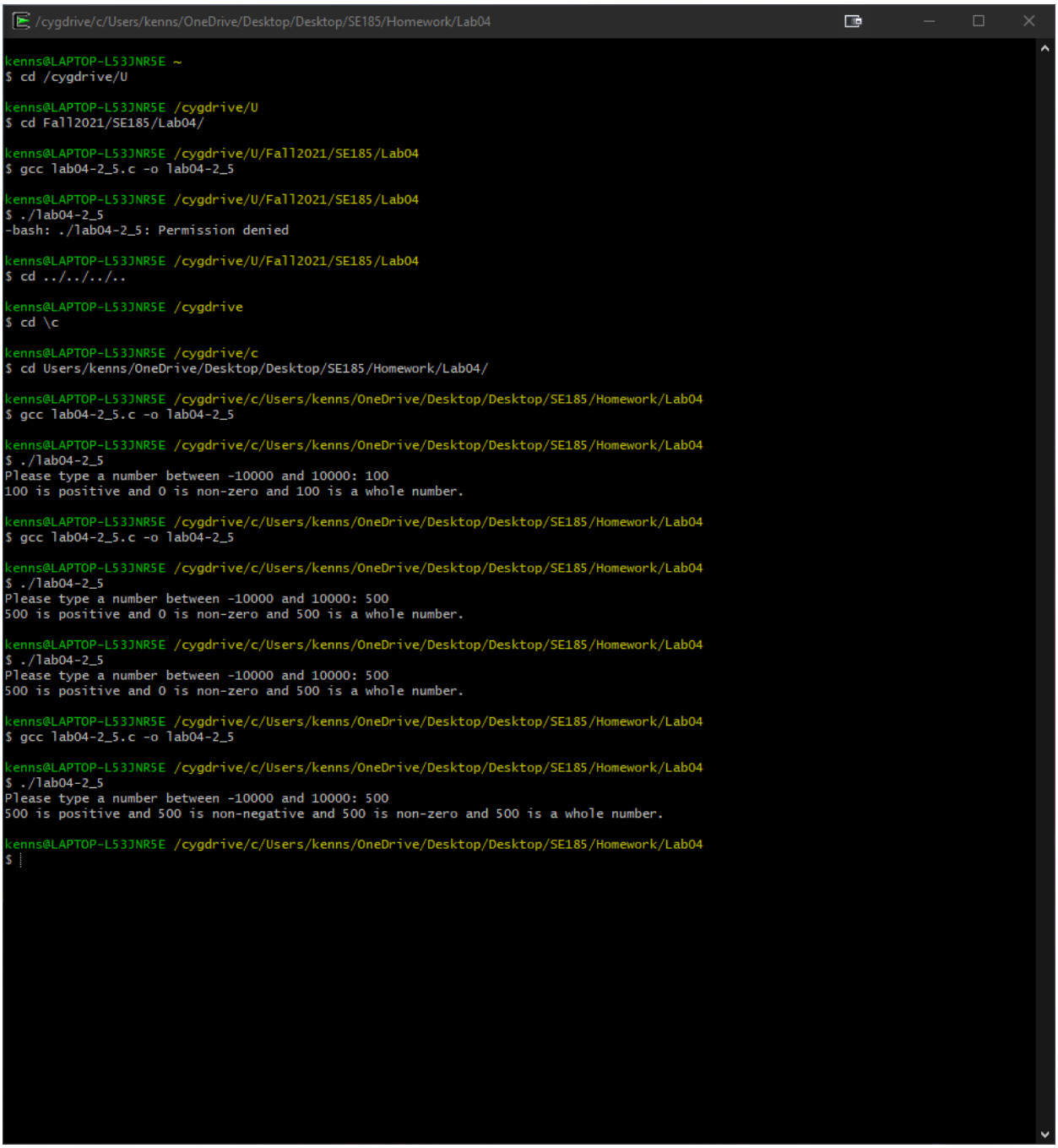
/cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
kenns@LAPTOP-L53JNR5E ~
$ cd /cygdrive/U
kenns@LAPTOP-L53JNR5E /cygdrive/U
$ cd Fall2021/SE185/Lab04/
kenns@LAPTOP-L53JNR5E /cygdrive/U/Fall2021/SE185/Lab04
$ gcc lab04-2_5.c -o lab04-2_5
kenns@LAPTOP-L53JNR5E /cygdrive/U/Fall2021/SE185/Lab04
$ ./lab04-2_5
-bash: ./lab04-2_5: Permission denied
kenns@LAPTOP-L53JNR5E /cygdrive/U/Fall2021/SE185/Lab04
$ cd ../../../..
kenns@LAPTOP-L53JNR5E /cygdrive
$ cd \c
kenns@LAPTOP-L53JNR5E /cygdrive/c
$ cd Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04/
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ gcc lab04-2_5.c -o lab04-2_5
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ ./lab04-2_5
Please type a number between -10000 and 10000: 100
100 is positive and 0 is non-zero and 100 is a whole number.
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ gcc lab04-2_5.c -o lab04-2_5
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ ./lab04-2_5
Please type a number between -10000 and 10000: 500
500 is positive and 0 is non-zero and 500 is a whole number.
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ ./lab04-2_5
Please type a number between -10000 and 10000: 500
500 is positive and 0 is non-zero and 500 is a whole number.
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ gcc lab04-2_5.c -o lab04-2_5
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$ ./lab04-2_5
Please type a number between -10000 and 10000: 500
500 is positive and 500 is non-negative and 500 is non-zero and 500 is a whole number.
kenns@LAPTOP-L53JNR5E /cygdrive/c/Users/kenns/OneDrive/Desktop/Desktop/SE185/Homework/Lab04
$

