Python CH2 Task

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Numbers

69. Corn Production Suppose each acre of farmland produces 18 tons of corn. How many tons of corn can be grown on a 30-acre farm?

```python
tonsPerAcre = 18
acres = 30
totalTonsProduced = tonsPerAcre * acres
print(totalTonsProduced)
```

70. Projectile Motion Suppose a ball is thrown straight up in the air with an initial velocity of 50 feet per second and an initial height of 5 feet. How high will the ball be after 3 seconds? Note: The height after t seconds is given by the expression $-16t^2 + v_0t + h_0$, where v_0 is the initial velocity and h_0 is the initial height.

```python
initialVelocity = 50
initialHeight = 5
t = 3
height = (-16 * (t ** 2)) + (initialVelocity * t) + initialHeight
print(height)
```

71. Distance Covered If a car left the airport at 5 o'clock and arrived home at 9 o'clock, what was the distance covered? Note: Speed of the car is 81.34 km per hour.

```python
elapsedTime = 9 - 5
speed=81.34
distance = elapsedTime*speed
print(distance)
```

72. Gas Mileage A motorist wants to determine her gas mileage. At 23,352 miles (on the odometer) the tank is filled. At 23,695 miles the tank is filled again with 14 gallons. How many miles per gallon did the car average between the two fillings?

```
miles = 23695 - 23352
gallonsUsed = 14
milesPerGallon = miles / gallonsUsed
print(milesPerGallon)
```

73. Power Usage A survey showed that the average monthly electricity consumption for a city was 750 million watts per month. What was the daily power consumption in watts of each resident? Note: The city has a population of about 5 million people.

```
monthlyavg=750000000
dailyavg=monthlyavg/30
pop=5000000
dailycon= dailyavg/pop
print(dailycon)
```

74. Square Deck José is building a square deck at the back of his house. José has a building permit for a 432-square-foot deck. How long will each side of the deck be?

```
permit=432
side=432/4
print(side,'foot')
```

75. Banks A bank offers 8.7% interest per year on all savings accounts. If a savings account initially contains $1000, how much money will the account hold two years later?

```
interest=.087
acc=1000
newacc=acc+(acc*interest)
print(newacc)
```

97. Distance from a Storm If n is the number of seconds between lightning and thunder, the storm is n/5 miles away. Write a program that requests the number of seconds between lightning and thunder and reports the distance from the storm rounded to two decimal places. See Fig. 2.7.

```python
prompt = "Enter number of seconds between lightning and thunder: "
numberOfSeconds = float(input(prompt))
distance = numberOfSeconds / 5
distance = round(distance, 2)
print("Distance from storm:", distance, "miles")
```

98. Training Heart Rate The American College of Sports Medicine recommends that you maintain your training heart rate during an aerobic workout. Your training heart rate is computed as .7 * (220 - a) + .3 * r, where a is your age and r is your resting heart rate (your pulse when you first awaken). Write a program to request a person's age and resting heart rate and display their training heart rate. See Fig. 2.8

```python
age = float(input("Enter your age: "))
rhr = int(input("Enter your resting heart rate: "))
thr = .7 * (220 - age) + (.3 * rhr)
print("Training heart rate:", round(thr), "beats/minute.")
```

101. Baseball Write a program to request the name of a baseball team, the number of games won, and the number of games lost as input, and then display the name of the team and the percentage of games won. See Fig. 2.11.

```python
name = input("Enter name of team: ")
gamesWon = int(input("Enter number of games won: "))
gamesList = int(input("Enter number of games lost: "))
percentageWon = round(100 * (gamesWon) / (gamesWon + gamesList), 1)
print(name, "won", str(percentageWon) + '%', "of their games.")
```

