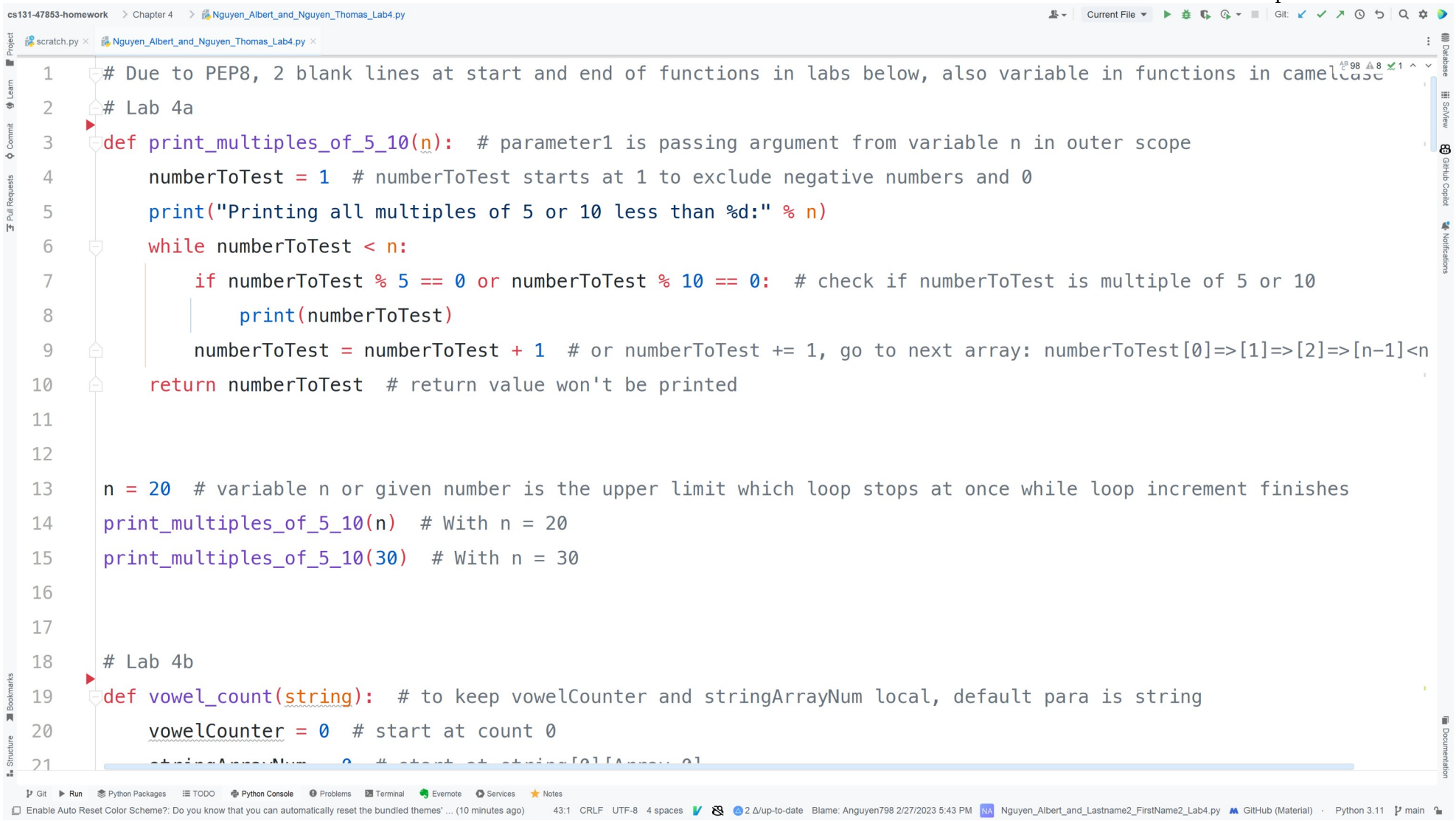

cs131-47853-homework
Chapter 4
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Current File
Git:
scratch.py
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Due to PEP8, 2 blank lines at start and end of functions in labs below, also variable in functions in camelcase
Lab 4a
def print_multiples_of_5_10(n): # parameter1 is passing argument from variable n in outer scope
numberToTest = 1 # numberToTest starts at 1 to exclude negative numbers and 0
print("Printing all multiples of 5 or 10 less than %d:" % n)
while numberToTest < n:
if numberToTest % 5 == 0 or numberToTest % 10 == 0: # check if numberToTest is multiple of 5 or 10
print(numberToTest)
numberToTest = numberToTest + 1 # or numberToTest += 1, go to next array: numberToTest[0]=>[1]=>[2]=>[n-1]<n
return numberToTest # return value won't be printed
n = 20 # variable n or given number is the upper limit which loop stops at once while loop increment finishes
print_multiples_of_5_10(n) # With n = 20
print_multiples_of_5_10(30) # With n = 30
Lab 4b
def vowel_count(string): # to keep vowelCounter and stringArrayNum local, default para is string
vowelCounter = 0 # start at count 0
Git
Run
Python Packages
TODO
Python Console
Problems
Terminal
Evernote
Services
Notes
Enable Auto Reset Color Scheme?: Do you know that you can automatically reset the bundled themes' ... (10 minutes ago)
43:1
CRLF
UTF-8
4 spaces
2 Δ/up-to-date
Blame: Anguyen798 2/27/2023 5:43 PM
Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
GitHub (Material)
Python 3.11
main

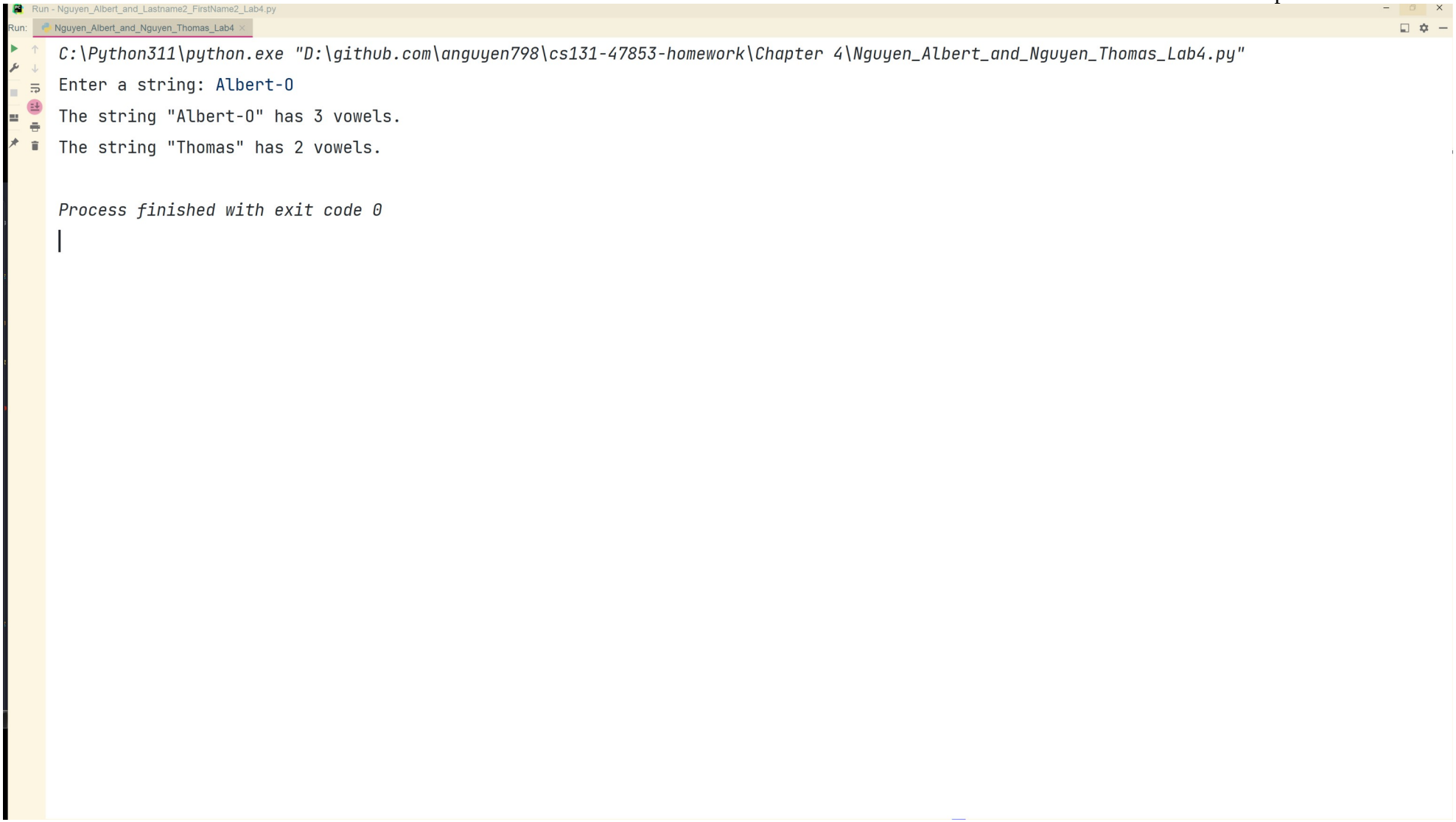
4a_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
Printing all multiples of 5 or 10 less than 20:
5
10
15
Printing all multiples of 5 or 10 less than 30:
5
10
15
20
25
Process finished with exit code 0

