Graded Tasks

Lab Task 1

(*Convert Celsius to Fahrenheit*) Draw a flowchart that reads a Celsius degree from the console and converts it to Fahrenheit and displays the result. The formula for the conversion is as follows:

```
fahrenheit = (9 / 5) * celsius + 32
```

Here is a sample run of the program:

```
Enter a degree in Celsius: 43 Enter
43 Celsius is 109.4 Fahrenheit
```

Lab Task 2

(*Compute the volume of a cylinder*) Draw a flowchart that reads in the radius and length of a cylinder and computes the area and volume using the following formulas:

```
area = radius * radius * π
volume = area * length
```

Here is a sample run:

```
Enter the radius and length of a cylinder: 5.5, 12 Enter
The area is 95.0331
The volume is 1140.4
```

Lab Task 3

(*Sum the digits in an integer*) Draw a flowchart that reads an integer between 0 and 1000 and adds all the digits in the integer. For example, if an integer is 932, the sum of all its digits is 14. (Hint: Use the % operator to extract digits, and use the // operator to remove the extracted digit. For instance, 932 % 10 = 2 and 932 // 10 = 93)

Here is a sample run:

```
Enter a number between 0 and 1000: 999 Enter
The sum of the digits is 27
```

Lab Task 4

(*Geometry: area of a triangle*) Write a program that prompts the user to enter the three points (x1, y1), (x2, y2), and (x3, y3) of a triangle and displays its area. The formula for computing the area of a triangle is

$$s = (side1 + side2 + side3) / 2$$

$$area = \sqrt{s(s - side1)(s - side2)(s - side3)}$$

Here is a sample run:

```
Enter three points for a triangle: 1.5, -3.4, 4.6, 5,
  9.5, -3.4 Enter
The area of the triangle is 33.6
```

Lab Task 5

A painter wants to know the amount of paint needed to paint only the walls and the interior side of the door in a room. The chosen paint covers 100 square feet per gallon. There are two windows. Test the problem with the following data:
The room is 12 feet long, 10 feet wide, and 8 feet tall.
The two windows are 5 by 3 feet, and 6 by 2 feet, respectively.

Lab Task 6

One of the jobs that Joe Roberts has been given at work is to order special paper for a report for a board meeting. The paper comes in reams of 500 sheets. He always makes five more copies than the number of people that will be there. Joe wants to know how many reams of paper he needs for a meeting. He can order only whole, not partial, reams. Assume the required number of pages will not equal an exact number of reams. Test your solution with the following data:
The report is 140 pages long.
There will be 25 people at the meeting.