*Figure 19*

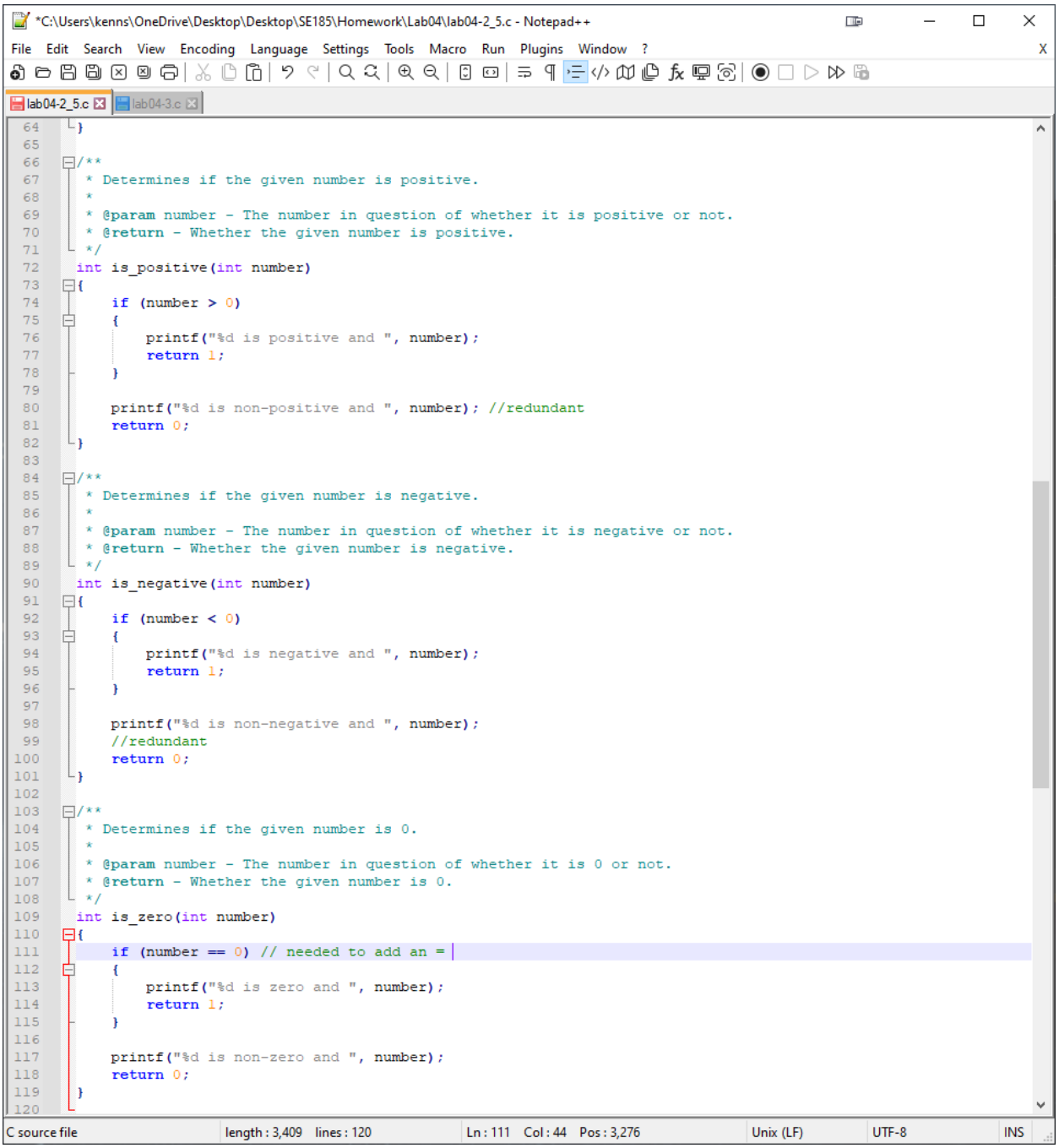
*C:\Users\kenns\OneDrive\Desktop\Desktop\SE185\Homework\Lab04\lab04-2_5.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-2_5.c
lab04-3.c
}
/**
* Determines if the given number is positive.
*
* @param number - The number in question of whether it is positive or not.
* @return - Whether the given number is positive.
*/
int is_positive(int number)
{
if (number > 0)
{
printf("%d is positive and ", number);
return 1;
}
printf("%d is non-positive and ", number); //redundant
return 0;
}
/**
* Determines if the given number is negative.
*
* @param number - The number in question of whether it is negative or not.
* @return - Whether the given number is negative.
*/
int is_negative(int number)
{
if (number < 0)
{
printf("%d is negative and ", number);
return 1;
}
printf("%d is non-negative and ", number);
//redundant
return 0;
}
/**
* Determines if the given number is 0.
*
* @param number - The number in question of whether it is 0 or not.
* @return - Whether the given number is 0.
*/
int is_zero(int number)
{
if (number == 0) // needed to add an =
{
printf("%d is zero and ", number);
return 1;
}
printf("%d is non-zero and ", number);
return 0;
}
C source file
length : 3,409 lines : 120
Ln : 111 Col : 44 Pos : 3,276
Unix (LF)
UTF-8
INS

