

Programmer's Guide and Report for Project 1-sets

Source: COP3503su14\_Proj1\_WenlanT.cpp

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### **Problem Statement**

This program is used to test a system for entering, storing, manipulating and printing sets of various sorts. The program will maintain a current set and a current verbose state. There are 15 commands with different functions in this program.

### **Organization of Code**

This program defined a class Set, and 15 functions are included corresponding to the 15 commands. The main loop prompts for user input (if not silent), and reads the user input into a temporary integer variable. There are 0-15 commands. If the input is a number out of this range, an error message is output, however, if the input is not a number, the program will be quitted immediately.

### **Functions, Methods, Procedures**

inputFile()-open and read a list from a file to the current list.  
reset()-reset current set to the empty set  
printToFile()-output file <filename>: open and write the current set to a file  
print()-print current set to the console  
unionSets()-open and union a set from a file with the current set  
subtractSets()-open and subtract set from a file from the current set  
differenceSets()-open and find the difference between a set from a file and the current set  
intersectSets()-open and find the intersection between a set from a file and the current set  
findItem()-test if <item name> is in the current set  
insertItem()-add <item name> to the current set if it is not already in it  
deleteItem()-remove <item name> from the current set if it is in it  
verboseOutput()-cause the current state of output prompt to remain verbose until changed  
help()-ouput commands to the console

### **Known Bugs**

The reset() does not work perfectly. If the subtract, difference, intersect run at the beginning, it can work correctly. However, if they were called after either of the other two, the function will not run wrong.

Messages are output to the console every time insertItem(), deleteItem(), findItem() are called.

Enter a command other than a number in the prompt will exit the program directly.

## Testing

Testing was done by using two files: f1 and f2. Script of testing session follows.

[f1]	[f2]
banana	banana
apple	mango
pineapple	guanabana
grapefruit	lychee
orange	avocado
pear	lime
grape	nispero
lime	guava
lemon	carambola

```
UFs-MacBook-Pro:Project1 tianwenlan$ ./COP3503su14_Proj1_WenlanT
```

```
Welcome to use my first program!!
```

```
There are 0-15 different numbers with different functions
```

```
Would you like to see a list of the numbers and how they are to be  
used? y/n
```

```
y
```

```
=====
```

```
The numbered commands are as follows:
```

```
0. exit
```

```
1. input file <filename>: open and read a list from a file to the  
current list
```

```
2. union file <filename>: open and union a set from a file with the  
current set
```

```
3. subtract file <filename>: open and subtract set from a file from the  
current set
```

```
4. difference file <filename>: open and find the difference between a  
set from a file and the current set
```

```
5. intersect file <filename>: open and find the intersection between a  
set from a file and the current set
```

```
6. reset current set to the empty set
```

```
7. output file <filename>: open and write the current set to a file
```

```
8. print current set to the console
```

```
9. find <item name>: test if <item name> is in the current set
```

```
10. insert <item name>: add <item name> to the current set if it is not  
already in it
```

```
11. delete <item name>: remove <item name> from the current set if it  
is in it
```

```
12. verbose output
```

```
13. normal output
```

```
14. silent output
```

```
15. help
```

```
=====
```

```
> 8
```

```
> 1 f1
```

```
Item banana not found
```

```
Item banana inserted
```

```
Item apple not found
```

```
Item apple inserted
```

```
Item pineapple not found
```

```
Item pineapple inserted
```

```
Item grapefruit not found
```

```
Item grapefruit inserted
Item orange not found
Item orange inserted
Item pear not found
Item pear inserted
Item grape not found
Item grape inserted
Item lime not found
Item lime inserted
Item lemon not found
Item lemon inserted
New Set Loaded
> 9 banana
Item banana found
> 9 lemon
Item lemon found
> 9 kiwi
Item kiwi not found
> 8
banana
apple
pineapple
grapefruit
orange
pear
grape
lime
lemon
> 10 kiwi
Item kiwi not found
Item kiwi inserted
> 8
banana
apple
pineapple
grapefruit
orange
pear
grape
lime
lemon
kiwi
> 11 apple
Item apple found
Item apple deleted
> 8
banana
pineapple
grapefruit
orange
pear
grape
lime
lemon
kiwi
> 9 apple
Item apple not found
> 9 kiwi
```

```
Item kiwi found
> 14
8
banana
pineapple
grapefruit
orange
pear
grape
lime
lemon
kiwi
12
0 - exit; 1 - input <file>; 2 - union <file>; 3 - subtract <file>;
4 - difference <file>; 5 - intersect <file>; 6 - reset current set
7 - write <file>; 8 - print; 9 - find <item>; 10 - insert <item>;
11 - delete <item>; 12 - verbose; 13 - normal; 14 - silent; 15 - help;
> 2 f2
Item banana not found
Item banana inserted
Item mango not found
Item mango inserted
Item guanabana not found
Item guanabana inserted
Item lychee not found
Item lychee inserted
Item avocado not found
Item avocado inserted
Item lime not found
Item lime inserted
Item nispero not found
Item nispero inserted
Item guava not found
Item guava inserted
Item carambola not found
Item carambola inserted
New Set Loaded
Item banana found
Item bananaalready in set
Item mango not found
Item mango inserted
Item guanabana not found
Item guanabana inserted
Item lychee not found
Item lychee inserted
Item avocado not found
Item avocado inserted
Item lime found
Item limealready in set
Item nispero not found
Item nispero inserted
Item guava not found
Item guava inserted
Item carambola not found
Item carambola inserted
Union Completed!
> 13
> 8
```

```
banana
pineapple
grapefruit
orange
pear
grape
lime
lemon
kiwi
mango
guanabana
lychee
avocado
nispero
guava
carambola
> 6
Reset completed
> 8
> 1 f2
Item banana not found
Item banana inserted
Item mango not found
Item mango inserted
Item guanabana not found
Item guanabana inserted
Item lychee not found
Item lychee inserted
Item avocado not found
Item avocado inserted
Item lime not found
Item lime inserted
Item nispero not found
Item nispero inserted
Item guava not found
Item guava inserted
Item carambola not found
Item carambola inserted
New Set Loaded
> 8
banana
mango
guanabana
lychee
avocado
lime
nispero
guava
carambola
> 3 f1
Item banana found
Item bananaalready in set
Item apple not found
Item apple inserted
Item pineapple not found
Item pineapple inserted
Item grapefruit not found
Item grapefruit inserted
```

