HOMEWORK 3

COP3035 – Intro Programming in Python - Summer 2024

Due date: 6/14/2024

Instructions:

- Submit your answers to questions in a single consolidated PDF file to Canvas.
- Show code and outputs that demonstrate your solutions.
- Multiple submissions are allowed; however, only the final submission made before the due date will be graded.
- No late submissions will be accepted, make sure you plan to submit at least 2hrs before the deadline to accommodate for unexpected technical difficulties.
- Once you've finished the Jupyter Notebook tasks, export the notebook as a PDF using the export feature (don't send the original .ipynb file or change the extension).
- Make sure you submit the right file to Canvas. Wrong file submissions will not be graded.
- Note: Inquiries about homework must be sent to the instructors within 3 days after grades are published.

Objective:
Enhance your Python programming and problem-solving skills through a series of predefined exercises. Remember, practice is key to mastery!

Submission:
Submit a single .pdf document in Canvas with all the sections.

Section 1: (80 points)

- Select eight exercises from the Appendix.
- Write down the number and the problem statement.
- Provide the code for your solution.
- Display the output to verify your solution.

Section 2: (20 points)

- Select 2 exercises from the Appendix different from section 1.
- Write down the number and the problem statement.
- Provide **two different solutions** to arrive at the same solution.
- Display the output to verify your solution.

Section 3: (Bonus 10 points) Engage in Peer Learning on Canvas.

- Create one exercise of your own.
- Draft a concise explanation and post it on a discussion forum in Canvas for your classmates to see.
- Then copy and paste your post in your homework PDF document to get the credit.
- **This is a great opportunity to share your creativity and learn from your peers!**

Appendix:

1. Use a loop to print numbers from 1 to 10.
2. Create a list of the first ten natural numbers multiples of 10.
3. Return the largest number from a list.
4. Return the smallest number from a list.
5. Check if a number is positive, negative, or zero.
6. Convert a string into a list of its characters.
7. Return the square number from a list of numbers.
8. Reverses a string using a for loop.
9. Check if a year is a leap year.
10. Convert a list of numbers into a list of strings.
11. Convert a list of numbers into a list of tuples by pairs.
12. Create a dictionary of 5 students and their grades.
13. List all the students in the dictionary (from 12).
14. List all the grades in the dictionary (from 12).
15. Update the grade of a student in the dictionary (from 12).
16. Replace all vowels in a paragraph with capital letters.
17. Write a program that returns the most common letter in a string.
18. Find the average of a list of numbers using for loops.
19. Create a tuple of the first five prime numbers.
20. From an arbitrary random list of numbers only print the even numbers.
21. Write a loop that prints the even numbers between 1 and 50.
22. Write a loop that prints the sum of numbers from 1 to 100.
23. Write a loop that prints the product of numbers from 1 to 20.
24. Generate the first 10 Fibonacci numbers using a loop.
25. Check if a string is a palindrome.
26. Count the vowels in a string.
27. Convert a string to uppercase without using .upper() and using for loops
28. Convert a string to lowercase without using .lower() and using for loops
29. Convert a string into a list of words without using .split() and using for loops
30. Check if a string contains only digits TIP: Use the .isdigit() method for strings.
31. Write a loop that prints only digits from a large text.
32. Check if a number exists in a given tuple.
33. Convert a tuple to a list.
34. Find the length of a tuple.
35. Write a program that checks if a string is an anagram of another.
36. Use a loop to create a dictionary of letters and their frequencies in a string.
37. Write a program that merges two dictionaries using a for loop.
38. Create a program that capitalizes the first letter of each word in a string.
39. Create a program that checks if a word exists in a string.
40. Write a program that calculates the area of a triangle given its base and height.
41. Convert a dictionary into a list of tuples.
42. Write a program that replaces a specific word in a string with another word.
43. Convert a list of tuples into a dictionary.
44. Write a program that calculates the sum of digits of a number and check if it is divisible by 3.
45. Generate a list of numbers from 1 to 100 that are not divisible by 2 and 3.
46. Create a program that finds the number of words in a string.

47. Convert a string into a dictionary where keys are characters and values are their ASCII values, using the ord() function for ASCII values.
48. Create a program that checks if all elements in a list are the same.
49. Write a program that replaces negative numbers in a list with 0.
50. Create a program that returns the list of keys in a dictionary using for loops.
51. Write a program that multiplies all numbers in a list.
52. Create a program that joins two lists by alternating their elements.
53. Write a program that checks if a string starts with a specific word.
54. Convert a dictionary into two lists: one for keys and another for values.