Here are the Python functions based on the provided problems:

**1. Functions that mutate a list**

# 1. repeat(lst, n)

def repeat(lst, n):

lst \*= n

# 2. add(lst, x)

def add(lst, x):

lst.append(x)

# 3. remove(lst, m, n)

def remove(lst, m, n):

del lst[m:n+1]

# 4. concat(lst, x)

def concat(lst, x):

lst.extend(x)

**2. Mastermind Guess Score**

def guess\_score(code, guess):

black, white = 0, 0

code\_count, guess\_count = {}, {}

# First, check for black pegs

for i in range(len(code)):

if code[i] == guess[i]:

black += 1

else:

code\_count[code[i]] = code\_count.get(code[i], 0) + 1

guess\_count[guess[i]] = guess\_count.get(guess[i], 0) + 1

# Then check for white pegs

for num in guess\_count:

if num in code\_count:

white += min(guess\_count[num], code\_count[num])

return {"black": black, "white": white - black}

**3. Find Two Numbers with a Specific Product**

def two\_product(lst, N):

seen = set()

for num in lst:

if N % num == 0 and N // num in seen:

return [num, N // num]

seen.add(num)

return None

**4. Sorting Dates**

from datetime import datetime

def sort\_dates(lst, mode):

format\_str = "%d-%m-%Y\_%H:%M"

lst.sort(key=lambda x: datetime.strptime(x, format\_str), reverse=(mode == "DSC"))

return lst

**5. Words with Same Vowels**

def same\_vowel\_group(lst):

def get\_vowels(word):

return set([char for char in word if char in "aeiou"])

first\_word\_vowels = get\_vowels(lst[0])

return [word for word in lst if get\_vowels(word) == first\_word\_vowels]

**6. Least Common Multiple (LCM) of List**

import math

def lcm\_of\_list(lst):

lcm = lst[0]

for num in lst[1:]:

lcm = (lcm \* num) // math.gcd(lcm, num)

return lcm

**Examples**

1. **Mutating List Functions**

lst = [1, 2, 3, 4]

repeat(lst, 3)

print(lst) # [1, 2, 3, 4, 1, 2, 3, 4, 1, 2, 3, 4]

add(lst, 1)

print(lst) # [1, 2, 3, 4, 1, 2, 3, 4, 1, 2, 3, 4, 1]

remove(lst, 1, 12)

print(lst) # [1]

concat(lst, [3, 4])

print(lst) # [1, 3, 4]

1. **Mastermind Score**

print(guess\_score("1423", "5678")) # {'black': 0, 'white': 0}

print(guess\_score("1423", "2222")) # {'black': 1, 'white': 0}

print(guess\_score("1423", "1234")) # {'black': 1, 'white': 3}

print(guess\_score("1423", "2211")) # {'black': 0, 'white': 2}

1. **Find Two Numbers with Product**

print(two\_product([1, 2, -1, 4, 5], 20)) # [4, 5]

print(two\_product([1, 2, 3, 4, 5], 10)) # [2, 5]

print(two\_product([100, 12, 4, 1, 2], 15)) # None

1. **Sorting Dates**

print(sort\_dates(["10-02-2018\_12:30", "10-02-2016\_12:30", "10-02-2018\_12:15"], "ASC"))

# ["10-02-2016\_12:30", "10-02-2018\_12:15", "10-02-2018\_12:30"]

print(sort\_dates(["10-02-2018\_12:30", "10-02-2016\_12:30", "10-02-2018\_12:15"], "DSC"))

# ["10-02-2018\_12:30", "10-02-2018\_12:15", "10-02-2016\_12:30"]

1. **Words with Same Vowels**

print(same\_vowel\_group(["toe", "ocelot", "maniac"])) # ['toe', 'ocelot']

print(same\_vowel\_group(["many", "carriage", "emit", "apricot", "animal"])) # ['many']

print(same\_vowel\_group(["hoops", "chuff", "bot", "bottom"])) # ['hoops', 'bot', 'bottom']

1. **Least Common Multiple of List**

print(lcm\_of\_list([1, 2, 3, 4, 5, 6, 7, 8, 9, 10])) # 2520

print(lcm\_of\_list([13, 6, 17, 18, 19, 20, 37])) # 27965340

print(lcm\_of\_list([44, 64, 12, 17, 65])) # 2333760