




# HW4

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# HW4

## HW4

*Maintain an ordered keyword list.*

- A keyword is a tuple of [String name, Integer count, Double weight]
- Keep the list in order by its count while adding or deleting elements
- For the list structure, you can
  - Use `java.util.ArrayList`, or
  - `java.util.LinkedList`, or
  - Develop it by yourself
- Given a sequence of operations in a txt file, parse the txt file and execute each operation accordingly

# Keyword

- A keyword is a tuple of **[String *name*, Integer *count*, Double *weight*]**
  - For example:

```
{  
    name: "Fang",  
    count: 3,  
    weight: 5.5  
}
```
- A keyword should output in format **[name, count, weight]** :
  - [Fang,3,5.5]

# Add and Output



operations	description
add(Keyword k)	Insert k to the list in order
outputIndex(int i)	Output the ith keyword in the list
outputCount(int c)	Output all keywords whose count is equal to c
outputHas(string s)	Output all keywords whose name contains s
outputName(string s)	Output all keywords whose name is equal to s
outputFirstN(int n)	Output the first n keywords
outputScore()	Output the score of the whole list

# I/O Example: Add

- To do: Insert a keyword [k,c,w] to the list in order
- Input:
  - Token1 : a constant “add”
  - Token2 : keyword name **k**
  - Token3 : keyword count **c**
  - Token4 : keyword weight **w**
  - EX: **add Fang 3 1.5**
- Smaller count placed in the front. If equal, smaller weight is placed in the front.

[MIS,2,1.2] [UCSB,2,2.2] [Food,3,0.1] [Data,3,0.3] [NCCU,3,0.8] [Fang,3,1.5] [Structure,4,2.1] [Badminton,4,2.3] [Yu,5,1.2]

# I/O Example: outputIndex

- To do: Output the  $i$ th keyword in the list
- Input:
  - Token1 : a constant “outputIndex”
  - Token2 : an index  $i$  in our keyword list
  - EX: **outputIndex 3**
- Output:
  - If  $i$  is out of bound, simply output a line of “InvalidOperation”:  
  
**InvalidOperation**
  - If  $i$  is legal:  
  
**[NCCU,4,9.9]**

# I/O Example: outputCount

- To do: Output all keywords whose count is equal to  $c$  in order
- Input:
  - Token1 : a constant “outputCount”
  - Token2 : an integer  $c$
  - EX: **outputCount 4**
- Output:
  - If there is no keyword whose count is equal to  $c$ , simply output a line of constant “NotFound”:  
**NotFound**
  - If there are any (separated by one space):  
**[OK,4,2.2] [MIS,4,3.3] [NCCU,4,9.9]**

# I/O Example: outputHas

- To do: Output all keywords whose name contains `s`
- Input:
  - Token1 : a constant “outputHas”
  - Token2 : a pattern string `s`
  - EX: `outputHas ang`
- Output:
  - If there is no keyword whose name contains `s`, simply output a line of constant “NotFound”:  
  
`NotFound`
  - If there are any (separated by one space):  
  
`[Stanger,4,2.2] [Rang,4,3.3] [Fang,4,9.9]`



# I/O Example: outputName

- To do: Output all keywords whose name is equal to `s`
- Input:
  - Token1 : a constant “outputName”
  - Token2 : a string `s`
  - EX: `outputName Fang`
- Output:
  - If there is no keyword whose name is equal to `s`, simply output a line of constant “NotFound”:  
  
`NotFound`
  - If there are any (separated by one space):  
  
`[Fang,4,9.9]`

# I/O Example: outputFirstN

- To do: Output the first N Keywords, if  $N \leq \text{size of list}$
- Input:
  - Token1 : a constant “outputFirstN”
  - Token2 : an signed integer N
  - EX: **outputFirstN 3**
- Output:
  - If  $N > \text{size of keyword list}$ , simply output a line of constant “InvalidOperation”:  
**InvalidOperation**
  - If N is legal (separated by one space):  
**[Stanger,4,2.2] [Rang,4,3.3] [Fang,4,9.9]**

# I/O Example: outputScore

- To do: Output the score of the whole list
  - $\Sigma(\text{count} * \text{weight})$
- Input:
  - Token1 : a constant “outputScore”
  - EX: **outputScore**
- Output:
  - Simply output a line of score
  - EX: **108.5**

# Delete



operations	description
<code>deleteIndex(int i)</code>	Delete the <i>i</i> th keyword in the list
<code>deleteCount(int c)</code>	Delete all keywords whose count is equal to <i>c</i>
<code>deleteHas(string s)</code>	Delete all keywords whose name contains <i>s</i>
<code>deleteName(string s)</code>	Delete all keywords whose name is equal to <i>s</i>
<code>deleteFirst(int n)</code>	Delete the first <i>n</i> keywords

# I/O Example: deleteIndex

- To do: Delete the  $i$ th keyword in the list
- Input:
  - Token1 : a constant “deleteIndex”
  - Token2 : an index  $i$  in our keyword list
  - EX: deleteIndex 3

# I/O Example: deleteCount

- To do: Delete all keywords whose count is equal to  $c$
- Input:
  - Token1 : a constant “deleteCount”
  - Token2 : an integer  $c$
  - EX: deleteCount 4

# I/O Example: deleteHas

- To do: Delete all keywords whose name contains s
- Input:
  - Token1 : a constant “deleteHas”
  - Token2 : a pattern string **s**
  - EX: **deleteHas ang**

# I/O Example: deleteName

- To do: Delete all keywords whose name is equal to s
- Input:
  - Token1 : a constant “deleteName”
  - Token2 : a string **s**
  - EX: **deleteName Fang**



# I/O Example: deleteFirstN

- To do: Delete the first N Keywords, if  $N \leq \text{size of list}$
- Input:
  - Token1 : a constant “deleteFirstN”
  - Token2 : an signed integer **N**
  - EX: deleteFirstN 2

# Input file

- You need to read the sequence of operations from a **txt file**
- The format is firm
- Raise an exception if the input does not match the format

```
add Fang 3 1.5
add Yu 5 1.2
add NCCU 3 0.8
add UCSB 2 2.2
add MIS 2 1.2
add Badminton 4 2.3
add Food 3 0.1
add Data 3 0.3
add Structure 4 2.1
outputScore
deleteCount 3
outputCount 2
outputName Yu
deleteName Yu
outputHas a
deleteHas a
outputIndex 2
deleteIndex 4
deleteFirstN 1
outputFirstN 3
deleteAll
```

# Output

```
38.5  
[MIS,2,1.2] [UCSB,2,2.2]  
[Yu,5,1.2]  
[Badminton,4,2.3]  
[Structure,4,2.1]  
InvalidOperation
```

# Notice

- The group formation for this semester is complete, please send your team's GitHub link and contact information via Google form! <https://forms.gle/sZbMwafigtvh64Us8>
- If you have any problem (such as finding your group member), please contact the TA.