Python Activity 1: Basic Problems

1)Write a program that reads a positive integer, n, from the user and then displays the

sum of all of the integers from 1 to n. The sum of the first n positive integers can be

computed using the formula:

sum = ((n)(n + 1)) / 2

2)Create a program that reads two integers, a and b, from the user. Your program should

compute and display:

i)The sum of a and b

ii)The difference when b is subtracted from a

iii)The product of a and b

iv)The quotient when a is divided by b

v)The remainder when a is divided by b

vi)The result of log 10 a

vii)The result of a b

1. Write a program that begins by reading a radius, r , from the user. The program will continue by computing and displaying the area of a circle with radius r and the volume of a sphere with radius r . Use the pi constant in the math module in your calculations.

4)The area of a triangle can be computed using the following formula, where b is the

length of the base of the triangle, and h is its height:

Area = b × h/2

Write a program that allows the user to enter values for b and h. The programshould then compute and display the area of a triangle with base length b and height h.

5)Write a program that begins by reading a temperature from the user in degrees Celsius. Then your program should display the equivalent temperature in degrees Fahrenheit and degrees Kelvin. The calculations needed to convert between different

units of temperature can be found on the internet.

1. Develop a program that reads a four-digit integer from the user and displays the sum of the digits in the number. For example, if the user enters 3141 then your program should display

3 + 1 + 4 + 1 = 9.

7)Create a program that reads three integers from the user and displays them in sorted order (from smallest to largest). Use the min and max functions to find the smallest and largest values. The middle value can be found by computing the sum of all three

values, and then subtracting the minimum value and the maximum value.

8)Create a program that reads a duration from the user as a number of days, hours, minutes, and seconds. Compute and display the total number of seconds represented

by this duration.

9)The volume of a cylinder can be computed by multiplying the area of its circular base by its height. Write a program that reads the radius of the cylinder, along with its height, from the user and computes its volume. Display the result rounded to one

decimal place.

1. Write a program that asks the user to enter his or her name. The program should respond with a message that says hello to the user, using his or her name.

List Problems:

1. Write a program that reads integers from the user and stores them in a list. Your program should continue reading values until the user enters 0. Then it should display all of the values entered by the user (except for the 0) in order from smallest to largest, with one value appearing on each line. Use either the sort method or the sorted function to sort the list.

2)Write a program that reads integers from the user and stores them in a list. Use 0 as a sentinel value to mark the end of the input. Once all of the values have been read your program should display them (except for the 0) in reverse order, with one value

appearing on each line.

3)In this exercise, you will create a program that reads words from the user until the user enters a blank line. After the user enters a blank line your program should dis-play each word entered by the user exactly once. The words should be displayed in

the same order that they were entered.

For example, if the user enters:

first

second

first

third

second

then your program should display:

first

second

third

3)Create a program that reads integers from the user until a blank line is entered. Once all of the integers have been read your program should display all of the negative numbers, followed by all of the zeros, followed by all of the positive numbers. Within

each group the numbers should be displayed in the same order that they were entered by the user. For example, if the user enters the values 3, -4, 1, 0, -1, 0, and -2 then your program should output the values -4, -1, -2, 0, 0, 3, and 1. Your program should display each value on its own line.

4)Write a program that reads numbers from the user until a blank line is entered. Your program should display the average of all of the values entered by the user. Then the program should display all of the below average values, followed by all of the average values (if any), followed by all of the above average values. An appropriate

label should be displayed before each list of values.

5)In order to win the top prize in a particular lottery, one must match all 6 numbers on his or her ticket to the 6 numbers between 1 and 49 that are drawn by the lottery organizer. Write a program that generates a random selection of 6 numbers for a lottery ticket. Ensure that the 6 numbers selected do not contain any duplicates.

Display the numbers in ascending order.