Python 3.10 Practical Question Set-1

Note:
- **All Questions are mandatory.**
- **Define functions, and also use built-in functions.**
- **Show code redundancy by defining common functions.**
- **Do not implement string operations on numbers.**

1. Write output for the below statements, if you find any error please write the error.
   - **[] * 3**   -> **('a', 'b', 'c') * 2**
   - **(2) ** 2**   -> **[{}] * 2**
   - **{3:1} * 2**   -> **'123' + 2**
   - **['a', 'b', 'c'] + 'rf'**   -> **(2, 4) ** 2**
   - Assume **Z = ['P', 'L', ']']** and then **Z += 'SE'**. What will be the output of **print(Z)**?

2. Function to check if a given number is an Armstrong number or not, a function must return a boolean.

3. Write an output/error for the below program.
   - a. a = 10
     b = 20
     print(a and b)
     print(a or b)

   - b. if False:
         print("It is False")
     else:
         print("It is True")

   - c. if [ ]:
         print("It is Blank")
     else:
         print("It is Something else")

   - d. if [[ ]]:
         print("It is Blank")
     else:
         print("It is Something else")

   - e. if [False]:
         print("It is Blank")
     else:
         print("It is Something else")

   - f. type(range)

4. Write a program to extract string elements from a list based on the conditions below.
   - a. The first character must be lower and consonant.
   - b. The string must not contain any number and also does not contain any special character.

5. Write a program to create a list of numbers, and extract integer numbers from a list based on the below conditions.
    a. The number must be 4 digits long i.e (1000 to 9999)
    b. The second digit of the number must be odd and the last digit must be even.
    c. The number must be divisible by either 8 or 5.

6. In the store, there are a few products arranged on a shelf (Prepare class/dictionary from the below details, if cost price is added to the product, sales price must be auto-calculated):

-   In **SHELF-1** there are 3 products Product 1, Product 2, and Product 3. The cost for Product 1 in January is 10, 30, 45, and 50, in February is 60, 6,4, and 68, for Product 2 in January is 66, 67, 81, and 75, in February is 78, 81, and 85. The sale price for Product 1 and Product 2 for January is Cost Price + 20% and for February is Cost Price + 30%. The cost for Product 3 in January is 18, 20 and in February is 21, 22, in March is 22, 23, and 24, sale price for January is Cost Price + 35% and for February is Cost Price + 40% and in March is Cost Price + 50%.

-   In **SHELF-2** there are 4 products Product 1, Product 3, Product 4, and Product 6 Costs for Product 1 in January are 206, 220, and 225 in March 180, 170, and 165 in April 160, 150, and 136. The sale price for January is CP + 10%, for February is the same as January, for March CP + 15% and April CP - 10%. Product 4 in January is 300 in February and March is 280, 300, and 385 in April 360, 376. The sale price for January and February is CP + 10%, for March CP + 15% and April CP + 10%.

-   In **SHELF-3** there are 3 products Product 2, Product 4, and Product 6. The cost of Product 2 in March is 55, 59, and 61, and in April it is 53, 54 and 55.

-   Perform Below Operations:
    a. Method to update the sale price with a given percentage.
    b. Method to update the sale price for a given shelf with a given percentage.
    c. Method to set a category for a given product.
    d. Method to create a new shelf.
    e. Method to reset cost price with 0 for a given shelf, product, and month.
    f. Method to get the maximum or minimum price with the shelf name of a product. Display a proper message that shows the shelf and product.
    g. Define the method and display the Average cost and a sale also profit based on the shelf for a specific month.
    h. Display the Average cost and sales also profit based on the product for a specific month.