Presidential Initiative for Artificial Intelligence and Computing (PIAIC)

https://www.piaic.org

AI Program

Python Programming Assignment 1

Quarter I:

AI-101 Fundamentals of Programming using Python

First Quarter 2019 (12 Weeks)

1. **Calculate Area of a Circle**

Write a Python program which accepts the radius of a circle from the user and compute the area.

Program Console Sample Output 1:
Input Radius: 0.5
Area of Circle with radius 0.5 is 0.7853981634

References:
https://www.mathsisfun.com/geometry/circle-area.html

2. **Check Number either positive, negative or zero**

Write a Python program to check if a number is positive, negative or zero

Program Console Sample Output 1:
Enter Number: -1
Negative Number Entered

Program Console Sample Output 2:
Integer: 3
Positive Number Entered

Program Console Sample Output 3:
Integer: 0
Zero Entered

3. **Divisibility Check of two numbers**

Write a Python program to check whether a number is completely divisible by another number. Accept two integer values form the user

Program Console Sample Output 1:
Enter numerator: 4
Enter Denominator: 2
Number 4 is Completely divisible by 2

Program Console Sample Output 2:
Enter numerator: 7

Enter Denominator: 4
Number 7 is not Completely divisible by 4

4. **Days Calculator**

Write a Python program to calculate number of days between two dates

Program Console Output:
Enter a date in (dd/mm/yy) format: 12/12/2018
Enter a date in (dd/mm/yy) format: 16/12/2018
There are 4 days in between 12/12/2018 and 16/12/18

5. **Calculate Volume of a sphere**

Write a Python program to get the volume of a sphere, please take the radius as input from user

Program Console Output:
Enter Radius of Sphere: 1
Volume of the Sphere with Radius 1 is 4.18

Reference:
https://keisan.casio.com/exec/system/1223372883

6. **Copy string n times**

Write a Python program to get a string which is n (non-negative integer) copies of a given string.

Program Console Output:
Enter String: Hi
How many copies of String you need: 4
4 Copies of Hi are HiHiHiHi

7. **Check if number is Even or Odd**

Write a Python program to find whether a given number (accept from the user) is even or odd, print out an appropriate message to the user

Program Console Output 1:
Enter Number: 4
4 is Even

Program Console Output 2:
Enter Number: 9
9 is Odd

8. **Vowel Tester**

Write a Python program to test whether a passed letter is a vowel or not

Program Console Output 1:
Enter a character: A
Letter A is Vowel

Program Console Output 2:
Enter a character: e
Letter e is Vowel

Program Console Output 2:
Enter a character: N
Letter N is not Vowel

9. **Triangle area**

Write a Python program that will accept the base and height of a triangle and compute the area

Program Console Sample 1:
Enter magnitude of Triangle base: 4
Enter Magnitude of Triangle Height: 4
Area of a Triangle with Height 4 and Base 4 is 8

Reference:
https://www.mathgoodies.com/lessons/vol1/area_triangle

10. **Calculate Interest**

Write a Python program to compute the future value of a specified principal amount, rate of interest, and a number of years

Program Console Sample 1:
Please enter principal amount: 10000
Please Enter Rate of interest in %: 0.1
Enter number of years for investment: 5
After 5 years your principal amount 10000 over an interest rate of 0.1 % will be 16105.1

11. **Euclidean distance**

Write a Python program to compute the distance between the points (x1, y1) and (x2, y2).

Program Console Sample 1:
Enter Co-ordinate for x1: 2
Enter Co-ordinate for x2: 4
Enter Co-ordinate for y1: 4
Enter Co-ordinate for y2: 4
Distance between points (2, 4) and (4, 4) is 2

Reference:
https://en.wikipedia.org/wiki/Euclidean_distance

12. **Feet to Centimeter Converter**

Write a Python program to convert height in feet to centimetres.

Program Console Sample 1:
Enter Height in Feet: 5
There are 152.4 Cm in 5 ft

Reference:

https://www.rapidtables.com/convert/length/feet-to-cm.html

13. **BMI Calculator**

Write a Python program to calculate body mass index

Program Console Sample 1:
Enter Height in Cm: 180
Enter Weight in Kg: 75
Your BMI is 23.15

Reference:

https://www.thecalculatorsite.com/articles/health/bmi-formula-for-bmi-calculations.php

14. Sum of n Positive Integers

Write a python program to sum of the first n positive integers

Program Console Sample 1:
Enter value of n: 5
Sum of n Positive integers till 5 is 15

15. Digits Sum of a Number

Write a Python program to calculate the sum of the digits in an integer

Program Console Sample 1:
Enter a number: 15
Sum of 1 + 5 is 6

Program Console Sample 2:
Enter a number: 1234
Sum of 1 + 2 + 3 + 4 is 10

16. Decimal to Binary Converter

Write a Python program to convert an decimal integer to binary

Program Console Sample 1:
Enter a decimal number: 5
Binary Representation of 5 is 101

Program Console Sample 2:
Enter a decimal number: 32
Binary Representation of 32 is 100000

Reference:

https://www.rapidtables.com/convert/number/decimal-to-binary.html

17. Binary to Decimal Converter

Write a program to convert binary number to Decimal number

Program Console Sample 1:
Enter a Binary number: 1101
Decimal Representation of 1101 is 13

Program Console Sample 2:
Enter a Binary number: 1001
Decimal Representation of 1001 is 9

Reference:

https://www.rapidtables.com/convert/number/binary-to-decimal.html

18. Vowel and Consonants Counter

Input a text and count the occurrences of vowels and consonant

Program Console Sample 1:
Enter text: QuickBrownFoxJumpsovertheDog

Vowels: 9
Consonants: 19

19. Palindrome tester

Write a program to check whether given input is palindrome or not

Program Console Sample 1:
Enter text: AHA
Text AHA is Palindrome

Program Console Sample 2:
Enter text: Hello
Text Hello is not a Palindrome

20. Count Alphabets, Numbers and Special Characters

Write a Python program that accepts a string and calculate the number of digits and letters

Program Console Sample 1:
Enter text: Python 3.2
Numbers = 2
Alphabets = 6
Special Characters = 1
Spaces = 1

21. Write a Python program to construct the following pattern

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

22. Write a Python program to construct the following pattern

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

23. Write a Python program to construct the following pattern

```
1
22
333
4444
55555
666666
7777777
88888888
999999999
```