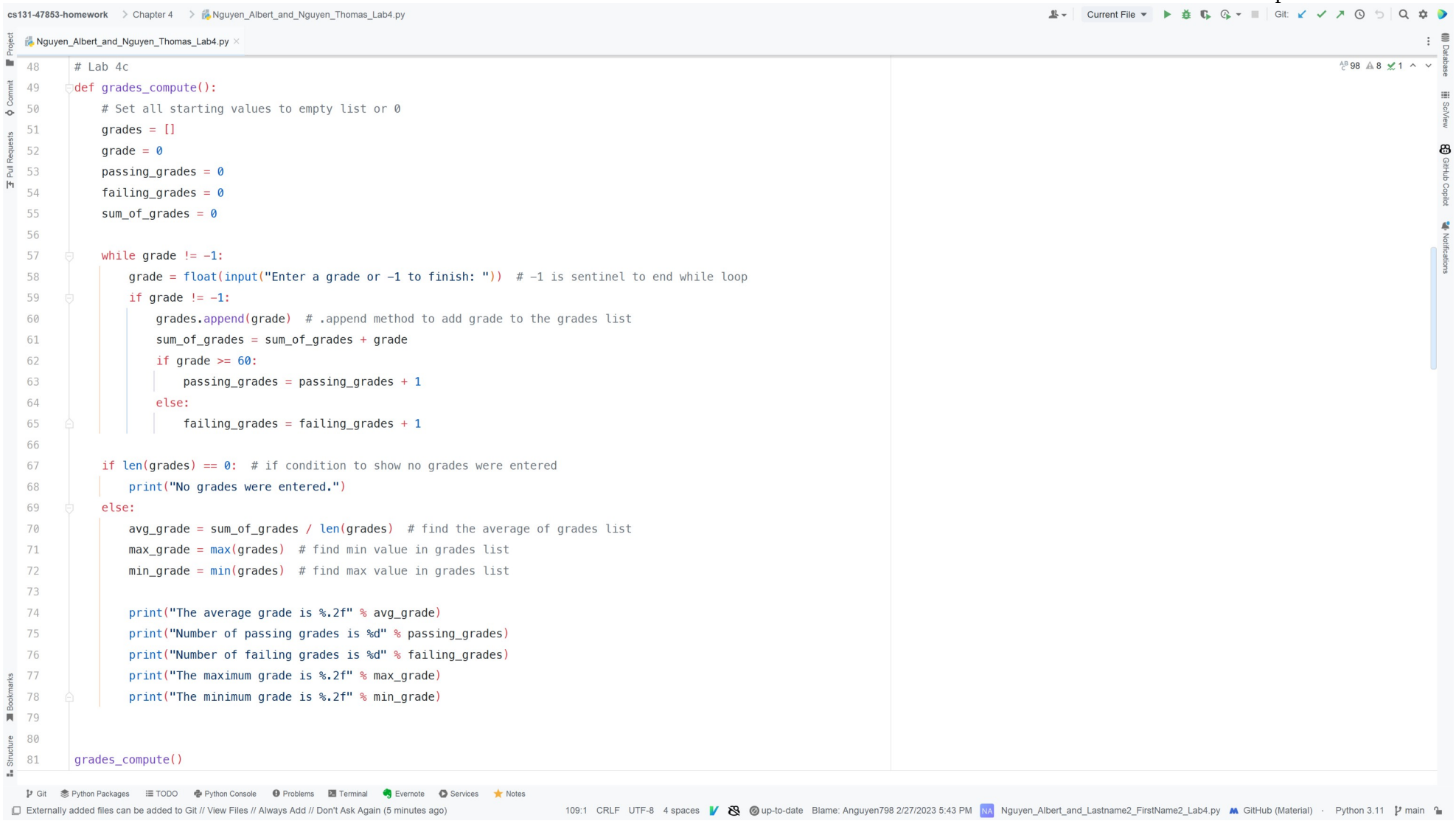
4a_Output


cs131-47853-homework
Chapter 4
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Current File
Git:
scratch.py
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Lab 4b
def vowel_count(string): # to keep vowelCounter and stringArrayNum local, default para is string
vowelCounter = 0 # start at count 0
stringArrayNum = 0 # start at string[0][Array=0]
vowels = "aeiouAEIOU"
while stringArrayNum < len(string): # the length of the string, i.e. len("foo") = 3, loop foo[0],foo[1],foo[2]
if string[stringArrayNum] in vowels: # i.e. vowelCounter = 0, foo[0] = f, foo[1] = o, vowelCounter += 1
vowelCounter = vowelCounter + 1 # or vowelCounter += 1, add to
# or stringArrayNum += 1: after executing if statement(vowelCounter), look at next stringArray[0] => [1] => [2]
stringArrayNum = stringArrayNum + 1
# print statement commented out in function to practice assigning function to return values:
# print("The string \"%s\" has %d vowels." % (parameter1, vowelCounter)) # commented out
return vowelCounter # return the vowel count to be assigned outside function
# Default, i.e. string = input("Albert-o")
string = input("Enter a string: ")
vowelCounter = vowel_count(string) # call function on string and assign vowel counter to function output, default para
print("The string \"%s\" has %d vowels." % (string, vowelCounter)) # format vowelCounter with integer %d specifier
# Bypassing the input() function with string = "Thomas"
string = "Thomas"
vowelCounter = vowel_count(string) # call function, must explicitly pass variable "string" as parameter
print(f"The string \"{string}\" has {vowelCounter} vowels.") # using f string, \ to escape the double quotes
Git
Run
Python Packages
TODO
Python Console
Problems
Terminal
Evernote
Services
Notes
Enable Auto Reset Color Scheme?: Do you know that you can automatically reset the bundled themes' ... (11 minutes ago)
43:1
CRLF
UTF-8
4 spaces
Blame: Anguyen798 2/27/2023 5:43 PM
Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
GitHub (Material)
Python 3.11
main

