Data Science Workshop-1 (CSE 2195)

ASSIGNMENT-3: FUNCTIONS, CONTROL STRUCTURES(PART II)

1. In a particular jurisdiction, old format of license plates consist of three uppercase letters followed by three digits and new format consist of four digits followed by three uppercase letters. Write a program that begins by reading a string of characters from the user. Then your program should display a message indicating whether the characters are valid for an old style license plate or a new style license plate.
2. Check whether a string is palindrome or not(Without using inbuilt functions.)
3. Write a program that reads two positive integers from the user and uses Euclid's algorithm to determine and report their greatest common divisor.
4. Write a program that reads an integer from the user and displays a message indicating whether or not it is prime.
5. Write a function that determines whether or not a password is good. We will define a good password to be a one that is at least 8 characters long and contains at least one uppercase letter, at least one lowercase letter, and at least one number.
6. Write a program to input 10 numbers. Then compute and display the sum of even numbers and product of odd numbers.
7. Write a program to compute the factorial of a number.
8. Write a Python Program to Count the Number of Occurrence of a Character in String, without using str.count() method.
9. Write a program to generate prime numbers in a certain range input by the user. if (number break else: print (number)
10. Write a program to reverse the digits of a number.(You should not use any string methods.)
11. Write a program to determine an Armstrong number.
12. Write a program that prompts the user for an integer number and then prints all it's factors.
13. Write a program that prompts a number from the user and generates the Fibonacci sequence up to that number. The Fibonacci sequence is given as under: $0, 1, 1, 2, 3, 5, 8, ...$
14. Write a python program to find the area of a triangle whose three sides are given.
15. Write a python program to find out the average of a set of integers
16. Write a python program to find the sum of the digits of an integer using a while loop.
17. Write a python program to display all integers within the range 100-200 whose sum of digits is an even number.
18. Write a python program that takes two numbers as input parameters and returns True or False depending on whether they are co-primes. Two numbers are called co-prime if they don't have any common divisor other than one.

19. (FizzBuzz Game in Python)Assume you are given the number 'n,' and asked to display the string representations of all the numbers from 1 to n. However, there are some restrictions, such as:
    - If the number can be divided by 3, it will output Fizz instead of the number.
    - If the number is divisible by 5, the result will display Buzz instead of the number.
    - If the given number is divisible by both 3 and 5, Fizz Buzz will be printed instead of the number.
    - If the number cannot be divided by 3 or 5, it will be printed as a string.

*20. (Rock-Paper-Scissor)Create a simple command-line Rock-Paper-Scissor game without using any external game libraries like PyGame. In this game, the user gets the first chance to pick the option between Rock, paper, and scissors. After the computer select from the remaining two choices(randomly), the winner is decided as per the rules.
    - Rock smashes scissors.(Rock wins over scissors)
    - Paper covers rock.(Paper wins over Rock)
    - Scissors cut paper.(Scissors win over paper)

*21. (Coin flip simulation) What's the minimum number of times you have to flip a coin before you can have three consecutive flips that result in the same outcome (either all three are heads or all three are tails)? How many flips are needed on average?(Experiment by doing the experiment for 10 times). Display an H each time the outcome is heads, and a T each time the outcome is tails, with all of the outcomes for one simulation on the same line. Then display the number of flips that were needed to reach 3 consecutive occurrences of the same outcome.

*22. (Guessing game problem) Write a program to select a random number between 1 and 10 and the user has to guess it in 5 attempts. Based on the user's guess computer will give various hints if the number is high or low. When the user guess matches the number computer will print the answer along with the number of attempts.