

**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>

1. **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

1. **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

1. **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

1. **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>

1. **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

1. **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

1. **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

1. **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>

1. **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

1. **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>

1. **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>

1. **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>

1. **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

1. **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

1. **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>

1. **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>

1. **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

1. **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

1. **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

1. **Write a Python program to construct the following pattern**

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

1. **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

1. **Write a Python program to construct the following pattern**

1

22

333

4444

55555

666666

7777777

88888888

999999999