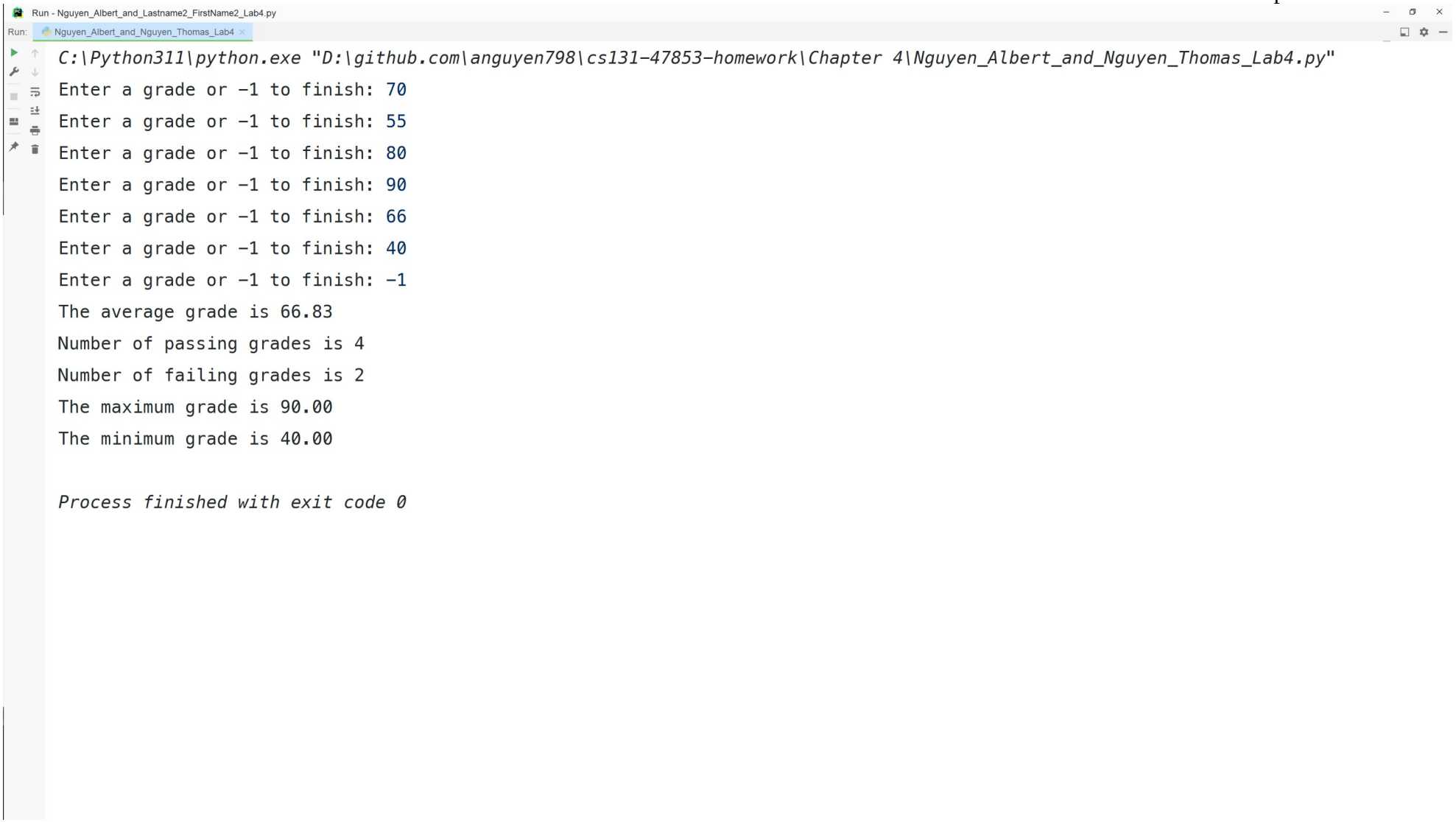
4b_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
Enter a string: Albert-O
The string "Albert-O" has 3 vowels.
The string "Thomas" has 2 vowels.
Process finished with exit code 0

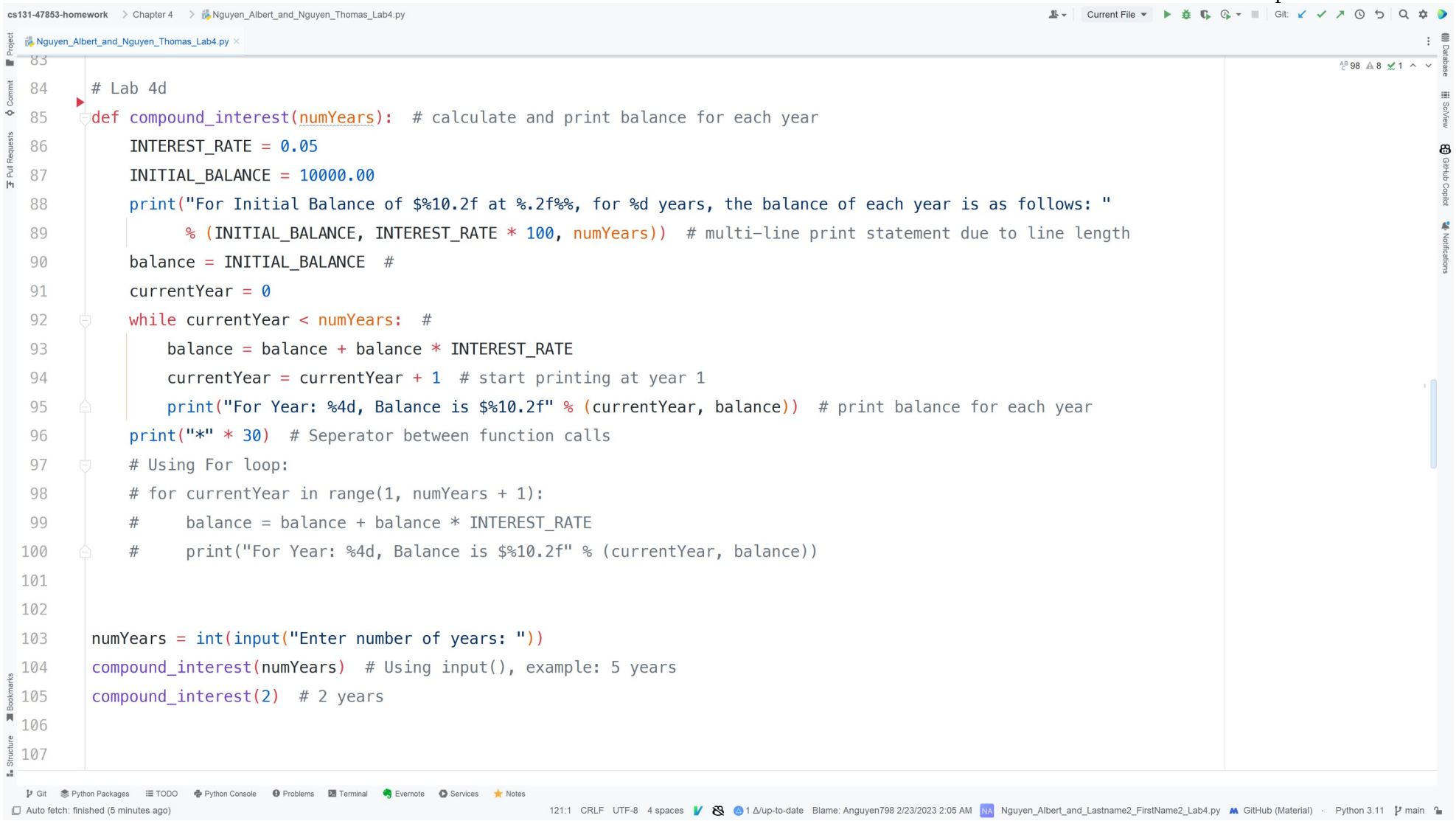
4b_Output


cs131-47853-homework
Chapter 4
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Current File
Git:
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
98 8 1
# Lab 4c
def grades_compute():
# Set all starting values to empty list or 0
grades = []
grade = 0
passing_grades = 0
failing_grades = 0
sum_of_grades = 0
while grade != -1:
grade = float(input("Enter a grade or -1 to finish: ")) # -1 is sentinel to end while loop
if grade != -1:
grades.append(grade) # .append method to add grade to the grades list
sum_of_grades = sum_of_grades + grade
if grade >= 60:
passing_grades = passing_grades + 1
else:
failing_grades = failing_grades + 1
if len(grades) == 0: # if condition to show no grades were entered
print("No grades were entered.")
else:
avg_grade = sum_of_grades / len(grades) # find the average of grades list
max_grade = max(grades) # find min value in grades list
min_grade = min(grades) # find max value in grades list
print("The average grade is %.2f" % avg_grade)
print("Number of passing grades is %d" % passing_grades)
print("Number of failing grades is %d" % failing_grades)
print("The maximum grade is %.2f" % max_grade)
print("The minimum grade is %.2f" % min_grade)
grades_compute()
Git
Python Packages
TODO
Python Console
Problems
Terminal
Evernote
Services
Notes
Externally added files can be added to Git // View Files // Always Add // Don't Ask Again (5 minutes ago)
109:1 CRLF UTF-8 4 spaces
up-to-date
Blame: Anguyen798 2/27/2023 5:43 PM
Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
GitHub (Material)
Python 3.11
main

