Question 1:

Write a Python program to implement a simple calculator.

1. Get two numbers and the operation desire
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

Question 2:

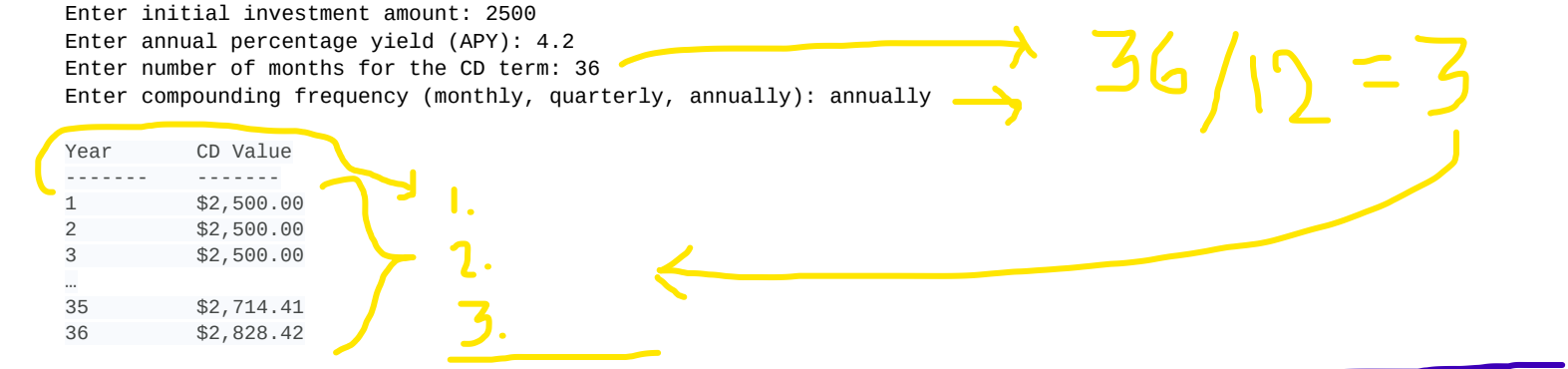
A bank offers various certificate of deposit (CD) options with different terms and interest rates.

Write a Python program that:

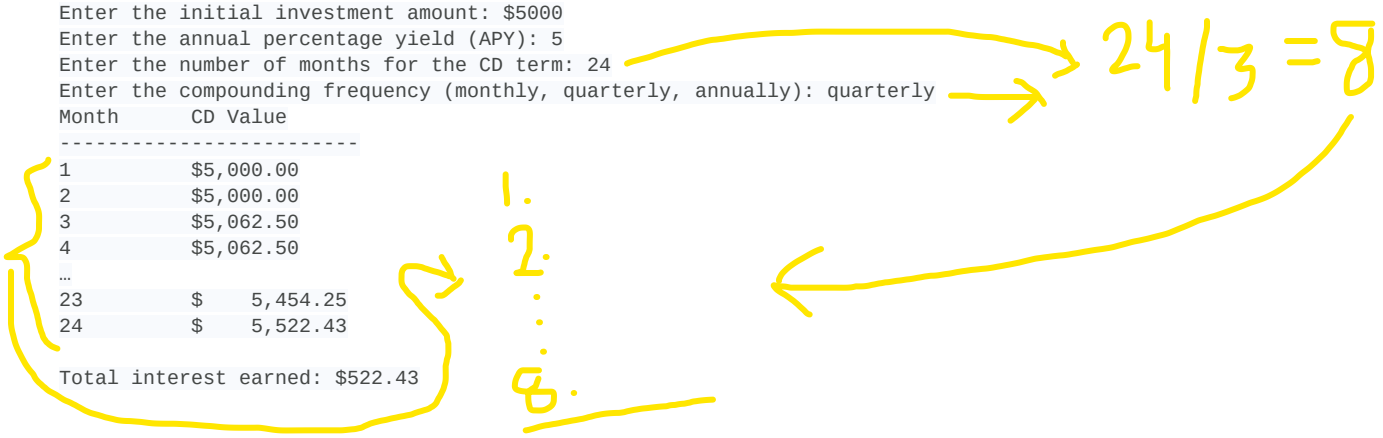
- Prompts for user input:
    - Initial investment amount
    - Annual percentage yield (APY)
    - Number of months for the CD term
    - Compounding frequency (monthly, quarterly, annually)
- Calculates the CD value at each interval:
    - Applies the appropriate compounding formula based on the selected 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 symbolis *, 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 symbolis *, 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 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.