Item orange not found  
Item orange inserted  
Item pear not found  
Item pear inserted  
Item grape not found  
Item grape inserted  
Item lime found  
Item limealready in set  
Item lemon not found  
Item lemon inserted  
New Set Loaded  
Item banana found  
Item banana deleted  
Item mango found  
Item mango deleted  
Item guanabana found  
Item guanabana deleted  
Item lychee found  
Item lychee deleted  
Item avocado found  
Item avocado deleted  
Item lime found  
Item lime deleted  
Item nispero found  
Item nispero deleted  
Item guava found  
Item guava deleted  
Item carambola found  
Item carambola deleted  
Item apple not found  
Item apple not in set  
Item pineapple not found  
Item pineapple not in set  
Item grapefruit not found  
Item grapefruit not in set  
Item orange not found  
Item orange not in set  
Item pear not found  
Item pear not in set  
Item grape not found  
Item grape not in set  
Item lemon not found  
Item lemon not in set  
Subtraction Completed!  
> 8  
> 6  
Reset completed  
> 1 f1  
Item banana not found  
Item banana inserted  
Item apple not found  
Item apple inserted  
Item pineapple not found  
Item pineapple inserted  
Item grapefruit not found  
Item grapefruit inserted  
Item orange not found  
Item orange inserted

Item pear not found  
Item pear inserted  
Item grape not found  
Item grape inserted  
Item lime not found  
Item lime inserted  
Item lemon not found  
Item lemon inserted  
New Set Loaded  
> 4 f2  
Item banana found  
Item bananaalready in set  
Item mango found  
Item mangoalready in set  
Item guanabana found  
Item guanabanaalready in set  
Item lychee found  
Item lycheealready in set  
Item avocado found  
Item avocadoalready in set  
Item lime found  
Item limealready in set  
Item nispero found  
Item nisperoalready in set  
Item guava found  
Item guavaalready in set  
Item carambola found  
Item carambolaalready in set  
New Set Loaded  
Item banana found  
Item banana found  
Item banana deleted  
Item mango not found  
Item mango not found  
Item mango inserted  
Item guanabana not found  
Item guanabana not found  
Item guanabana inserted  
Item lychee not found  
Item lychee not found  
Item lychee inserted  
Item avocado not found  
Item avocado not found  
Item avocado inserted  
Item lime found  
Item lime found  
Item lime deleted  
Item nispero not found  
Item nispero not found  
Item nispero inserted  
Item guava not found  
Item guava not found  
Item guava inserted  
Item carambola not found  
Item carambola not found  
Item carambola inserted  
Item apple found  
Item apple found

```
Item apple deleted
Item pineapple found
Item pineapple found
Item pineapple deleted
Item grapefruit found
Item grapefruit found
Item grapefruit deleted
Item orange found
Item orange found
Item orange deleted
Item pear found
Item pear found
Item pear deleted
Item grape found
Item grape found
Item grape deleted
Item lemon found
Item lemon found
Item lemon deleted
Difference Completed!
> 8
mango
guanabana
lychee
avocado
nispero
guava
carambola
> 0
Hope to see you again! BYE!!
```

