

Question 1:

Write a Python program to implement a simple calculator.

1. Get two numbers and the operation desired
 2. Check the operation
 - a. If the operation is addition, the result is the first + the second
 - b. If the operation is subtraction, the result is the first - the second
 - c. If the operation is multiplication, the result is the first * the second
 - d. If the operation is division, check the second number
 - i. If the second number is zero, construct an error message
 - ii. If the second number is not zero, the result is the first / the second
 3. Print out the result or the error message
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Question 2:

A bank offers various certificate of deposit (CD) options with different terms and interest rates.

Write a Python program that:

- Prompts for user input:
 - Initial investment amount
 - Annual percentage yield (APY)
 - Number of months for the CD term
 - Compounding frequency (monthly, quarterly, annually)
- Calculates the CD value at each interval:
 - Applies the appropriate compounding formula based on the selected frequency.
 - Handles different compounding periods accurately.
- Generates a detailed table:
 - Displays the CD value at the end of each month (or compounding period) in a clear and organized table format.
- Includes descriptive headers for each column (e.g., "Month", "CD Value").
 - Aligns numerical values for better readability.
- Calculates total interest earned:
 - Subtracts the initial investment from the final CD value to determine the total interest earned.

Examples:

```
Enter initial investment amount: 5000
Enter annual percentage yield (APY): 3.5
Enter number of months for the CD term: 12
Enter compounding frequency (monthly, quarterly, annually): monthly
```

Month	CD Value
1	5014.58
2	5029.21
3	5,043.88
...	
12	5,177.83

Total interest earned: \$177.83

Enter initial investment amount: 2500
Enter annual percentage yield (APY): 4.2
Enter number of months for the CD term: 36
Enter compounding frequency (monthly, quarterly, annually): annually

Year	CD Value
1	\$2,500.00
2	\$2,500.00
3	\$2,500.00
...	
35	\$2,714.41
36	\$2,828.42

Total interest earned: \$328.42

Enter the initial investment amount: \$5000
Enter the annual percentage yield (APY): 5
Enter the number of months for the CD term: 24
Enter the compounding frequency (monthly, quarterly, annually): quarterly

Month	CD Value
1	\$5,000.00
2	\$5,000.00
3	\$5,062.50
4	\$5,062.50
...	
23	\$ 5,454.25
24	\$ 5,522.43

Total interest earned: \$522.43

Question 3:

Task 1

Obtain a list of words from the keyboard. Exit is a word that terminates the input. Print the words in the order they were entered, and then create a sorted list of words without modifying the original list. Then print the sorted list.

Task 2

Print the original list of words one at a time from the beginning; if a word has already been printed, do not print it again. In other words, no word should be printed more than once. You cannot modify the original list; instead, you must use nested loops to achieve this. Keep in mind that you must only use the original list in this task; if you use multiple lists, temporary lists, or other data structures, such as a dictionary, you will fail to meet the requirements.

For example,

Enter a word: a
Enter a word: d
Enter a word: b
Enter a word: c
Enter a word: a
Enter a word: d
Enter a word: e
Enter a word: Exit

The original list:
[a, d, b, c, a, d, e]

The sorted list:

[a, a, b, c, d, d, e]

The unique words:

a, d, b, c, e

Question 4:

Given as input two whole numbers representing a time like time, minute. Additional input is a time shift in minutes. Print the time prior to a time shift and the time following the time shift. Assume that the hour is in 24hr format.

Find the time x minutes before and after the input time

Enter a time (hh:mm): 23:55

Enter a time shift in mins: 10

23:45

00:05

Question 5:

Write a method `rectangle_of_symbols` that displays a solid rectangle of symbols whose height and width are specified in integer parameter "height" and "width" respectively. And this method also receive a third parameter of type char called "symbol". For example, if height is 5, weight is 4, and the symbol is *, the method should display

```
****
****
****
****
****
```

Create a main function that reads the height, width and symbol of the user and then calls the `rectangle_of_symbols` method to display the rectangle of symbols. Example,

```
def main():
    print('Print a rectangle of symbols')
    height = int(input("Enter the height: "))
    weight = int(input("Enter the weight: "))
    symbol = input("Enter the symbol: ")

    rectangle_of_symbols(height, weight, symbol)
```

Question 6:

Write a method `triangle_of_symbols` that displays a solid triangle of symbols whose height is specified in integer parameter "height", the symbol is specified in string parameter "symbol". For example, if height is 4 and the symbol is *, the method should display

```
*
**
***
****
```

Create a main function that reads the height and symbol of the triangle and then calls the `triangle_of_symbols` method to display the triangle of symbols.

Question 7:

Write a method `circle_of_symbols` that displays a solid circle of symbols whose radius is specified in integer parameter "radius", the symbol is specified in string parameter "symbol". For example, if radius is 6 and the symbol is *, the method should display

Please enter the radius of the circle: 6

Please enter the symbol character: A

```

    A A A A A
  A A A A A A A
A A A A A A A A A
A A A A A A A A A A
A A A A A A A A A A
A A A A A A A A A A
A A A A A A A A A A
  A A A A A A A A
    A A A A A A
      A A A A A
```

Create a main function that reads the height and symbol of the circle and then calls the `circle_of_symbols` method to display the circle of symbols.
