Practice questions

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Question:

Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included).

The numbers obtained should be printed in a comma-separated sequence on a single line.

Code:

```
result_numbers = []
for num in range(2000, 3201):

    if num % 7 == 0 and num % 5 != 0:
        result_numbers.append(str(num))

print(','.join(result_numbers))

```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\Users\Kunal\PycharmProjects1\pythonProject1\main.py
2002,2009,2016,2023,2037,2044,2051,2058,2072,2079,2086,2093,2107,2114,2121,2128,2142,2149,2156,2163,2177,2184,2191,2198,2212,2219,2226,2233,2247

Process finished with exit code 0
```

Question:

Write a program which can compute the factorial of a given numbers.

The results should be printed in a comma-separated sequence on a single line.

Suppose the following input is supplied to the program:

8

Then, the output should be:

40320

Code:

```python
def factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * factorial(n - 1)

number = int8(input("Enter a number: "))

result = factorial(number)

print(result)
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\p
Enter a number: 8
40320

Process finished with exit code 0
```

Question:

With a given integral number n, write a program to generate a dictionary that contains (i, i*i) such that is an integral number between 1 and n (both included). and then the program should print the dictionary.

Suppose the following input is supplied to the program:

8

Then, the output should be:

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}

Code:

main.py

```
# print(result)

n = int(input("Enter a number: "))

result_dict = {i: i*i for i in range(1, n+1)}

print(result_dict)
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\Users\Kun
Enter a number: 8
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}

Process finished with exit code 0
```

Question:

Write a program which accepts a sequence of comma-separated numbers from console and generate a list and a tuple which contains every number.

Suppose the following input is supplied to the program:

34,67,55,33,12,98

Then, the output should be:

['34', '67', '55', '33', '12', '98']

('34', '67', '55', '33', '12', '98')

Code:

main.py

```
input_sequence = input("Enter a sequence of comma-separated numbers: ")


number_list = input_sequence.split(',')


number_tuple = tuple(number_list)

print(number_list)
print(number_tuple)

```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python
Enter a number: 8
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}

Process finished with exit code 0
```

Write a program that calculates and prints the value according to the given formula:

Q = Square root of [(2 * C * D)/H]

Following are the fixed values of C and H:

C is 50. H is 30.

D is the variable whose values should be input to your program in a comma-separated sequence.

Example

Let us assume the following comma separated input sequence is given to the program:

100,150,180

The output of the program should be:

18,22,24

Code:

```
import math

C = 50
H = 30
input_sequence = input("Enter a sequence of comma-separated values for D: ")

D_values = [int(value) for value in input_sequence.split(',')]

result_values = [int(math.sqrt((2 * C * D) / H)) for D in D_values]
print(','.join(map(str, result_values)))
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\
Enter a sequence of comma-separated values for D: 100,150,180
18,22,24

Process finished with exit code 0
```

Question:

Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i*j.

Note: i=0,1.., X-1; j=0,1,¡-Y-1.

Example

Suppose the following inputs are given to the program:

3,5

Then, the output of the program should be:

[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]

Code:

```
main.py
48  # print(','.join(map(str, result_values)))
49
50  X, Y = map(int, input("Enter two digits X and Y separated by a comma: ").split(','))
51
52  result_array = [[i * j for j in range(Y)] for i in range(X)]
53
54
55  for row in result_array:
56      print(row)
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\
Enter two digits X and Y separated by a comma: 3,5
[0, 0, 0, 0, 0]
[0, 1, 2, 3, 4]
[0, 2, 4, 6, 8]

Process finished with exit code 0
```

Question:

Write a program that accepts a comma separated sequence of words as input and prints the words in a comma-separated sequence after sorting them alphabetically.

Suppose the following input is supplied to the program:

without,hello,bag,world

Then, the output should be:

bag,hello,without,world

Code:

```
input_sequence = input("Enter words: ")
word = ""
sorted_words = ""
while input_sequence:
    index = input_sequence.find(',')
    if index != -1:
        word = input_sequence[:index]
        input_sequence = input_sequence[index + 1:]
    else:
        word = input_sequence
        input_sequence = ""

    if sorted_words:
        sorted_words += ',' + word
    else:
        sorted_words += word
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Script
Enter words: without,hello,bag,world
without,hello,bag,world

Process finished with exit code 0
```

Question

Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized.