108. Marketing Terms The markup of an item is the difference between its selling price and its purchase price. Two other marketing terms are percentage markup = markup purchase price and profit margin = markup selling price where the quotients are expressed as percentages. Write a program that computes the markup, percentage markup, and profit margin of an item. See Fig. 2.18. Notice that when the purchase price is tripled, the percentage markup is 200%

```python
purchasePrice = float(input("Enter purchase price: "))
sellingPrice = float(input("Enter selling price: "))
markup = sellingPrice - purchasePrice
percentageMarkup = 100 * (markup / purchasePrice)
profitMargin = 100 * (markup / sellingPrice)
print("Markup:", '$' + str(round(markup, 2)))
print("Percentage markup:", str(round(percentageMarkup, 2)) + '%')
print("Profit margin:", str(round(profitMargin, 2)) + '%')
```

109. Analyze a Number Write a program that requests a positive number containing a decimal point as input and then displays the number of digits to the left of the decimal point and the number of digits to the right of the decimal point. See Fig. 2.19

```python
number = input("Enter number: ")
decimalPoint = number.find('.')
print(decimalPoint, "digits to left of decimal point")
print(len(number) - decimalPoint - 1, "digits to right of decimal
point")
```

110. Word Replacement Write a program that requests a sentence, a word in the sentence, and another word and then displays the sentence with the first word replaced by the second. See Fig. 2.20

```python
sentence = input("Enter a sentence: ")
word1 = input("Enter word to replace: ")
word2 = input("Enter replacement word: ")
location = sentence.find(word1)
newSentence = sentence[:location] + word2 + sentence[location +
len(word1):]
print(newSentence)
```

111. Convert Months Write a program that asks the user to enter a whole number of months as input and then converts that amount of time to years and months. See Fig. 2.21. The program should use both integer division and the modulus operator.

```python
numberOfMonths = int(input("Enter number of months: "))
years = numberOfMonths // 12
months = numberOfMonths % 12
print(numberOfMonths, "months is", years, "years and", months,
"months.")
```

<mark>Output</mark>

53. Server's Tip Calculate the amount of a server's tip, given the amount of the bill and the percentage tip as input. See Fig. 2.23

```python
bill = float(input("Enter amount of bill: "))
percentage = float(input("Enter percentage tip: "))
tip = (bill * percentage) / 100
print("Tip: ${0:.2f}".format(tip))
```

54. Income Request a company's annual revenue and expenses as input, and display the company's net income (revenue minus expenses). See Fig. 2.24.

```python
revenue = eval(input("Enter revenue: "))
expenses = eval(input("Enter expenses: "))
netIncome = revenue - expenses
print("Net income: ${0:,.2f}".format(netIncome))
```

55. Change in Salary A common misconception is that if you receive a 10% pay raise and later a 10% pay cut, your salary will be unchanged. Request a salary as input and then display the salary after receiving a 10% pay raise followed by a 10% pay cut. The program also should display the percentage change in salary. See Fig. 2.25.

```python
beginningSalary = float(input("Enter beginning salary: "))
raisedSalary = 1.1 * beginningSalary
cutSalary = .9 * raisedSalary
percentChange = (cutSalary - beginningSalary) / beginningSalary
print("New salary: ${0:,.2f}".format(cutSalary))
print("Change: {0:.2%}".format(percentChange))
```

Lists, tuples and files

101. Analyze a Sentence Write a program that counts the number of words in a sentence input by the user. See Fig. 2.

```python
sentence = input("Enter a sentence: ")
L = sentence.split(" ")
print("Number of words:", len(L))
```

102. Analyze a Sentence Write a program that displays the first and last words of a sentence input by the user. See Fig. 2.31. Assume that the only punctuation is a period at the end of the sentence.

```python
sentence = input("Enter a sentence: ")
L = sentence.split()
print("First word:", L[0])
print("Last word:", L[-1][:-1])
```

103. Name Write a program that requests a two-part name and then displays the name in the form "lastName, firstName". See Fig. 2.32.

```python
name = input("Enter a 2-part name: ")
L = name.split()
print("{0:s}, {1:s}".format(L[1], L[0]))
```

104. Name Write a program that requests a three-part name and then displays the middle name. See Fig. 2.33

```python
name = input("Enter a Name: ")
m = name.split()
print("Middle Name:", m[1])
```