1. In many jurisdictions a small deposit is added to drink containers to encourage people to recycle them. In one particular jurisdiction, drink containers holding one liter or less have a $0.10 deposit, and drink containers holding more than one liter have a 0.25 deposit. Write a program that reads the number of containers of each size from the user. Your program should continue by computing and displaying the refund that will be received for returning those containers. Format the output so that it includes a dollar sign and two digits to the right of the decimal point.

In [1]:
```
LESS_DEPOSIT = 0.10
MORE_DEPOSIT = 0.25
less = int(input("How many containers 1 litre or less?"))
more = int(input("How many containers more than 1 litre?"))
refund = less*LESS_DEPOSIT + more* MORE_DEPOSIT
print("Your total refund will be $%.2f."% refund)
```

```
How many containers 1 litre or less?23
How many containers more than 1 litre?32
Your total refund will be $10.30.
```

1. The program that you create for this exercise will begin by reading the cost of a meal ordered at a restaurant from the user. Then your program will compute the tax and tip for the meal. Use your local tax rate when computing the amount of tax owing. Compute the tip as 18 percent of the meal amount (without the tax). The output from your program should include the tax amount, the tip amount, and the grand total for the meal including both the tax and the tip. Format the output so that all of the values are displayed using two decimal places

In [9]:
```
TAX_RATE = 0.05
TIP_RATE = 0.18
cost = float(input("Enter the cost of the meal: "))
# Compute the tax and the tip
tax = cost * TAX_RATE
tip = cost * TIP_RATE
total = cost + tax + tip
print(total)
```

```
Enter the cost of the meal: 23
28.29
```

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

In [10]:
```
n = int(input("Enter a positive integer: "))
sm = n*(n+1)/2
print("The sum of the first", n, "positive integers is", sm)
```

```
Enter a positive integer: 34
The sum of the first 34 positive integers is 595.0
```

4.Pretend that you have just opened a new savings account that earns 4 percent interest per year. The interest that you earn is paid at the end of the year, and is added to the balance of the savings account. Write a program that begins by reading the amount of money deposited into the account from the user. Then your program should compute and display the amount in the savings account after 1, 2, and 3 years. Display each amount so that it is rounded to 2 decimal places.

In [11]:
```
def compound_interest(principal, rate, time):

    # Calculates compound interest
    Amount = principal * (pow((1 + rate / 100), time))
    CI = Amount - principal
    print("Compound interest is", CI)


# Driver Code
#Taking input from user.
principal = int(input("Enter the principal amount: "))
rate = int(input("Enter rate of interest: "))
time = int(input("Enter time in years: " ))
#Function Call
compound_interest(principal,rate,time)
```

```
Enter the principal amount: 7500
Enter rate of interest: 4
Enter time in years: 2
Compound interest is 612.0000000000009
```

1. In the United States, fuel efficiency for vehicles is normally expressed in miles-per-gallon (MPG). In Canada, fuel efficiency is normally expressed in liters-per-hundred kilometers (L/100km). Use your research skills to determine how to convert from MPG to L/100km.Then create a program that reads a value from the user in American units and displays the equivalent fuel efficiency in Canadian units.

In [ ]:
```

```

1. The surface of the Earth is curved, and the distance between degrees of longitude varies with latitude. As a result, finding the distance between two points on the surface of the Earth is more complicated than simply using the Pythagorean theorem.

In [ ]:
```

```

1. Many people think about their height in feet and inches, even in some countries that primarily use the metric system. Write a program that reads a number of feet from the user, followed by a number of inches. Once these values are read, your program should compute and display the equivalent number of centimeters.

In [16]:
```
IN_PER_FT = 12
CM_PER_IN = 2.54
print("Enter your height:")
feet = float(input("Number of feet:"))
inches = float(input("Number of inches:"))
cm = ((feet * IN_PER_FT + inches)*CM_PER_IN)/2
print("Your height in centimeters is:", cm)
```

```
Enter your height:
Number of feet:5.7415
Number of inches:68.8976
Your height in centimeters is: 175.00041199999998
```

1. Write a program that begins by reading a radius, , from the user. The program will continue by computing and displaying the area of a circle with radius and the volume of a sphere with radius . Use

the pi constant in the math or numpy modules in your calculations. Use Internet to look up the necessary formula if you don't have them memorized.

