CS 302 Project 2

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Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

ksmall 5

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

ksmall.cpp 7
ksmall.h 7
main.cpp 8

Chapter 3

Class Documentation

3.1 ksmall Class Reference

`#include <ksmall.h>`

Public Member Functions

- ksmall (const int)
- ~ksmall ()
- int search (const int, const int, const int)
- void display () const

3.1.1 Constructor & Destructor Documentation

3.1.1.1 ksmall::ksmall (const int *value*)

Constructor for ksmall class object. Takes user specified value to determine the size of the array. Randomizes all values in the array between 0-999.

Parameters

value	The size of the array that will be generated and randomized.

Precondition

Value must be greater than 0 to generate an array with data to sort.

Postcondition

ksmall object will have been created with size = value, with a randomized int in each element.

Returns

None.

3.1.1.2 ksmall::~ksmall ( )

Destructor for ksmall class object. Deallocates data from the array created in the constructor, returning the memory to the system.

Precondition

None.

Postcondition

None.

Returns

None.

3.1.2 Member Function Documentation

3.1.2.1 void ksmall::display ( ) const

Display function for ksmall class object. Prints formatted contents of data array to console so user can see the data before and after the ksmall search function has been run on it.

Precondition

None.

Postcondition

Contents of ksmall data array are printed to consle in a formatted fashion. Contents of array are unchanged.

Returns

None.

3.1.2.2 int ksmall::search (const int *target*, const int *first*, const int *last*)

ksmall search function; finds the k-th smallest element in the ksmall object's data array, where k = target.

Parameters

target	The function finds the k-th smallest value in the array, where k = target.
first	The first value that will be searched in the array.
last	The last value that will be searched in the array.

Precondition

Target must be greater than or equal to 1. First must be greater than or equal to 0. Last must be greater than or equal to first.

Postcondition

the ksmall object's array will be partially sorted such that all elements less than or equal to target - 1 will be sorted in ascending order.

Returns

The k-th smallest value in the array, where k = target.

The documentation for this class was generated from the following files:

- ksmall.h
- ksmall.cpp

Chapter 4

File Documentation

4.1 ksmall.cpp File Reference

```
#include <ctime>
#include <cstdlib>
#include <iostream>
#include "ksmall.h"
```

4.1.1 Detailed Description

CS 302 Project 2 - implementation for ksmall sort class

Author

Patrick Austin

Date

2/9/2015

4.2 ksmall.h File Reference

Classes

- class ksmall

4.2.1 Detailed Description

CS 302 Project 2 - header for ksmall sort class

Author

Patrick Austin

Date

2/9/2015

4.3 main.cpp File Reference

```
#include "ksmall.h"
#include <iostream>
#include <cstdlib>
```

Functions

- int main ()

Variables

- const int TEST_SIZE = 100

4.3.1 Detailed Description

CS 302 Project 2 - test program for ksmall class

Author

Patrick Austin

Date

2/9/2015

4.3.2 Function Documentation

4.3.2.1 int main ( )

Main function for testing the ksmall class. Creates a ksmall object with an array of TEST_SIZE elements, displays it, prompts the user for a valid k value for which to seek the k-th smallest element, outputs the array after the ksmall search operation has been conducted on it, and informs the user what the k-th smallest value was.

Precondition

Correctly implemented ksmall class included.

Postcondition

As above. No file I/O is conducted.

Returns

None.

4.3.3 Variable Documentation

4.3.3.1 const int TEST_SIZE = 100

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