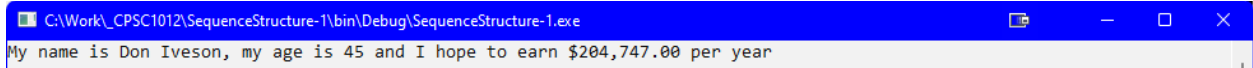


# Sequence Structure Programming Exercises

1. Write a program that displays the message with your name, your age, and your expected annual salary. Here is a sample run:

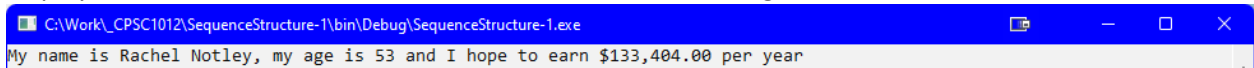


```
C:\Work_CPSC1012\SequenceStructure-1\bin\Debug\SequenceStructure-1.exe
My name is Don Iveson, my age is 45 and I hope to earn $204,747.00 per year
```

Modify the program to declare the following:

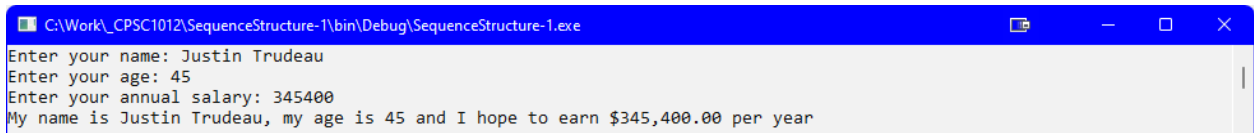
- A **string** variable named **name**
- An **int** variable named **age**
- A **double** variable named **annualPay**

Store your age, name, and desired annual income as literals in these variables. The program should display these values on the screen in a manner like the following:



```
C:\Work_CPSC1012\SequenceStructure-1\bin\Debug\SequenceStructure-1.exe
My name is Rachel Notley, my age is 53 and I hope to earn $133,404.00 per year
```

Modify the program to prompt the user to enter their name, age, and annual pay. Here is a sample run:



```
C:\Work_CPSC1012\SequenceStructure-1\bin\Debug\SequenceStructure-1.exe
Enter your name: Justin Trudeau
Enter your age: 45
Enter your annual salary: 345400
My name is Justin Trudeau, my age is 45 and I hope to earn $345,400.00 per year
```

2. Write a program that reads in the radius and length of a cylinder and computes the area and volume using the formulas:

$$\begin{aligned} \text{area} &= \text{radius} \times \text{radius} \times \pi \\ \text{volume} &= \text{area} \times \text{length} \end{aligned}$$

Here is a sample run:

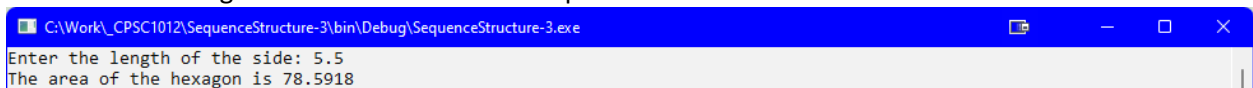


```
C:\Work_CPSC1012\SequenceStructure-2\bin\Debug\SequenceStructure-2.exe
Enter the radius of a cylinder: 5.5
Enter the length of a cylinder: 12
The area is 95.0332
The volume is 1140.3981
```

3. Write a program that prompts the user to enter the side of a hexagon and displays its area. The formula for computing the area of a hexagon is:

$$\text{area} = \frac{3\sqrt{3}}{2} s^2$$

Where **s** is the length of the side. Here is a sample run:



```
C:\Work_CPSC1012\SequenceStructure-3\bin\Debug\SequenceStructure-3.exe
Enter the length of the side: 5.5
The area of the hexagon is 78.5918
```

4. Write a program 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:



```
C:\Work_CPSC1012\SequenceStructure-4\bin\Debug\SequenceStructure-4.exe
Enter a number between 0 and 1000: 999
The sum of the digits is 27
```

5. If you know the balance and the annual percentage interest rate, you can compute the interest on the next monthly payment using the following formula:

$$\text{futureInvestmentValue} = \text{investmentValue} \times (1 + \text{monthlyInterestRate})^{\text{numberOfYears} \times 12}$$

where *monthlyInterestRate* is the *annualInterestRate* / 12 / 100.

For example, if you enter an amount 1000, annual interest rate 3.25%, and number of years 1, the future investment value is 1032.98. Here is a sample run:



```
C:\Work_CPSC1012\SequenceStructure-5\bin\Debug\SequenceStructure-5.exe
Enter the investment amount: 1000.56
Enter the annual interest rate as a percentage: 4.25
Enter the number of years: 1
Future value is $1,043.92
```