*Figure 20*

## Problem: Putting It All Together

**For each** program in **Part 1 and 2** that you fixed, answer the following:

1. What changes did you have to make to fix the program? Please list the line number with the changes that you made.

2. What kind of issue caused this problem?
    a. Example: missing semicolon, wrong variable types, missing brackets, etc.

**For Part 3:** What is the purpose of the **"`-Wall`"** flag? Do you have to fix all of the messages that it gives you?

## Analysis

There were a lot of small mistakes that caused a lot of issues for me to find

## Design

The person who made this problem was evil but once added the correct declarations and syntax the program ran well.

## Testing

-Wall was very useful to find the multiple errors in the program.

## Comments

This problem took me a very long time.

## Screen Shots

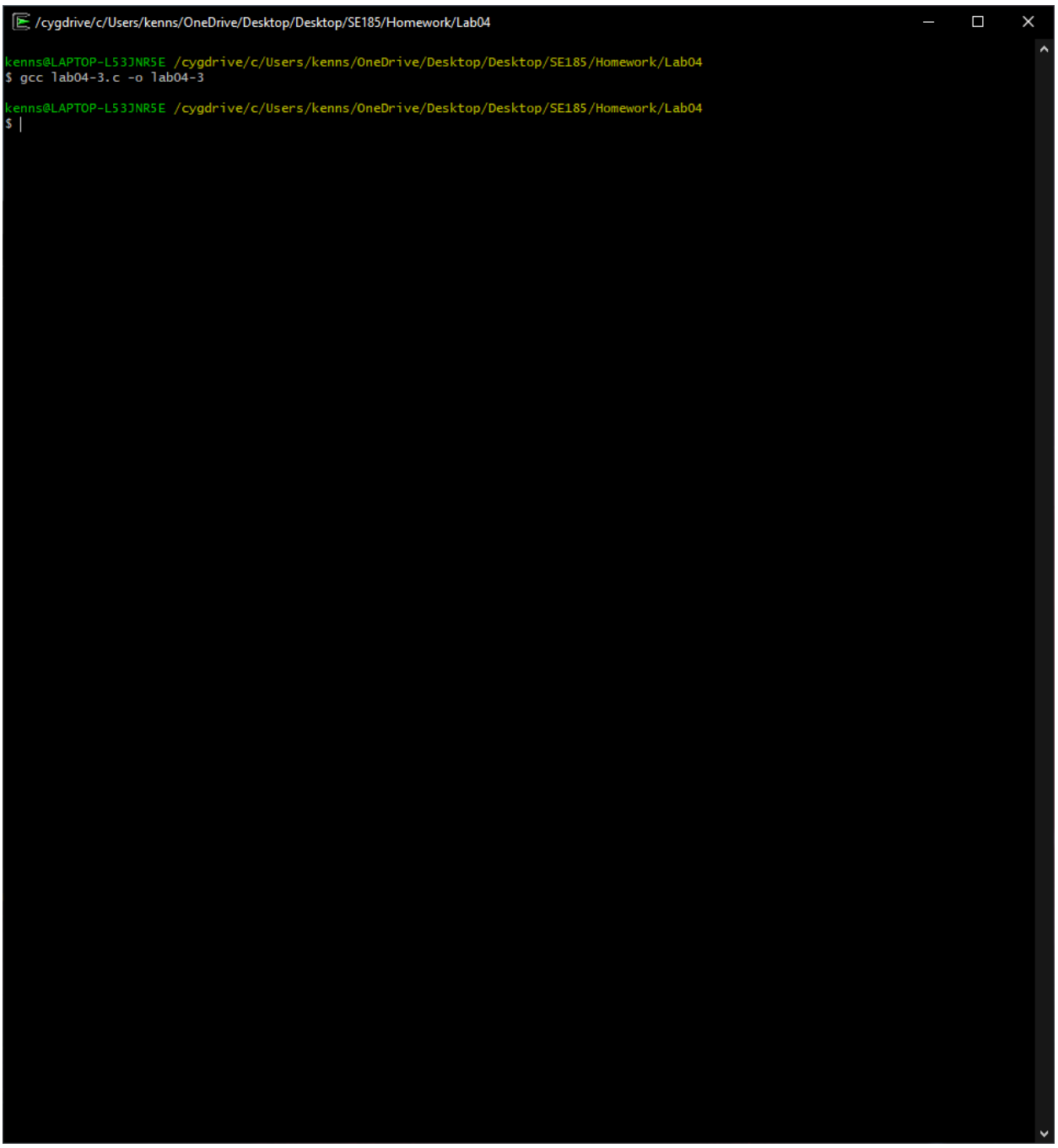


*Figure 21*

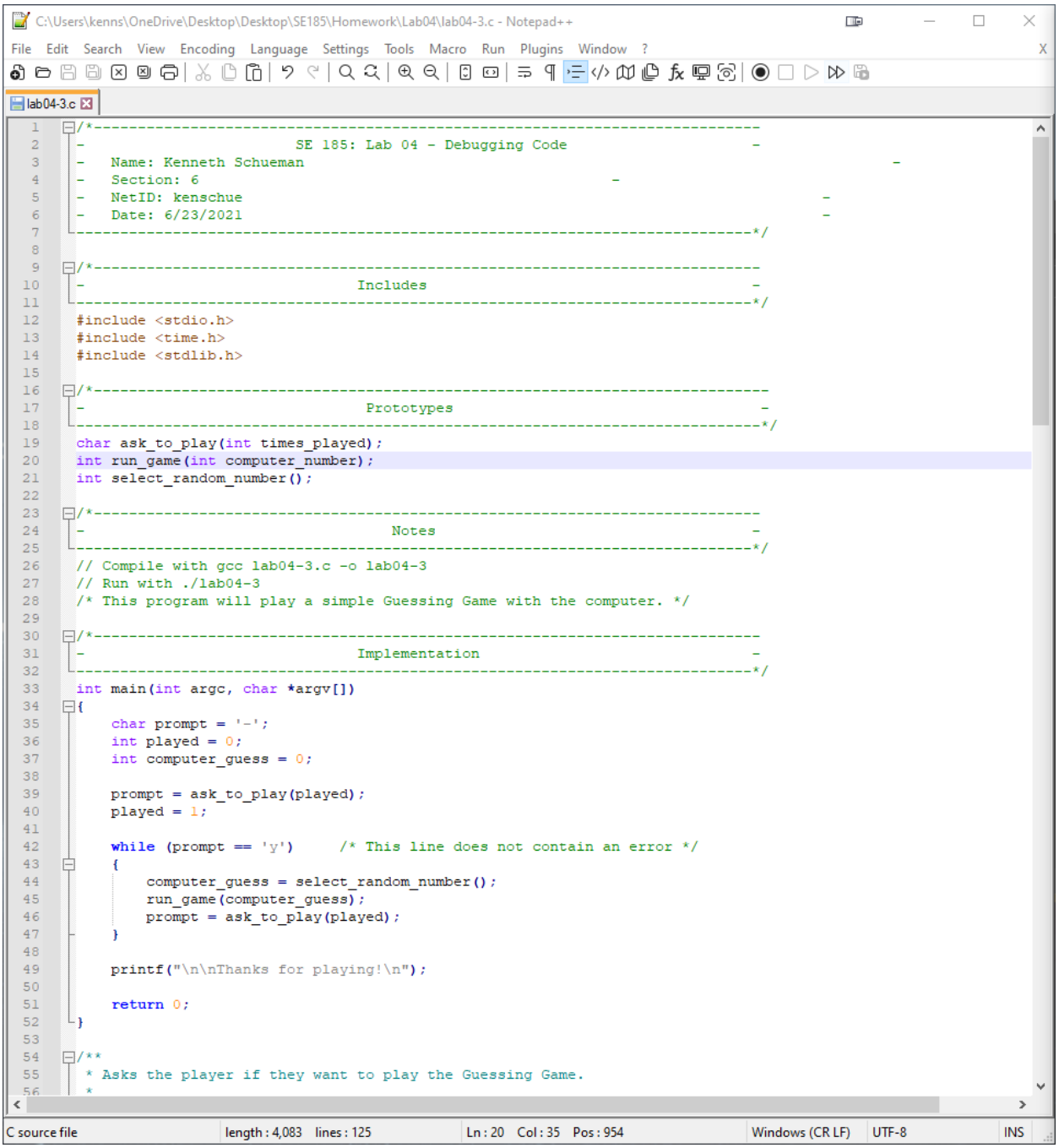
