Algorithms and Data Structures

Assignment 2, Orders of Functions of Lists and Dictionaries

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This report details our findings on the BigO efficiency of various built-in python functions relating to lists and dictionaries.

**List Functions**

**Pop()**

The following is a graph of the run time of the pop() method as a function of list size:

The data follows a constant pattern, close to Y=0, or O(1). This is because it will only require one “step” to remove the last element of a list.

Other O(1) operations:  
Index[]—returns item at a specific index, only requires one “step”

Append()—appends one item to the end of the list, only requires one “step”

**Pop(i)**

The following is a graph of the run time of the pop(i) method as a function of list size where i=0:

The data follows a linear pattern, or O(n). When the function removes the first element of the list, all the subsequent elements must have their indices decreased by one.

Other O(n) operations:

Insert(i,item)—inserts an element at a certain index, and shifts the indices of all subsequent elements

Del—deletes an element and shifts the indices of all subsequent elements

Iteration

Contains

**Getslice**

**Setslice**

**Sort**

**Multiply**

**Dictionary Functions**

**Copy**

**Get**