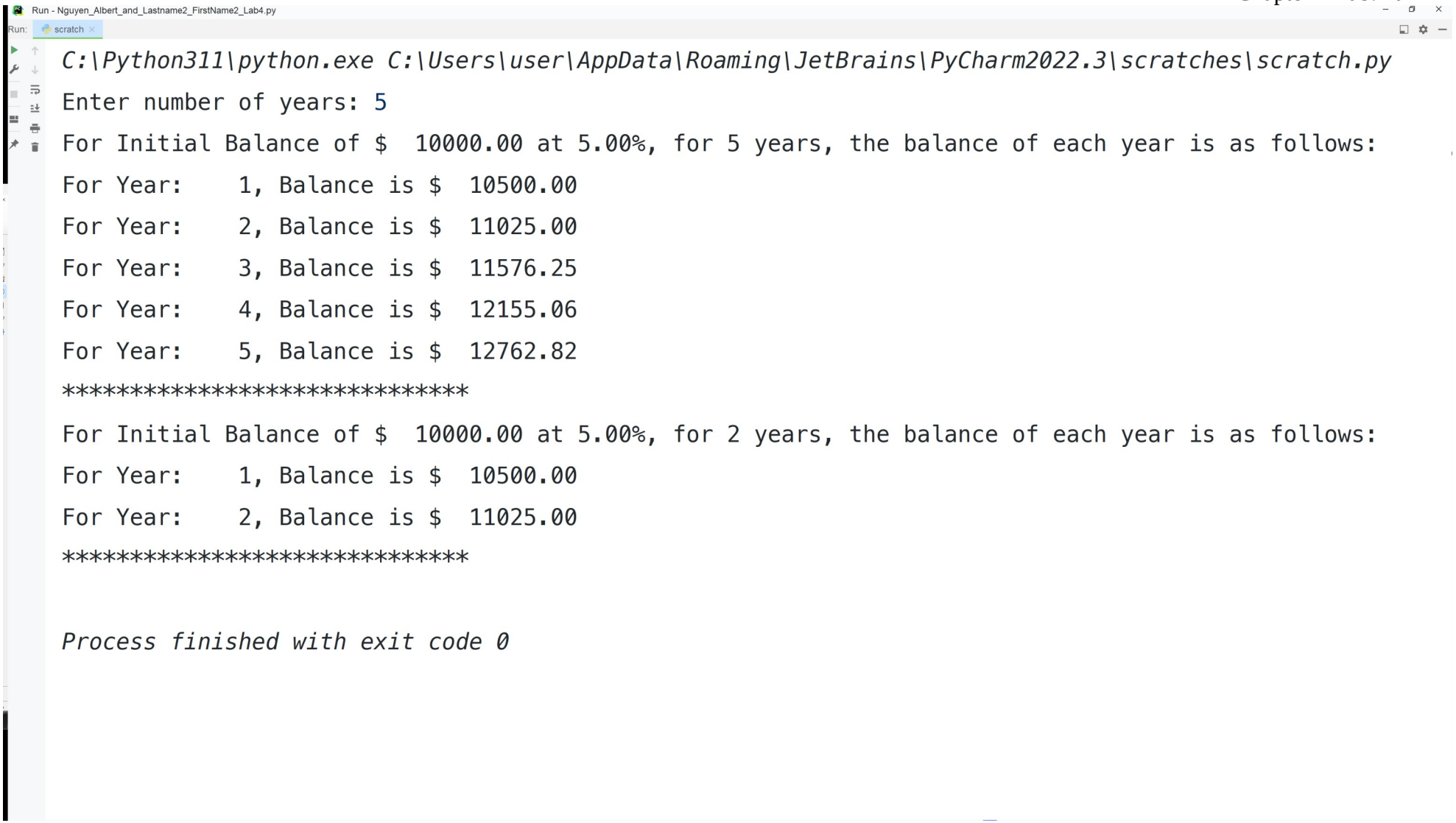
4c_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
Enter a grade or -1 to finish: 70
Enter a grade or -1 to finish: 55
Enter a grade or -1 to finish: 80
Enter a grade or -1 to finish: 90
Enter a grade or -1 to finish: 66
Enter a grade or -1 to finish: 40
Enter a grade or -1 to finish: -1
The average grade is 66.83
Number of passing grades is 4
Number of failing grades is 2
The maximum grade is 90.00
The minimum grade is 40.00
Process finished with exit code 0

4c_Output


cs131-47853-homework
Chapter 4
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Current File
Git:
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Lab 4d
def compound_interest(numYears): # calculate and print balance for each year
INTEREST_RATE = 0.05
INITIAL_BALANCE = 10000.00
print("For Initial Balance of $%10.2f at %.2f%%, for %d years, the balance of each year is as follows: "
% (INITIAL_BALANCE, INTEREST_RATE * 100, numYears)) # multi-line print statement due to line length
balance = INITIAL_BALANCE #
currentYear = 0
while currentYear < numYears: #
balance = balance + balance * INTEREST_RATE
currentYear = currentYear + 1 # start printing at year 1
print("For Year: %4d, Balance is $%10.2f" % (currentYear, balance)) # print balance for each year
print("*" * 30) # Seperator between function calls
# Using For loop:
# for currentYear in range(1, numYears + 1):
#   balance = balance + balance * INTEREST_RATE
#   print("For Year: %4d, Balance is $%10.2f" % (currentYear, balance))
numYears = int(input("Enter number of years: "))
compound_interest(numYears) # Using input(), example: 5 years
compound_interest(2) # 2 years
Git
Python Packages
TODO
Python Console
Problems
Terminal
Evernote
Services
Notes
Auto fetch: finished (5 minutes ago)
121:1
CRLF
UTF-8
4 spaces
Blame: Anguyen798 2/23/2023 2:05 AM
Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
GitHub (Material)
Python 3.11
main

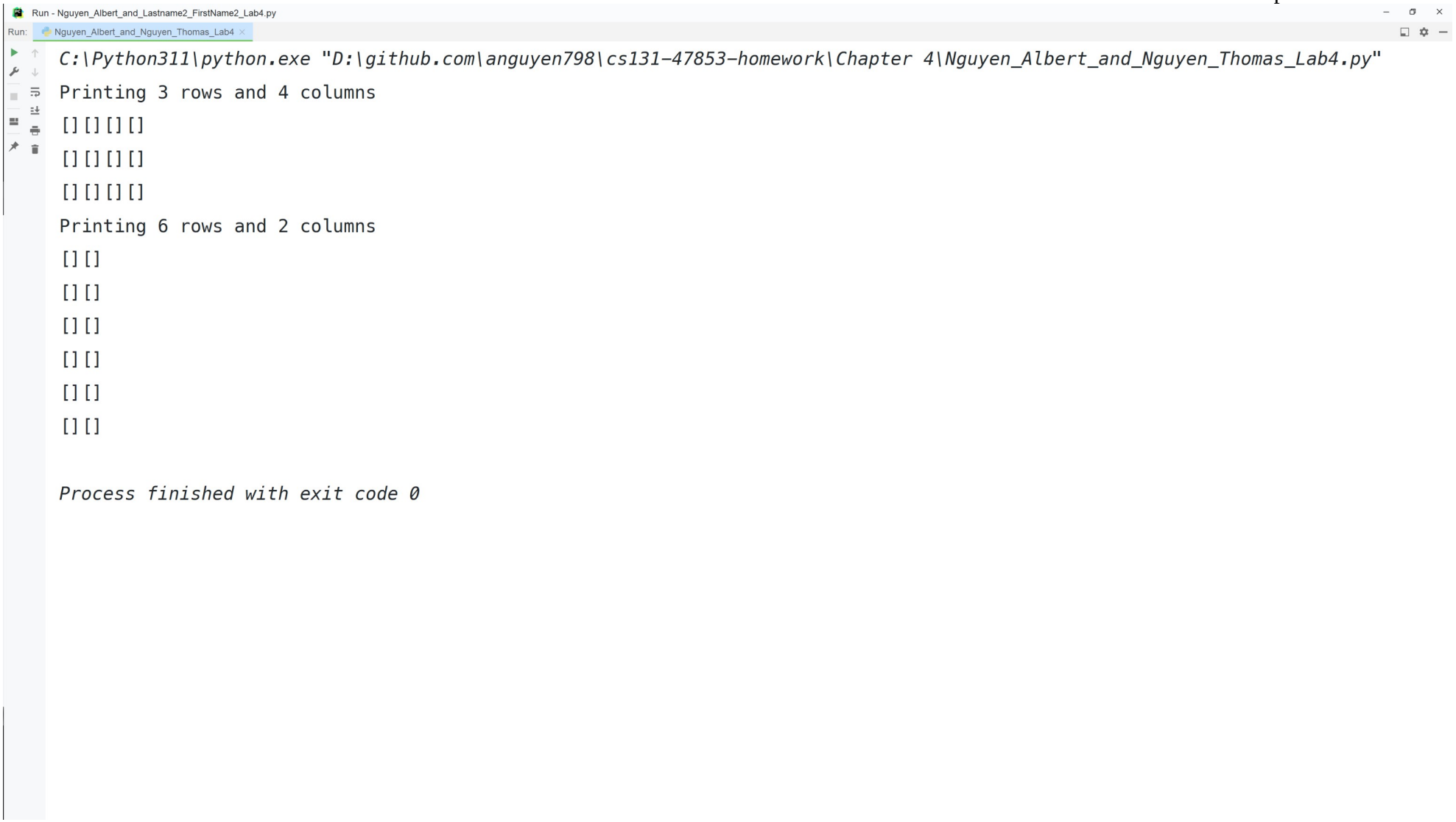
4d_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
scratch
C:\Python311\python.exe C:\Users\user\AppData\Roaming\JetBrains\PyCharm2022.3\scratches\scratch.py
Enter number of years: 5
For Initial Balance of $ 10000.00 at 5.00%, for 5 years, the balance of each year is as follows:
For Year: 1, Balance is $ 10500.00
For Year: 2, Balance is $ 11025.00
For Year: 3, Balance is $ 11576.25
For Year: 4, Balance is $ 12155.06
For Year: 5, Balance is $ 12762.82
****
For Initial Balance of $ 10000.00 at 5.00%, for 2 years, the balance of each year is as follows:
For Year: 1, Balance is $ 10500.00
For Year: 2, Balance is $ 11025.00
****
Process finished with exit code 0