In [35]:
```
import math
import numpy as np
pi = math.pi

r = float(input ("Enter a radius of circle:"))
area = pi*r**2
volume = 4/3*pi*r**3
print("The area is:", area)
print("The volume is:", volume)
```

```
Enter a radius of circle:4
The area is: 50.26548245743669
The volume is: 268.082573106329
```

1. Python's time module includes several time-related functions. One of these is the asctime function which reads the current time from the computer's internal clock and returns it in a human-readable format. Use this function to write a program that displays the current time and date. Your program will not require any input from the user

In [37]:
```
from datetime import datetime

# datetime object containing current date and time
now = datetime.now()

print("now =", now)

# dd/mm/YY H:M:S
dt_string = now.strftime("%d/%m/%Y %H:%M:%S")
print("date and time =", dt_string)
```

```
now = 2023-03-08 17:53:24.825522
date and time = 08/03/2023 17:53:24
```

In [40]:
```
import time
local = time.localtime()
print("Date and time: {} ".format(time.asctime(local)))
```

```
Date and time: Wed Mar  8 18:02:22 2023
```

1. When the wind blows in cold weather, the air feels even colder than it actually is because the movement of the air increases the rate of cooling for warm objects, like people. This effect is known as wind chill.

In 2001, Canada, the United Kingdom and the United States adopted the following formula for computing the wind chill index. Within the formula is the air temperature in degrees Celsius and is the wind speed in kilometers per hour. A similar formula with different constant values can be used for temperatures in degrees Fahrenheit and wind speeds in miles per hour.

Write a program that begins by reading the air temperature and wind speed from the user. Once these values have been read your program should display the wind chill index rounded to the closest integer.

The wind chill index is only considered valid for temperatures less than or equal to 10 degrees Celsius and wind speeds exceeding 4.8 kilometers per hour.

In [41]:
```
WC_OFFSET = 13.12
WC_FACTOR1 = 0.6215
WC_FACTOR2 = -11.37
WC_FACTOR3 = 0.3956
WC_EXPONENT = 0.16
temp = float(input("Air temperature (degree Celsius): "))
speed = float(input("Wind speed (kilometers per hour): "))
wci = WC_OFFSET + \
WC_FACTOR1 * temp+ \
WC_FACTOR2 *speed **WC_EXPONENT +\
WC_FACTOR3 * temp*speed**WC_EXPONENT
print("The wind chill index is", round(wci))
```

```
Air temperature (degree Celsius): 8
Wind speed (kilometers per hour): 5
The wind chill index is 7
```

1. Develop a program that reads a four-digit integer from the user and displays the sum of its digits. For example, if the user enters 3141 then your program should display 3 + 1 + 4 + 1 = 9.

In [50]:
```
n = int(input("Enter supposed number:"))
def getSum(n):

    sum = 0
    for digit in str(n):
      sum += int(digit)
    return sum

print(getSum(n))
```

```
Enter supposed number:9999999999
90
```

1. 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.

In [51]:
```
a = int(input("Enter the first number: "))
b = int(input("Enter the second number: "))
c = int(input("Enter the third number: "))
mn = min(a,b,c)
mx = max(a,b,c)
md = a+b+c-mn-mx
print("The numbers in sorted order are:")
print(" ", mn)
print(" ",md)
print(" ",mx)
```

```
Enter the first number: 23
Enter the second number: 43
Enter the third number: 76
The numbers in sorted order are:
  23
  43
  76
```

1. A bakery sells loaves of bread for $3.49 each. Day old bread is discounted by 60 percent. Write a program that begins by reading the number of loaves of day old bread being purchased from the user.

Then your program should display the regular price for the bread, the discount because it is a day old, and the total price. Each of these amounts should be displayed on its own line with an appropriate label. All of the values should be displayed using two decimal places, and the decimal points in all of the numbers should be aligned when reasonable values are entered by the user.

In [53]:
```
BREAD_PRICE = 3.49
DISCOUNT_RATE = 0.60
num_loaves = int(input("Enter the number of day old loaves:"))
regular_price = num_loaves * BREAD_PRICE
discount = regular_price*DISCOUNT_RATE
total = regular_price - discount
print("Regular price: %5.2f" %regular_price)
print("Discount: %5.2f"      % discount)
print("Total: %5.2f"         %total)
```

```
Enter the number of day old loaves:3
Regular price: 10.47
Discount:  6.28
Total:  4.19
```

In [ ]:

In [ ]:

In [ ]:

In [ ]: