Project: Write a program that exercises **class** *AVL*. Program **p03** reads a list of identifiers, stores them into an AVL tree, prints the tree, and prints a sorted list of identifiers. Program **p03** deletes nodes in the AVL tree that reference identifiers read from a second list. The input list used to construct the AVL tree is in file **i03i.dat.** The list containing identifiers to delete from the AVL tree is in file **i03d.dat**. Program **p03** prints the AVL tree after each identifier is deleted.

Program Files:

File	Description
p03.cpp	File **p03.cpp** contains functions that process command line arguments and exercises **class** *AVL*.
AVL03.h	File **AVL03.h** defines **class** *AVL*.
AVL03.cpp	File **AVL03.cpp** contains the implementation of class AVL.
***03.h**	All files containing class definitions must have the suffix **03.h**.
***03.cpp**	All files containing member function implementations must have the suffix **03.cpp**.
p03make	File **p03make** contains instructions for program **p03**. Instructions are written for the UNIX utility ***make***. Program **p03** is contained in file **p03**.

Command Line: Project **3** can be invoked with zero, one, two, or three program parameters. The first program parameter is the name of the file containing identifiers used to construct an AVL tree. The second parameter is the name of the file containing identifiers from the first file used to delete nodes of the AVL tree. The third program parameter is the name of the output file. Sample command lines together with corresponding actions by program **p03** are shown below. Boldfaced type indicates data entered at the keyboard by the user.

$ **p03**
Enter the name of the file containing identifiers to insert: **i03i.dat**
Enter the name of the file containing identifiers to delete: **i03d.dat**
Enter the output file name: **o03.dat**

$ **p03 i03i.dat**
Enter the name of the file containing identifiers to delete: **i03d.dat**
Enter the output file name: **o03.dat**

$ **p03 i03i.dat i03d.dat**
Enter the output file name: **o03.dat**

$ **p03 i03i.dat i03d.dat o03.dat**

Input Files: You are free to use input files **i03i.dat** and **i03d.dat** found in the class directory (**~tt/cs3613/**). You are also encouraged to devise additional tests of your own design.

File	**Description**
i03i.dat	File **i03i.dat** contains a list of identifiers. Identifiers are separated by white space. White space consists of one or more blanks, tabs, or new-line characters. Identifiers in file **i03i.dat** are put into an AVL tree. Refer to figure 1 for an example of the format of file **i03i.dat**.
i03d.dat	File **i03d.dat** contains a list of identifiers. Identifiers are separated by white space. The identifiers are processed one at a time. If an identifier from the file is found in the AVL tree constructed by using identifiers in file **i03i.dat**, the corresponding node is deleted. The identifiers listed in figure 2 are an example of the format of file **i03d.dat**.

Output File: Program **p03** produces a graphical representation of the AVL tree constructed from file **i03i.dat**. Program **p03** produces an alphabetical listing of the identifiers in file **i03i.dat** next. Program **p03** produces a graphical representation of the AVL tree before each identifier is deleted from the tree together with a notation indicating which identifier is to be deleted. An example of the output file is depicted in figure 3.

```
abigail chloe fantine grace melinda natalie zoe
```

Figure 1. Format of the input file containing identifiers to insert

```
grace melinda natalie chloe fantine zoe abigail
```

Figure 2. Format of the input file containing identifiers to delete

```
AVL tree:
      abigail
   chloe
      fantine
grace
      melinda
   natalie
      zoe

Alphabetical list:
abigail
chloe
fantine
grace
melinda
natalie
zoe

Delete grace:
      abigail
   chloe
      fantine
melinda
   natalie
      zoe

Delete melinda:
      abigail
   chloe
      fantine
natalie
   zoe

Delete natalie:
   abigail
chloe
      fantine
   zoe
```

Figure 3. Output file format

```
Delete chloe:
   abigail
fantine
   zoe

Delete fantine:
   abigail
zoe

Delete zoe:
abigail

Delete abigail:
```

Figure 3. Output file format (continued)