Part 1. Answer All Questions

Question 1 :

 # Write a Python program to insert a string in the middle of a string

 # Example :

 # input : [[]] hello

 # output : [[hello]]

Question 2 :

 # Write a python script to find the tuple that has the least second value from a list of tuples

tuples = [(1,2), (1,3), (4,2), (5,6), (10,0)]

Part 2. Answer only 2 Questions

(If you solve more the top 2 marks will be awarded)

Question 1

A painting company has determined that for every 112 square feet of wall space, one gallon of paint and eight hours of labor will be required. The company charges $35.00 per hour for labor.

Write a program that asks the user to **enter the square feet of wall space** to be painted and **the price of the paint per gallon**. The program should display the following data:

- The number of gallons of paint required
- The hours of labor required
- The cost of the paint
- The labor charges
- The total cost of the paint job

Question 2

Write a program that predicts the approximate size of a population of organisms. The application should use text boxes to allow the user to enter the starting number of organ- isms, the average daily population increase (as a percentage), and the number of days the organisms will be left to multiply. For example, assume the user enters the following values:

Starting number of organisms: 2 Average daily increase: 30% Number of days to multiply: 10

The program should write the data into a csv file and display the following table of data:

Day	Approximate Population
1	2
2.	2.6
3.	3.38
4.	4.394
5.	5.7122
6.	7.42586
7.	9.653619
8.	12.5497
9.	16.31462
10.	10 21.209

Question 3

- Write a code that generate 200 random numbers between -510 and 275 then adds those numbers to a text file. Repeat that step 4 time (you end up with a file that have 4 lines each has 200 numbers separated by spaces)
- Read the data from the file line by line. Each integer value must be: -500 <= value <= 270
- If a value was entered outside that range raise an exception, print error message to the output then continue processing the rest of the numbers.
- Find the value that repeated the most number of times in each line.
    - If there are many solutions: find the **smallest** value.
- Find the maximum number in all lines
- Find the minimum number in all lines

Question 4

- Implement function: def sort_different_types(lst):
- It takes a list of different data types (int, float, string, list, tuple)
    - Return a list:
    - For every data type, group, and sort from small to large
    - Within data types: Order them based on the order of the list (int comes first? Be first)
    - Assumption: provided lists or tuples will be comparable.

```
lst = [10, 'most', 2.5, 7, 'aly', 9, 4.5, 2, 'ziad', -4, 1.1, [1, 5], 5, [0, 7, 8]]
print(sort_different_types(lst))
```

```
[-4, 2, 5, 7, 9, 10, 'aly', 'most', 'ziad', 1.1, 2.5, 4.5, [0, 7, 8], [1, 5]]
```