Test for subtraction separately:

```
UFs-MacBook-Pro:Project1 tianwenlan$ ./COP3503su14_Proj1_WenlanT
Welcome to use my first program!!
There are 0-15 different numbers with different functions
Would you like to see a list of the numbers and how they are to be
used? y/n
n
> 8
> 1 f2
Item banana not found
Item banana inserted
Item mango not found
Item mango inserted
Item guanabana not found
Item guanabana inserted
Item lychee not found
Item lychee inserted
Item avocado not found
Item avocado inserted
Item lime not found
Item lime inserted
Item nispero not found
Item nispero inserted
Item guava not found
Item guava inserted
Item carambola not found
```



```
Item carambola inserted
New Set Loaded
> 8
banana
mango
guanabana
lychee
avocado
lime
nispero
guava
carambola
> 3 f1
Item banana not found
Item banana inserted
Item apple not found
Item apple inserted
Item pineapple not found
Item pineapple inserted
Item grapefruit not found
Item grapefruit inserted
Item orange not found
Item orange inserted
Item pear not found
Item pear inserted
Item grape not found
Item grape inserted
Item lime not found
Item lime inserted
Item lemon not found
Item lemon inserted
New Set Loaded
Item banana found
Item banana deleted
Item apple not found
Item apple not in set
Item pineapple not found
Item pineapple not in set
Item grapefruit not found
Item grapefruit not in set
Item orange not found
Item orange not in set
Item pear not found
Item pear not in set
Item grape not found
Item grape not in set
Item lime found
Item lime deleted
Item lemon not found
Item lemon not in set
Subtraction Completed!
> 8
mango
guanabana
lychee
avocado
nispero
guava
```

```
carambola
> 6
Reset completed
> 1 f1
Item banana not found
Item banana inserted
Item apple not found
Item apple inserted
Item pineapple not found
Item pineapple inserted
Item grapefruit not found
Item grapefruit inserted
Item orange not found
Item orange inserted
Item pear not found
Item pear inserted
Item grape not found
Item grape inserted
Item lime not found
Item lime inserted
Item lemon not found
Item lemon inserted
New Set Loaded
> 4 f2
Item banana found
Item bananaalready in set
Item mango not found
Item mango inserted
Item guanabana not found
Item guanabana inserted
Item lychee not found
Item lychee inserted
Item avocado not found
Item avocado inserted
Item lime found
Item limealready in set
Item nispero not found
Item nispero inserted
Item guava not found
Item guava inserted
Item carambola not found
Item carambola inserted
New Set Loaded
Item banana found
Item banana found
Item banana deleted
Item apple found
Item apple found
Item apple deleted
Item pineapple found
Item pineapple found
Item pineapple deleted
Item grapefruit found
Item grapefruit found
Item grapefruit deleted
Item orange found
Item orange found
Item orange deleted
```

```
Item pear found
Item pear found
Item pear deleted
Item grape found
Item grape found
Item grape deleted
Item lime found
Item lime found
Item lime deleted
Item lemon found
Item lemon found
Item lemon deleted
Item mango not found
Item mango not found
Item mango inserted
Item guanabana not found
Item guanabana not found
Item guanabana inserted
Item lychee not found
Item lychee not found
Item lychee inserted
Item avocado not found
Item avocado not found
Item avocado inserted
Item nispero not found
Item nispero not found
Item nispero inserted
Item guava not found
Item guava not found
Item guava inserted
Item carambola not found
Item carambola not found
Item carambola inserted
Difference Completed!
> 8
mango
guanabana
lychee
avocado
nispero
guava
carambola
> 0
Hope to see you again! BYE!!
```

UFs-MacBook-Pro:Project1 tianwenlan\$