

CSE101 – Introduction to Computers

Python Programming Assignment # 1

(25 points, Submission due date: 18 March 2019)

Instructions

For each of the following problems, create an error free efficient Python program. Each program should be submitted in a separate Python file respectively that follows a particular naming convention. (E.g. The Python program for Question 1 should be in .py file with name Assign1Answer1.py. The Python program for question 2 should be in .py file with name Assign1Answer2.py. Include one or two input cases in your program. The program should execute properly in PyCharm).

Problem 1:

(5 points)

Write a python program with a function that will take as input the temperature in Celsius from the user and will convert and display temperature values from Celsius to Fahrenheit, using the equation $F = C * 9/5 + 32$.

>>>Enter temperature in Celsius: 10

10 Celsius = 50 Fahrenheit

Problem 2:

(5 points)

Distance between Seoul and Busan is 325 kms. Write a Python program with a function that does the following:

Given as input number of seconds to travel 1 km of distance, return the number of hours required to travel between Seoul and Busan (with a precision of two decimal points).

>>>Enter number of seconds to travel 1 km: 70

Time required to travel from Seoul to Busan: 6.32 hours

Problem 3:

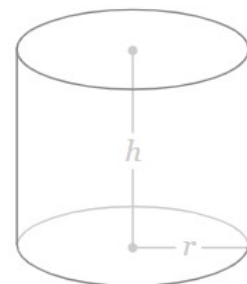
(7 points)

A surface area of a closed cylinder is calculated using a formula $2\pi rh + 2(\pi r^2)$ where r is the radius and h is the height of cylinder respectively. Write a Python function that takes as input radius and height of a cylinder and returns its surface area. The radius and height inputs will be given by the program user.

>>>Enter radius of a cylinder (in cm): 5

>>>Enter height of a cylinder (in cm): 10

The surface area of a cylinder is: 471.24 sq. cm



Problem 4:

(8 points)

Write a python program with a function named pmt that will compute the amount of a monthly payment on a loan with a precision of two decimal places. The three parameters of the function should be amt, the initial loan amount; rate, the annual interest rate; and yrs, the number of years before the loan is paid off. The algorithm for computing the payment is as follows. First, calculate a value r using the formula $r = \text{rate}/100/12$. Then calculate a value $p = 12 * \text{yrs}$. The formula for the payment is then:

$$(\text{amt} * r) / (1 - (1 / (1 + r) ** p))$$

The first test asks for the monthly mortgage on a \$800,000 home with a 4.5% mortgage rate on a 20 years loan:

>>> Enter loan amount in \$: 800000

>>> Enter yearly mortgage rate in %: 4.5

>>> Enter the loan term in years: 20

The emi is: \$5061.20