Suppose the following input is supplied to the program:

Hello world

Practice makes perfect

Then, the output should be:

HELLO WORLD

PRACTICE MAKES PERFECT

Code:

```
lines = []
while True:
    line = input("Enter a line (or press Enter to finish): ")
    if not line:
        break
    lines.append(line)


for line in lines:
    print(line.upper())
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\Users\Kunal\P
Enter a line (or press Enter to finish): Hello world
Practice makes perfect
Enter a line (or press Enter to finish): Enter a line (or press Enter to finish):
HELLO WORLD
PRACTICE MAKES PERFECT

Process finished with exit code 0
```

Question:

Write a program that accepts a sequence of whitespace separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically.

Suppose the following input is supplied to the program:

hello world and practice makes perfect and hello world again

Then, the output should be:

again and hello makes perfect practice world

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

We use set container to remove duplicated data automatically and then use sorted() to sort the data.

Code:

```
main.py
80
81  input_sequence = input("Enter a sequence of words: ")
82
83
84  words = input_sequence.split()
85
86
87  unique_sorted_words = sorted(set(words))
88
89
90  print(' '.join(unique_sorted_words))
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\Users\Kunal\Pycharm
Enter a sequence of words: hello world and practice makes perfect and hello world again
again and hello makes perfect practice world

Process finished with exit code 0
```

Question:

Write a program which accepts a sequence of comma separated 4 digit binary numbers as its input and then check whether they are divisible by 5 or not. The numbers that are divisible by 5 are to be printed in a comma separated sequence.

Example:

0100,0011,1010,1001

Then the output should be:

1010

Notes: Assume the data is input by console.

Code:

main.py

```python
binary_numbers = input("Enter a sequence of comma-separated 4-digit binary numbers: ")

numbers_list = binary_numbers.split(',')

divisible_by_5 = []


for binary_num in numbers_list:
    decimal_num = int(binary_num, 2)
    if decimal_num % 5 == 0:
        divisible_by_5.append(binary_num)


print(','.join(divisible_by_5))
```

Output:

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe C:\Users\Kunal\
Enter a sequence of comma-separated 4-digit binary numbers: 0100,0011,1010,1001
1010

Process finished with exit code 0
```

Question:

Write a program, which will find all such numbers between 1000 and 3000 (both included) such that each digit of the number is an even number.

The numbers obtained should be printed in a comma-separated sequence on a single line.

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

Question:

Write a program that accepts a sentence and calculate the number of letters and digits.

Suppose the following input is supplied to the program:

hello world! 123

Then, the output should be:

LETTERS 10

DIGITS 3

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

```python
sentence = input("Enter a sentence: ")

letter_count = 0
digit_count = 0

for char in sentence:
    if char.isalpha():
        letter_count += 1
    elif char.isdigit():
        digit_count += 1