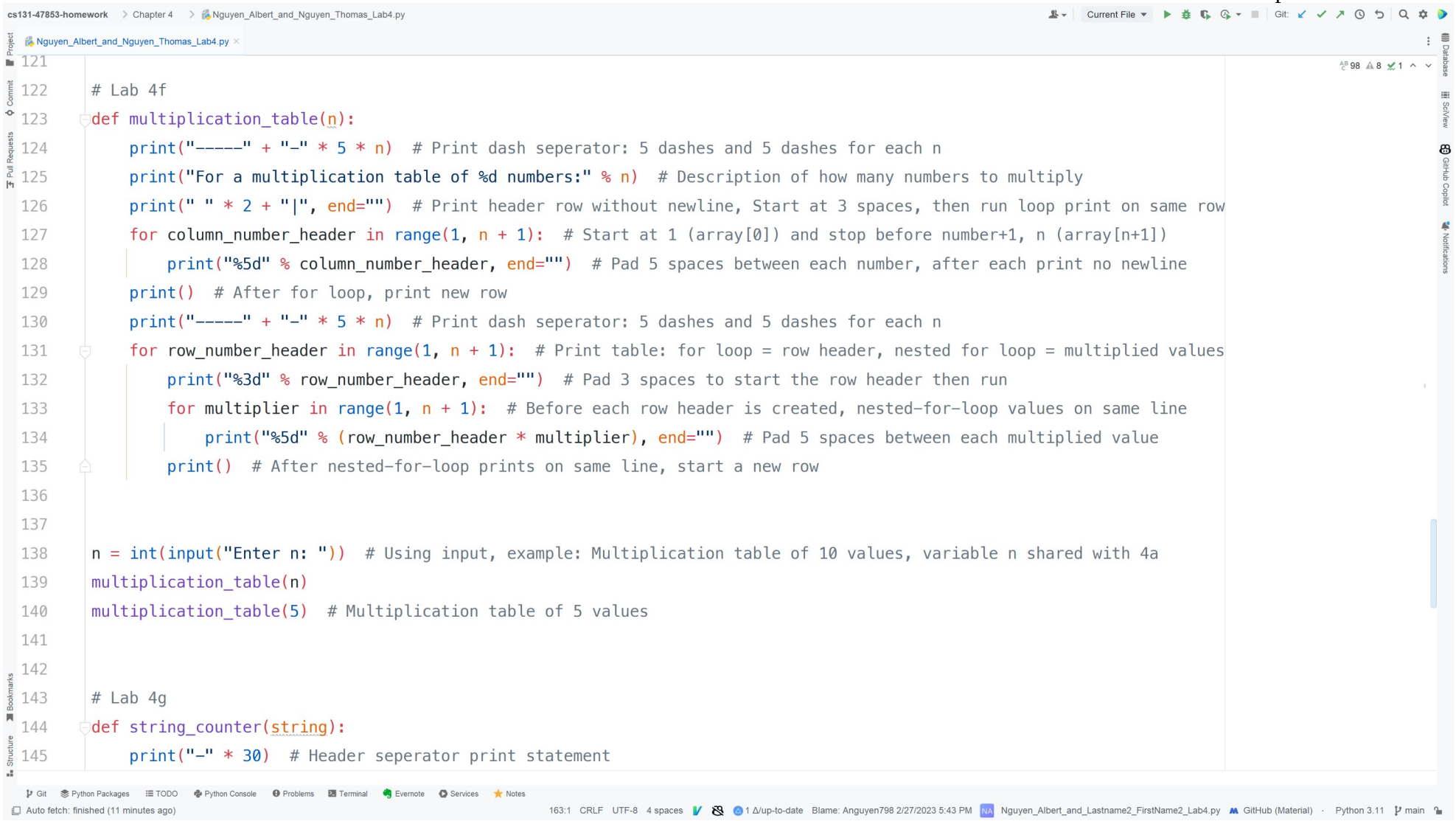
4d_Output

```python
# Lab 4e
def bracket_print(rows=3, columns=4):  # keyword parameter, default rows = 3 and columns = 4
    print("Printing %d rows and %d columns" % (rows, columns))
    for row in range(rows):  # Range function no start parameter=start[0], stop at row 3 (array[3])
        for column in range(columns):  # Outer-row-loop only runs after nested-column-loop completes
            print("[]", end="")  # Print brackets on one row, parameter end="" instead of newline "\n" after every print
        print()  # Go to next row after nested-column-loop runs and brackets are all finished printing on same row
        # Then continue outer row for loop - print statement will execute at end of every interation of outer-row-loop


bracket_print()  # Using default parameter values: 3 rows, 4 columns
bracket_print(6, 2)  # Custom parameter value: 6 rows, 2 columns


# Lab 4f
def multiplication_table(n):
    print("-----" + "-" * 5 * n)  # Print dash seperator: 5 dashes and 5 dashes for each n
    print("For a multiplication table of %d numbers:" % n)  # Description of how many numbers to multiply
    print(" " * 2 + "|", end="")  # Print header row without newline, Start at 3 spaces, then run loop print on same row
    for column_number_header in range(1, n + 1):  # Start at 1 (array[0]) and stop before number+1, n (array[n+1])
        print("%5d" % column_number_header, end="")  # Pad 5 spaces between each number, after each print no newline
    print()  # After for loop, print new row
    print("-----" + "-" * 5 * n)  # Print dash seperator: 5 dashes and 5 dashes for each n
    for row_number_header in range(1, n + 1):  # Print table: for loop = row header, nested for loop = multiplied values
```