C:\Users\kenns\OneDrive\Desktop\Desktop\SE185\Homework\Lab04\lab04-3.c - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
lab04-3.c
/*--------------------------------------------------------------------------------
- SE 185: Lab 04 - Debugging Code -
- Name: Kenneth Schueman -
- Section: 6 -
- NetID: kenschue -
- Date: 6/23/2021 -
--------------------------------------------------------------------------------*/
/*--------------------------------------------------------------------------------
- Includes -
--------------------------------------------------------------------------------*/
#include <stdio.h>
#include <time.h>
#include <stdlib.h>
/*--------------------------------------------------------------------------------
- Prototypes -
--------------------------------------------------------------------------------*/
char ask_to_play(int times_played);
int run_game(int computer_number);
int select_random_number();
/*--------------------------------------------------------------------------------
- Notes -
--------------------------------------------------------------------------------*/
// Compile with gcc lab04-3.c -o lab04-3
// Run with ./lab04-3
/* This program will play a simple Guessing Game with the computer. */
/*--------------------------------------------------------------------------------
- Implementation -
--------------------------------------------------------------------------------*/
int main(int argc, char *argv[])
{
char prompt = '-';
int played = 0;
int computer_guess = 0;
prompt = ask_to_play(played);
played = 1;
while (prompt == 'y') /* This line does not contain an error */
{
computer_guess = select_random_number();
run_game(computer_guess);
prompt = ask_to_play(played);
}
printf("\n\nThanks for playing!\n");
return 0;
}
/**
* Asks the player if they want to play the Guessing Game.
*
C source file
length : 4,083 lines : 125
Ln : 20 Col : 35 Pos : 954
Windows (CR LF)
UTF-8
INS

*Figure 22*