# Print the result
print(f"LETTERS {letter_count}")
print(f"DIGITS {digit_count}")
```

Run main

```
Enter a sentence: hello world! 123
LETTERS 10
DIGITS 3

Process finished with exit code 0
```

Question:

Write a program that accepts a sentence and calculate the number of upper case letters and lower case letters.

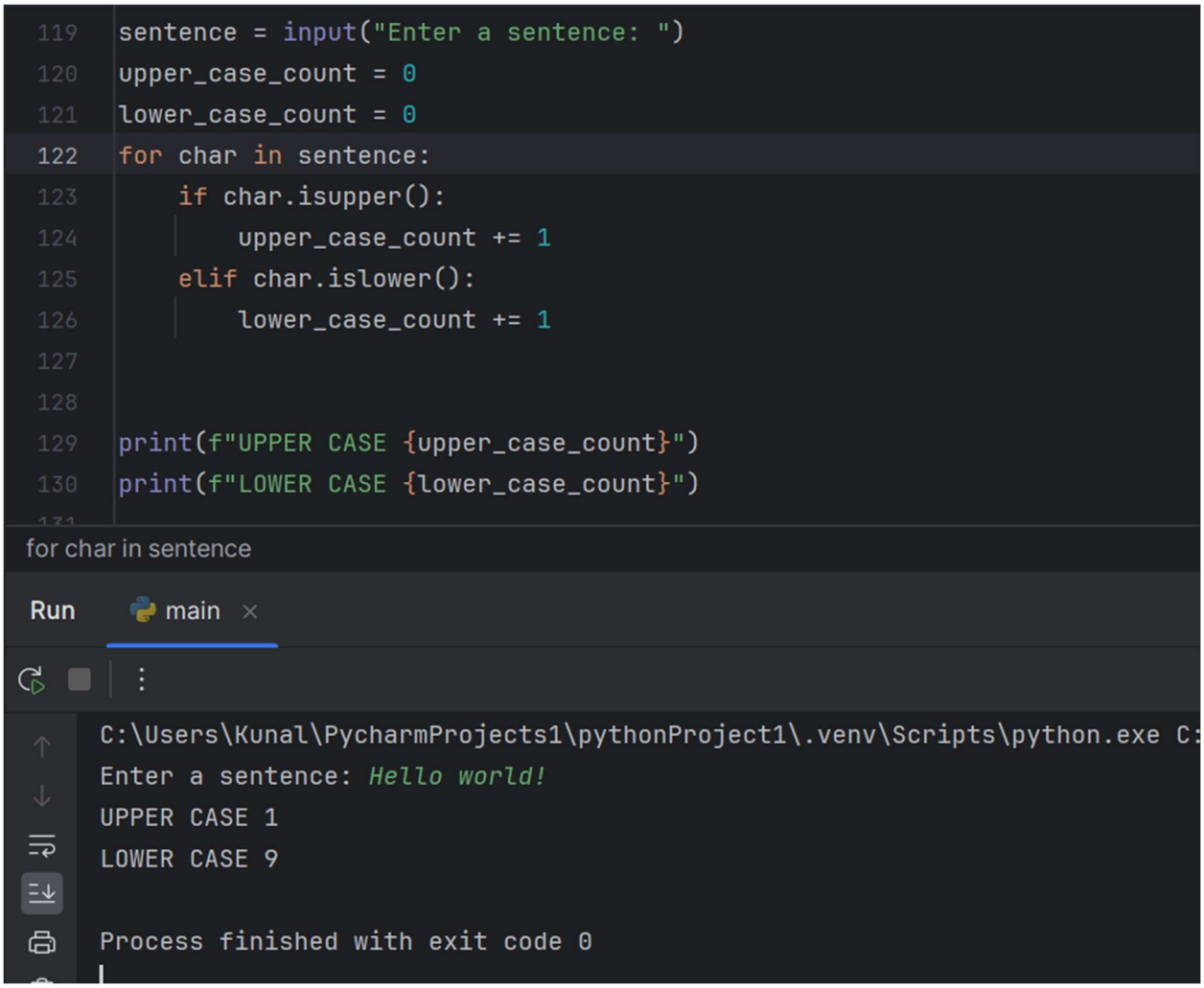
Suppose the following input is supplied to the program:

Hello world!

Then, the output should be:

UPPER CASE 1

LOWER CASE 9



Question:

Write a program that computes the value of a+aa+aaa+aaaa with a given digit as the value of a.

Suppose the following input is supplied to the program:

9

Then, the output should be:

11106

```python
sentence = input("Enter a sentence: ")
upper_case_count = 0
lower_case_count = 0
for char in sentence:
    if char.isupper():
        upper_case_count += 1
    elif char.islower():
        lower_case_count += 1


print(f"UPPER CASE {upper_case_count}")
print(f"LOWER CASE {lower_case_count}")
```

ar in sentence

main ×

```
C:\Users\Kunal\PycharmProjects1\pythonProject1\.venv\Scripts\python.exe
Enter a sentence: Hello world!
UPPER CASE 1
LOWER CASE 9

Process finished with exit code 0
```