**TwitterSearch Version 1**

**SFWRENG 2XB3**

**Software Engineering Practice and Experience: Binding Theory to Practice**

**Department of Computing and Software**

**McMaster University**

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# Report revision History

Version 0: March, 2019

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# Team member and roles

| **Name** | **Student Number** | **Role in the Project** |
| --- | --- | --- |
| Yumo Bai | 400137535 | programmer |
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| Chenwei Song | 400124879 | programmer |
| Shuo Zhang | 400065241 | programmer |
| Dios Zhou | 400082351 | progarmmer |

*By virtue of submitting this document we electronically sign and date that the work being submitted by all the individuals in the group is their exclusive work as a group and we consent to make available the application developed through SE-2XB3 project, the reports, presentations, and assignments (not including my name and student number) for future teaching purposes.*

# Search Module

### Module

Search

### Uses

ReadData

twitterADT

### Syntax

### Exported Access Programs

|  |  |  |  |
| --- | --- | --- | --- |
| **Routine name** | **In** | **Out** | **Exceptions** |
| search | String, N, N, String, N, N | String | None |
| filter | String, N, N, String, N, N | Seq of String | FileNotFound |

### Semantics

### State invariant

FilePath = “src/javaapplication2/test.json”

### Access Routine Semantics

search(lang, begin\_date, end\_date, region, begin\_time, end\_time):

* Output: s such that (∀ t : String | t ∈ filter(lang, begin\_date, end\_date, reigion, begin\_time, end\_time) : count(t) ≤ count (s))
* Exception: None

filter(lang, begin\_date, end\_date, region, begin\_time, end\_time):

* Output: StringSeq seq such that (∀ s : twitterADT | s ∈ LoadUsers(FilePath) & getDate(s) ≥ begin\_date & getDate(s) ≤ end\_date & getTime(s) ≥ begin\_time & getTime(s) ≤ end\_time & getLanguage(s) = lang & getRegion(s) = region : (∃ t : String | t ∈ seq : t = getTag(s) ) )
* Exception: FileNotFound

### Local Types

StringSeq : seq of String

### Local functions

Count : String → N

Count(s) : (+s : String | (∃ str : String | str ∈ filter(lang, begin\_date, end\_date, reigion, begin\_time, end\_time) & s = str : ) : 1)

# Sort Module

### Module

Sort

### Syntax

### Exported Access Programs

|  |  |  |  |
| --- | --- | --- | --- |
| **Routine name** | **In** | **Out** | **Exception** |
| Sort | Seq of t, N |  | None |

### Semantics

### Access Routine Semantics

Sort(a, n):

* Transition: a := a such that (∀ num : N | num ≥ 0 & num < n - 1 : a[num] < a[num + 1] )
* Exception: None

**Local Types**

SeqT: seq of t

### Local functions

Merge: SeqT × SeqT × SeqT × N × N → SeqT

* Merge(a, l, r, lo, hi): a := SeqT such that (∀ t : Comparable | t ∈ l ∪ r : (∃ term : Comparable | term ∈ a : a = t)) & (∀ num : N | num ≥ 0 & num < n - 1 : a[num] < a[num + 1] )

# Generic twitterADT Module

## **Generic Template Module**

### Module

twitterADT

### Uses

N/A

### Syntax

## **Exported Types**

twitterADT = ?

### Exported Access Programs

|  |  |  |  |
| --- | --- | --- | --- |
| **Routine name** | **In** | **Out** | **Exceptions** |
| twitterADT | String, String, String, String, String, N | twitterADT | none |
| getDate |  | String |  |
| getTag |  | String |  |
| getLanguage |  | String |  |
| getTime |  | String |  |
| getRegion |  | String |  |
| getLikeNum |  | N |  |
| compareTo | twitterADT | N |  |

### Semantics

### State invariant

date: String

tag: String

language: String

time: String

region: String

likeNum: Z

### Access Routine Semantics

twitterADT(date, tag, language, time, region, likeNum):

* transition: date, tag, language, time, region, likeNum := date, tag, language, time, region, likeNum
* output: out := self
* Exception: None

getDate():

* Output: out := date
* Exception: None

getTag():

* Output: out := tag
* Exception: None

getRegion():

* Output: out := region
* Exception: None

getLikeNum():

* Output: out := likeNum
* Exception: None

getLanguage():

* Output: out := language
* Exception: None

getTime():

* Output: out := time
* Exception: None

compareTo(j):

* Output: out := (this.getLikeNum() < j.getLikeNum(): -1 | this.getLikeNum() > j.getLikeNum(): 1 | this.getTime() < j.getTime(): -1 | this.getLikeNum() > j.getLikeNum(): 1)
* Exception: None

### Local Types

N/A

### Local functions

N/A

# ReadData Module

### Module

ReadData

### Uses

twitterADT

### Syntax

### Exported Access Programs

|  |  |  |  |
| --- | --- | --- | --- |
| **Routine name** | **In** | **Out** | **Exceptions** |
| LoadUsers | String | Seq of twitterADT | FileNotFound |

### Semantics

### State invariant

date: Null

tag: Null

language: Null

time: Null

region: Null

likeNum: 0

### Access Routine Semantics

LoadUsers(path):

* Output: Read data from file associated with path and load a list of twitterADT with information including date, tag, language, time, region and likeNum from each tweet. Return the list of twitterADT.
* Exception: FileNotFound