4e_Code

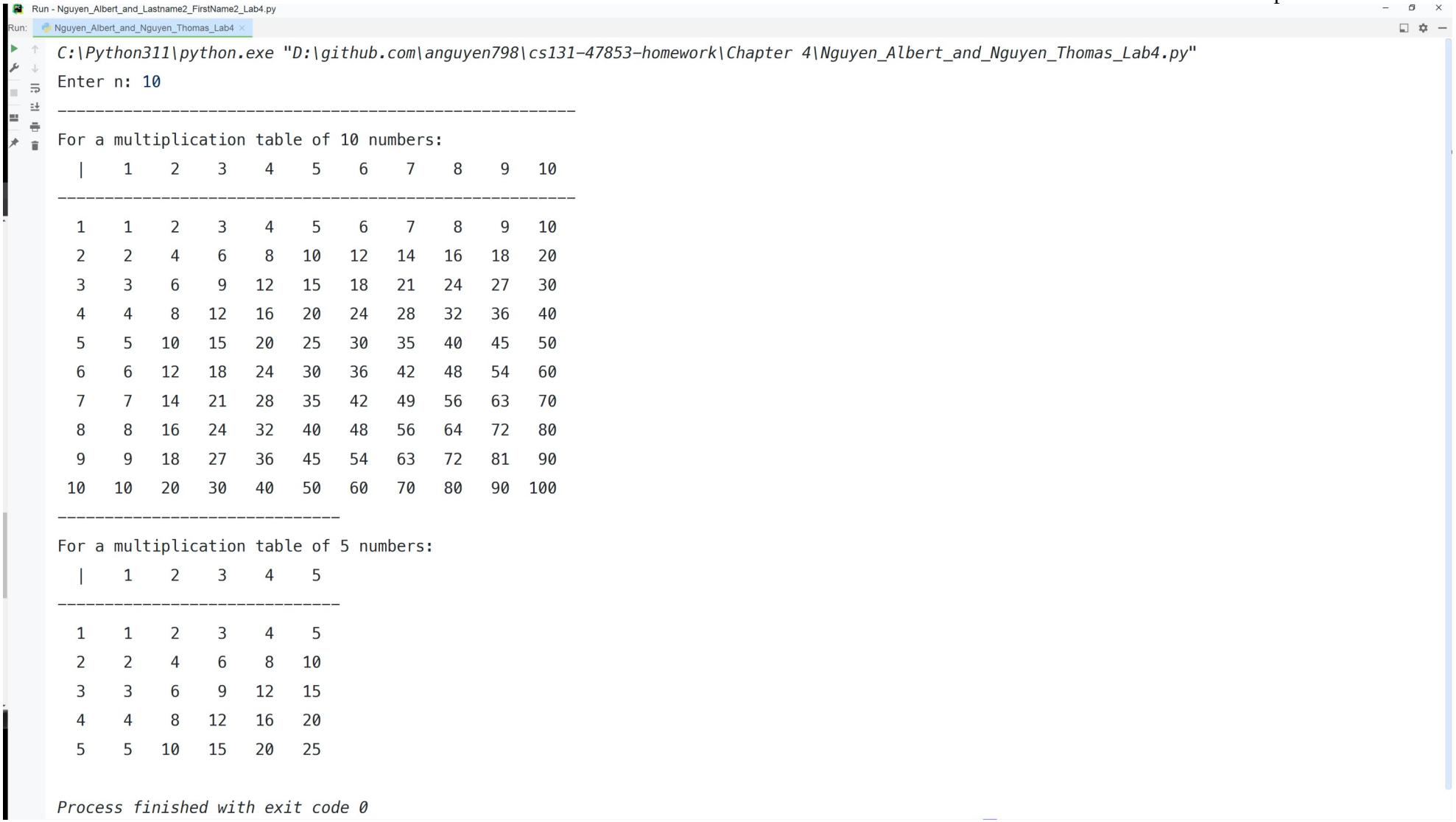

Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
Printing 3 rows and 4 columns
[][][][]
[][][][]
[][][][]
Printing 6 rows and 2 columns
[][]
[][]
[][]
[][]
[][]
[][]
Process finished with exit code 0

4e_Output

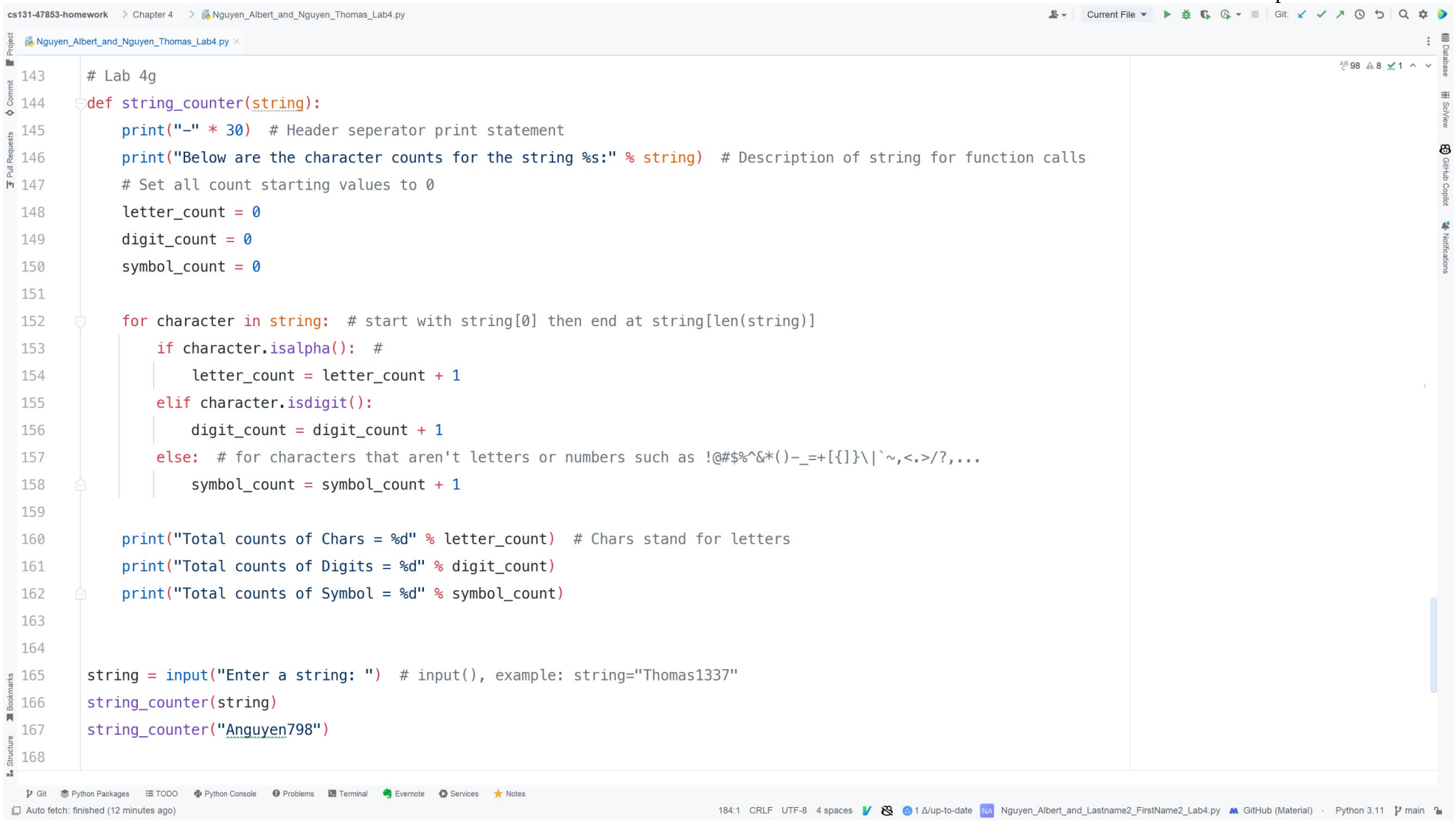


```python
# Lab 4f
def multiplication_table(n):
    print("-----" + "-" * 5 * n)  # Print dash seperator: 5 dashes and 5 dashes for each n
    print("For a multiplication table of %d numbers:" % n)  # Description of how many numbers to multiply
    print(" " * 2 + "|", end="")  # Print header row without newline, Start at 3 spaces, then run loop print on same row
    for column_number_header in range(1, n + 1):  # Start at 1 (array[0]) and stop before number+1, n (array[n+1])
        print("%5d" % column_number_header, end="")  # Pad 5 spaces between each number, after each print no newline
    print()  # After for loop, print new row
    print("-----" + "-" * 5 * n)  # Print dash seperator: 5 dashes and 5 dashes for each n
    for row_number_header in range(1, n + 1):  # Print table: for loop = row header, nested for loop = multiplied values
        print("%3d" % row_number_header, end="")  # Pad 3 spaces to start the row header then run
        for multiplier in range(1, n + 1):  # Before each row header is created, nested-for-loop values on same line
            print("%5d" % (row_number_header * multiplier), end="")  # Pad 5 spaces between each multiplied value
        print()  # After nested-for-loop prints on same line, start a new row


n = int(input("Enter n: "))  # Using input, example: Multiplication table of 10 values, variable n shared with 4a
multiplication_table(n)
multiplication_table(5)  # Multiplication table of 5 values


# Lab 4g
def string_counter(string):
    print("-" * 30)  # Header seperator print statement
```

