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CSE 3342
Programming Languages
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Assignment 2

1) **Python Code:**

```
#turns word list into a dictionary of key, value pairs based on
number of names
def word_freq(items):
    dictionary ={}
    for x in items:
        if(dictionary.get(x) == None):
            dictionary[x] = 1
        else:
            dictionary[x] = dictionary.get(x) + 1

    return dictionary


#arranges dictionary from smallest to largest by value
def asc_word_freq(dictionary):
    my_list = list(dictionary.items())
    my_list.sort(key=lambda x: x[1])
    return my_list

#arranges dictionary from largest to smallest by value
def desc_word_freq(dictionary):
    dictionary.reverse()
    print(dictionary)
    return dictionary

#trims dictionary based on user input
def size_dict(dictionary, n):
    if(n<0): #returns a blank dictionary if user gives a
negative number
        return []

#returns entire dictionary if user's number is longer than
length of dictionary
    elif(n > len(dictionary)):
        return dictionary
    else: #trims dictionary to desired length
        i = 0
        dict = []
        for x in dictionary:
```

```
            if i == n:
                break
            else:
                dict.insert(i, dictionary[i])
                i += 1
        return dict

def main():
    #list of words
    items = ["Liam", "Mason", "William", "Noah", "William",
"James", "Sophia","Logan", "Benjamin", "Mason", "Elijah",
"Oliver", "Jacob", "Emma","Olivia", "Ava", "William",
"Isabella", "Oliver", "Sophia", "Mia", "Charlotte", "Amelia",
"William", "Evelyn", "Abigail", "Olivia", "Ava", "Mason",
"Isabella", "Noah", "William", "James", "Olivia",
             "Amelia", "Oliver", "William"]
    #send to function that will turn list into dictionary by
    #counting number of words in list
    dictionary = word_freq(items)
    print(dictionary)

    #sorts by value lowest to highest
    dictionary = asc_word_freq(dictionary)
    print(dictionary)

    #sorts by value highest to lowest
    dictionary = desc_word_freq(dictionary)
    print(dictionary)

    #receives int n from user to determine length of dictionary
     while True:
          try:
               n = int(input("Enter the number of terms to be
               displayed from the dictionary: "))
               except ValueError: #if user enters something
               other than a number, ask again
               print("Error: please enter a number.")
          else:
               #adjusts length of dictionary based on input
               dictionary = size_dict(dictionary, n)
               print(dictionary)

#runs main
if __name__ == "__main__":
    main()
```

2) **Output:**

```
======= RESTART: /Users/elizabethhanna/Documents/hanna_assignment2.py =======
Dictionary:
{'Liam': 1, 'Mason': 3, 'William': 6, 'Noah': 2, 'James': 2, 'Sophia': 2, 'Logan': 1, 'Benjamin': 1, 'Elijah': 1, 'Oliver
': 3, 'Jacob': 1, 'Emma': 1, 'Olivia': 3, 'Ava': 2, 'Isabella': 2, 'Mia': 1, 'Charlotte': 1, 'Amelia': 2, 'Evelyn': 1, 'A
bigail': 1}
Ascending Word Order:
[('Liam', 1), ('Logan', 1), ('Benjamin', 1), ('Elijah', 1), ('Jacob', 1), ('Emma', 1), ('Mia', 1), ('Charlotte', 1), ('Ev
elyn', 1), ('Abigail', 1), ('Noah', 2), ('James', 2), ('Sophia', 2), ('Ava', 2), ('Isabella', 2), ('Amelia', 2), ('Mason'
, 3), ('Oliver', 3), ('Olivia', 3), ('William', 6)]
Descending Word Order:
[('William', 6), ('Olivia', 3), ('Oliver', 3), ('Mason', 3), ('Amelia', 2), ('Isabella', 2), ('Ava', 2), ('Sophia', 2), (
'James', 2), ('Noah', 2), ('Abigail', 1), ('Evelyn', 1), ('Charlotte', 1), ('Mia', 1), ('Emma', 1), ('Jacob', 1), ('Elija
h', 1), ('Benjamin', 1), ('Logan', 1), ('Liam', 1)]
Enter the number of terms to be displayed from the dictionary: 3
[('William', 6), ('Olivia', 3), ('Oliver', 3)]
>>>
```

3) **Test Cases:**

- Test Case 1: n = 4

```
Enter the number of terms to be displayed from the dictionary: 4
[('William', 6), ('Olivia', 3), ('Oliver', 3), ('Mason', 3)]
```

- Test Case 2: n = 250

```
Enter the number of terms to be displayed from the dictionary: 250
[('William', 6), ('Olivia', 3), ('Oliver', 3), ('Mason', 3), ('Amelia', 2), ('Isabella', 2), ('Ava', 2), ('Sophia', 2), (
'James', 2), ('Noah', 2), ('Abigail', 1), ('Evelyn', 1), ('Charlotte', 1), ('Mia', 1), ('Emma', 1), ('Jacob', 1), ('Elija
h', 1), ('Benjamin', 1), ('Logan', 1), ('Liam', 1)]
>>>
```

- Test Case 3: n = -1

```
Enter the number of terms to be displayed from the dictionary: -1
[]
>>>
```

- Test Case 4: n = 0

```
Enter the number of terms to be displayed from the dictionary: 0
[]
```

- Test Case 5: n = ABC

```
Enter the number of terms to be displayed from the dictionary: ABC
Error: please enter a number.
Enter the number of terms to be displayed from the dictionary: 1
[('William', 6)]
>>>
```