Project 6

Question from a Student:
   You always use the C input/output stuff (printf/scanf etc).   Can we use cin/cout in our project?

Answer: Yes.   I am not discussing cin/cout because:
   1.   I have 100% confidence that everyone can learn that for him/her self.

   2.   There are more important (i.e. harder) C++ concepts to spend class time on

Code from doTravel() to read in an integer into variable val1:

```
  int val1 = 0;

 // get an integer value from the input
 char* next = strtok (NULL, " \n\t");
 if ( next == NULL )
 {
   printf ("Integer value expected\n");
   return;
 }
 val1 = atoi ( next );
 if ( val1 == 0 && strcmp (next, "0") != 0)
 {
   printf ("Integer value expected\n");
   return;
 }
```

The strtok() functions are "seeded" in processCommandLoop():
```
 char  buffer[300];
 char* input;
 input = fgets ( buffer, 300, inFile );   // get a line of input

 // loop until all lines are read from the input
 while (input != NULL)
 {
   // process each line of input using the strtok functions
   char* command;
   command = strtok (input , " \n\t");
```

....

From <https://www3.cs.uic.edu/pub/CS211/ProjectS18/proj6Base.cpp>

Need similar code to read input in doResize(), doInsert() and doDelete()

What Methods are needed for each class?

TravelNetwork class
  - dynamic array of Airport instances
  - number of airports in the TravelNetwork
 methods
   - constructor
   - processCommandLoop
   - showCommands
   - doTravel
        call depth first search helper
   - depthFirstSearchHelper()
   - dfs()
   - doResize
   - doInsert
   - doDelete
   - doList
   - doFile

 Airport class
  - list of adjacent airports
  - visited value to assist in the Depth First Search algorithm
  methods
   - get Visited / isVisited
   - set Visited / markVisited / markUnvisited
  - may need to create "pass through" methods to List Class
       (inheritance might be useful for this????)

 List Class
  - linked list of nodes (head of the list, tail of the list???)
  methods
  - constructor
  - add value to list
  - remove value from list
  - print list
  - clear List
  - get List Length
  - get Nth Element

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Node Class
 - integer value
 - next pointer
methods
  - constructor
  - get/set element
  - get/set next

doFile() in review

```
void doFile()
{
  // get a filename from the input
  char* fname = strtok (NULL, " \n\t");
  if ( fname == NULL )
  {
    printf ("Filename expected\n");
    return;
  }

  printf ("Performing the File command with file: %s\n", fname);

  FILE* newInput;

  // next steps:  (if any step fails: print an error message and return )
  //  1. verify the file name is not currently in use


  //  2. open the file using fopen creating a new instance of FILE*
  newInput = fopen ( fname, "r");

  //  3. recursively call processCommandLoop() with this new instance of FILE* as the parameter
  processCommandLoop ( newInput );

  //  4. close the file when processCommandLoop() returns
  fclose ( newInput );

}
```

From <https://www3.cs.uic.edu/pub/CS211/ProjectS18/proj6Base.cpp>