4f_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
Enter n: 10
For a multiplication table of 10 numbers:
| 1 2 3 4 5 6 7 8 9 10
1 1 2 3 4 5 6 7 8 9 10
2 2 4 6 8 10 12 14 16 18 20
3 3 6 9 12 15 18 21 24 27 30
4 4 8 12 16 20 24 28 32 36 40
5 5 10 15 20 25 30 35 40 45 50
6 6 12 18 24 30 36 42 48 54 60
7 7 14 21 28 35 42 49 56 63 70
8 8 16 24 32 40 48 56 64 72 80
9 9 18 27 36 45 54 63 72 81 90
10 10 20 30 40 50 60 70 80 90 100
For a multiplication table of 5 numbers:
| 1 2 3 4 5
1 1 2 3 4 5
2 2 4 6 8 10
3 3 6 9 12 15
4 4 8 12 16 20
5 5 10 15 20 25
Process finished with exit code 0

4f_Output


cs131-47853-homework
Chapter 4
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Current File
Git:
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
# Lab 4g
def string_counter(string):
print("-" * 30) # Header seperator print statement
print("Below are the character counts for the string %s:" % string) # Description of string for function calls
# Set all count starting values to 0
letter_count = 0
digit_count = 0
symbol_count = 0
for character in string: # start with string[0] then end at string[len(string)]
if character.isalpha(): #
letter_count = letter_count + 1
elif character.isdigit():
digit_count = digit_count + 1
else: # for characters that aren't letters or numbers such as !@#$%^&*()-_=+[{]}\|`~,<.>/?,...
symbol_count = symbol_count + 1
print("Total counts of Chars = %d" % letter_count) # Chars stand for letters
print("Total counts of Digits = %d" % digit_count)
print("Total counts of Symbol = %d" % symbol_count)
string = input("Enter a string: ") # input(), example: string="Thomas1337"
string_counter(string)
string_counter("Anguyen798")
Git
Python Packages
TODO
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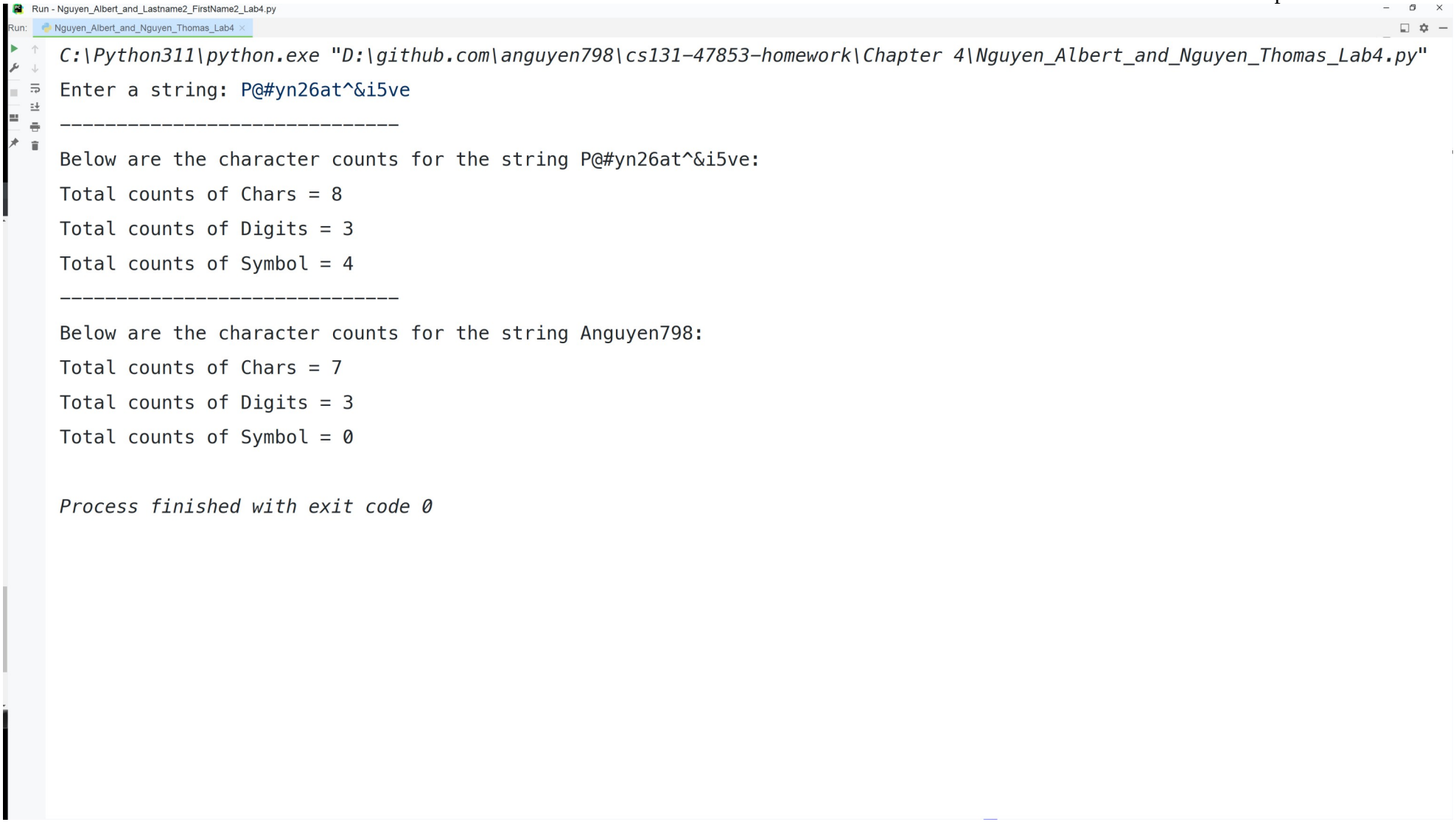
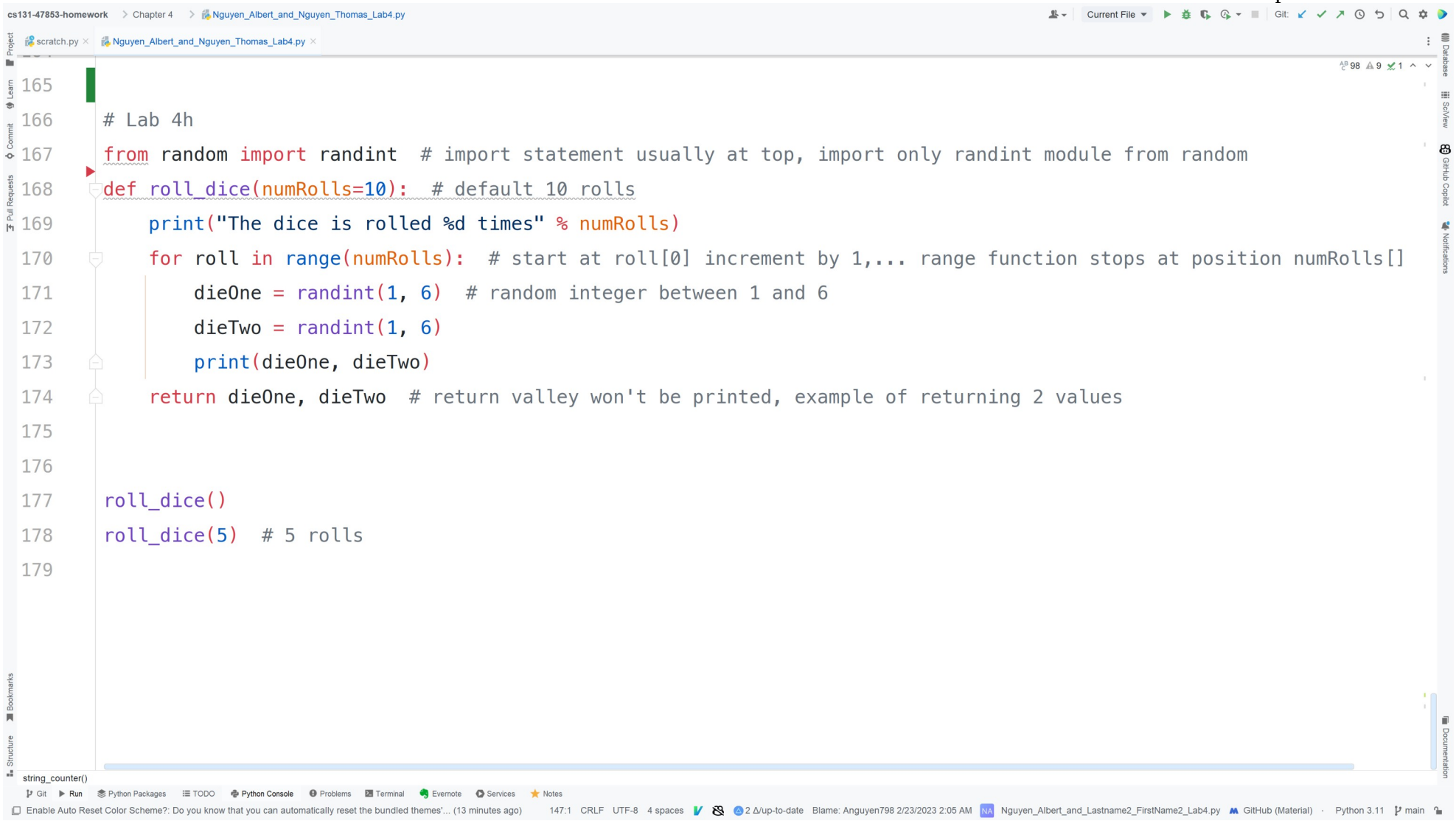
Services
Notes
Auto fetch: finished (12 minutes ago)
184:1 CRLF UTF-8 4 spaces
Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
GitHub (Material)
Python 3.11
main

