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Subject	Python

Assignment on List, String and Dictionary

Q1. Write a program to perform following operations on list

1. Sum all the items in a list.
2. Get the largest number from a list.
3. Remove duplicates from a list.
4. Separate positive and negative number from a list.
5. Filter even and odd number from a list.

Ans –

```
def sum_list(lst):
    return sum(lst)
def get_largest_number(lst):
    return max(lst)

def remove_duplicates(lst):
    return list(set(lst))

def separate_positive_negative(lst):
    positive_numbers = [num for num in lst if num > 0]
    negative_numbers = [num for num in lst if num < 0]
    return positive_numbers, negative_numbers

def filter_even_odd(lst):
    even_numbers = [num for num in lst if num % 2 == 0]
    odd_numbers = [num for num in lst if num % 2 != 0]
    return even_numbers, odd_numbers

my_list = [3, 1, 5, 2, 5, 2, -7, -2, 4, -1, 6]
print("Original List:", my_list)

print("Sum of the list:", sum_list(my_list))

print("Largest number in the list:", get_largest_number(my_list))

print("List after removing duplicates:", remove_duplicates(my_list))

positive_numbers, negative_numbers = separate_positive_negative(my_list)
print("Positive numbers:", positive_numbers)
print("Negative numbers:", negative_numbers)

even_numbers, odd_numbers = filter_even_odd(my_list)
print("Even numbers:", even_numbers)
```

print("Odd numbers:", odd_numbers)

Output –

```
[Running] python -u "d:\College\IMCC\Sem_2\Python P\Lab Assignment 1\1.py"
Original List: [3, 1, 5, 2, 5, 2, -7, -2, 4, -1, 6]
Sum of the list: 18
Largest number in the list: 6
List after removing duplicates: [1, 2, 3, 4, 5, 6, -1, -7, -2]
Positive numbers: [3, 1, 5, 2, 5, 2, 4, 6]
Negative numbers: [-7, -2, -1]
Even numbers: [2, 2, -2, 4, 6]
Odd numbers: [3, 1, 5, 5, -7, -1]

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```

Q2. Write a program to perform following operations on string

1. Reverse string.
2. Count vowels and consonants in a string.
3. Count the number of letters in a word.
4. Convert lower letter to upper and upper letter to lower in a string.
5. Count lower, upper, numeric and special characters in a string.

Ans –

```
def reverse_string(s):
    return s[::-1]

def count_vowels_consonants(s):
    vowels = "aeiouAEIOU"
    vowel_count = sum(1 for char in s if char in vowels)
    consonant_count = len(s) - vowel_count
    return vowel_count, consonant_count

def count_letters_in_word(word):
    return len(word)

def convert_case(s):
    return s.swapcase()

def count_character_types(s):
    lower_count = sum(1 for char in s if char.islower())
    upper_count = sum(1 for char in s if char.isupper())
    numeric_count = sum(1 for char in s if char.isnumeric())
    special_count = len(s) - (lower_count + upper_count + numeric_count)
    return lower_count, upper_count, numeric_count, special_count

my_string = "Hello, World! 123"
print("Original String:", my_string)
```

```
print("Reversed String:", reverse_string(my_string))

vowel_count, consonant_count = count_vowels_consonants(my_string)
print("Vowel count:", vowel_count)
print("Consonant count:", consonant_count)

word = "Hello"
print("Number of letters in the word '{}': {}".format(word, count_letters_in_word(word)))

print("String after case conversion:", convert_case(my_string))

lower_count, upper_count, numeric_count, special_count = count_character_types(my_string)
print("Lowercase characters count:", lower_count)
print("Uppercase characters count:", upper_count)
print("Numeric characters count:", numeric_count)
print("Special characters count:", special_count)
```

Output –

```
[Running] python -u "d:\College\IMCC\Sem_2\Python P\Lab Assignment 1\2.py"
Original String: Hello, World! 123
Reversed String: 321 !dlroW ,olleH
Vowel count: 3
Consonant count: 14
Number of letters in the word 'Hello': 5
String after case conversion: hELLO, wORLD! 123
Lowercase characters count: 8
Uppercase characters count: 2
Numeric characters count: 3
Special characters count: 4

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```

Q3. Write a program to perform following operations on dictionary

1. Check whether a given key exists in a dictionary or not.
2. Iterate over dictionary items using for loop.
3. Concatenate two dictionaries to create one.
4. Sum all the values of a dictionary.
5. Get the maximum and minimum value of dictionary.

Ans –

```
def key_exists(dictionary, key):
    return key in dictionary

def iterate_dictionary(dictionary):
    for key, value in dictionary.items():
        print("Key:", key, ", Value:", value)
```

```
def concatenate_dictionaries(dict1, dict2):
    concatenated_dict = dict1.copy()
    concatenated_dict.update(dict2)
    return concatenated_dict

def sum_dictionary_values(dictionary):
    return sum(dictionary.values())

def max_min_values(dictionary):
    max_value = max(dictionary.values())
    min_value = min(dictionary.values())
    return max_value, min_value

my_dict = {'a': 10, 'b': 20, 'c': 30}
print("Original Dictionary:", my_dict)

key_to_check = 'b'
print("Does key '{}' exist in the dictionary? {}".format(key_to_check, key_exists(my_dict, key_to_check)))

print("Iterating over dictionary items:")
iterate_dictionary(my_dict)

dict2 = {'d': 40, 'e': 50}
concatenated_dict = concatenate_dictionaries(my_dict, dict2)
print("Concatenated Dictionary:", concatenated_dict)

sum_values = sum_dictionary_values(my_dict)
print("Sum of dictionary values:", sum_values)

max_value, min_value = max_min_values(my_dict)
print("Maximum value in the dictionary:", max_value)
print("Minimum value in the dictionary:", min_value)
```

Output –

```
[Running] python -u "d:\College\IMCC\Sem_2\Python P\Lab Assignment 1\3.py"
Original Dictionary: {'a': 10, 'b': 20, 'c': 30}
Does key 'b' exist in the dictionary? True
Iterating over dictionary items:
Key: a , Value: 10
Key: b , Value: 20
Key: c , Value: 30
Concatenated Dictionary: {'a': 10, 'b': 20, 'c': 30, 'd': 40, 'e': 50}
Sum of dictionary values: 60
Maximum value in the dictionary: 30
Minimum value in the dictionary: 10

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```