4g_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
Enter a string: P@#yn26at^&i5ve
Below are the character counts for the string P@#yn26at^&i5ve:
Total counts of Chars = 8
Total counts of Digits = 3
Total counts of Symbol = 4
Below are the character counts for the string Anguyen798:
Total counts of Chars = 7
Total counts of Digits = 3
Total counts of Symbol = 0
Process finished with exit code 0

4g_Output


cs131-47853-homework
Chapter 4
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
Current File
Git:
scratch.py
Nguyen_Albert_and_Nguyen_Thomas_Lab4.py
165
166 # Lab 4h
167 from random import randint # import statement usually at top, import only randint module from random
168 def roll_dice(numRolls=10): # default 10 rolls
169   print("The dice is rolled %d times" % numRolls)
170   for roll in range(numRolls): # start at roll[0] increment by 1,... range function stops at position numRolls[]
171   dieOne = randint(1, 6) # random integer between 1 and 6
172   dieTwo = randint(1, 6)
173   print(dieOne, dieTwo)
174   return dieOne, dieTwo # return valley won't be printed, example of returning 2 values
175
176
177 roll_dice()
178 roll_dice(5) # 5 rolls
179
string_counter()
Git
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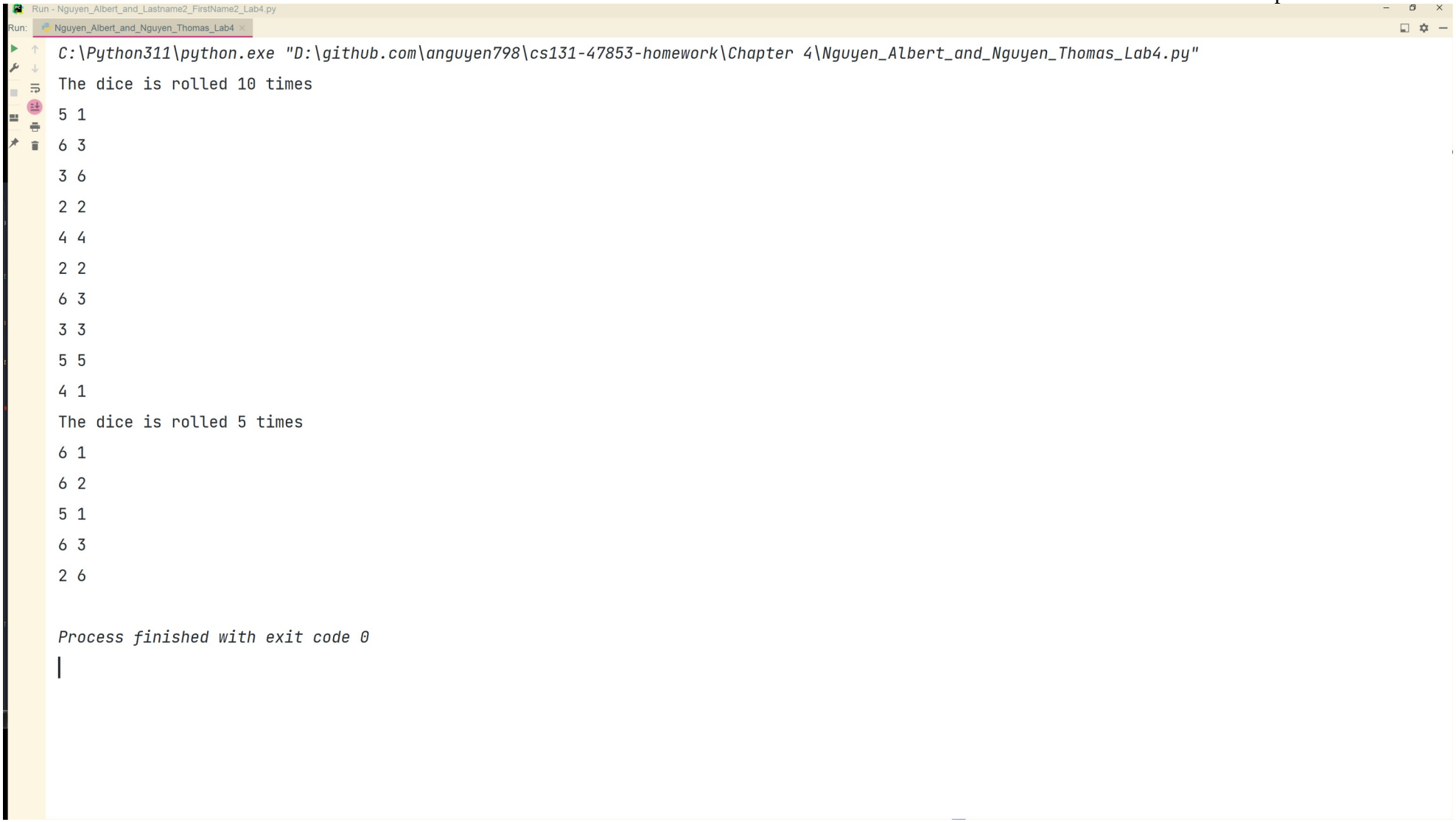
Notes
Enable Auto Reset Color Scheme?: Do you know that you can automatically reset the bundled themes'... (13 minutes ago)
147:1
CRLF
UTF-8
4 spaces
2 Δ/up-to-date
Blame: Anguyen798 2/23/2023 2:05 AM
Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
GitHub (Material)
Python 3.11
main

4h_Code


Run - Nguyen_Albert_and_Lastname2_FirstName2_Lab4.py
Run:
Nguyen_Albert_and_Nguyen_Thomas_Lab4
C:\Python311\python.exe "D:\github.com\anguyen798\cs131-47853-homework\Chapter 4\Nguyen_Albert_and_Nguyen_Thomas_Lab4.py"
The dice is rolled 10 times
5 1
6 3
3 6
2 2
4 4
2 2
6 3
3 3
5 5
4 1
The dice is rolled 5 times
6 1
6 2
5 1
6 3
2 6
Process finished with exit code 0

4h_Output