## 4.4 THE save AND load COMMANDS

The save and load commands are most useful for saving and retrieving data for use in MATLAB. The save command can be used for saving the variables that are currently in the workspace, and the load command is used for retrieving variables that have been previously saved, to the workspace. The workspace can be saved when MATLAB is used in one type of platform (e.g., PC), and retrieved for use in MATLAB in another platform (e.g., Mac). The save and load commands can also be used for exchanging data with applications outside MATLAB. Additional commands that can be used for this purpose are presented in Section 4.5.

### 4.4.1 The save Command

The save command is used for saving the variables (all or some of them) that are stored in the workspace. The two simplest forms of the save command are:

```
save file_name
```

and

```
save('file_name')
```

When either one of these commands is executed, all of the variables currently in the workspace are saved in a file named file_name.mat that is created in the current directory. In mat files, which are written in a binary format, each variable preserves its name, type, size, and value. These files cannot be read by other applications. The save command can also be used for saving only some of the variables that are in the workspace. For example, to save two variables named var1 and var2, the command is:

```
save file_name var1 var2
```

or

```
save('file_name','var1','var2')
```

The save command can also be used for saving in ASCII format, which can be read by applications outside MATLAB. Saving in ASCII format is done by adding the argument -ascii in the command (for example, save file_name -ascii). In the ASCII format the variable's name, type, and size are not preserved. The data is saved as characters separated by spaces but without the variable names. For example, the following shows how two variables (a $1\times4$ vector and a $2\times3$ matrix) are defined in the Command Window and then saved in ASCII format to a file named DatSavAsci:

```
>> V=[3 16 -4 7.3];                    Create a 1×4 vector V.
>> A=[6 -2.1 15.5; -6.1 8 11];         Create a 2×3 matrix A.
>> save -ascii DatSavAsci              Save variables to a file named DatSavAsci.
```

Once saved, the file can be opened by any application that can read ASCII files. For example, Figure 4-5 shows the data when the file is opened with Notepad.

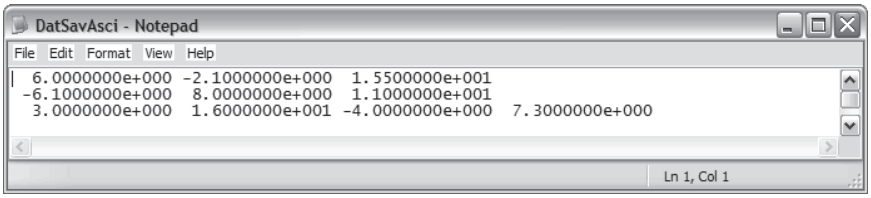


**Figure 4-5: Data saved in ASCII format.**

Note that the file does not include the names of the variables, just the numerical values of the variables (first `A` and then `V`) are listed.

### *4.4.2 The* `load` *Command*

The `load` command can be used for retrieving variables that were saved with the `save` command back to the workspace, and for importing data that was created with other applications and saved in ASCII format or in text (.txt) files. Variables that were saved with the `save` command in .mat files can be retrieved with the command:

```
load file_name
```

or

```
load('file_name')
```

When the command is executed, all the variables in the file (with the name, type, size, and values as were saved) are added (loaded back) to the workspace. If the workspace already has a variable with the same name as a variable that is retrieved with the `load` command, then the variable that is retrieved replaces the existing variable. The `load` command can also be used for retrieving only some of the variables that are in the saved .mat file. For example, to retrieve two variables named `var1` and `var2`, the command is:

```
load file_name var1 var2
```

or

```
load('file_name','var1','var2')
```

The `load` command can also be used to import data that is saved in ASCII or text (.txt) to the workspace. This is possible, however, only if the data in the file is in the form of a variable in MATLAB. Thus, the file can have one number (scalar), a row or a column of numbers (vector), or rows with the same number of numbers in each (matrix). For example, the data shown in Figure 4-5 cannot be loaded with the `load` command (even though it was saved in ASCII format with the `save` command), because the number of elements is not the same in all rows. (Recall that this file was created by saving two different variables.)

When data is loaded from an ASCII or text file into the workspace, it has to be assigned to a variable name. Data in ASCII format can be loaded with either of the following two forms of the load command:

```
load file_name
```
or
```
VarName=load('file_name')
```

If the data is in a text file, the extension .txt has to be added to the file name. The form of the load command is then:

```
load file_name.txt
```
or
```
VarName=load('file_name.txt')
```

In the first form of the command the data is assigned to a variable that has the name of the file. In the second form the data is assigned to a variable named VarName.

For example, the data shown in Figure 4-6 (a $3 \times 2$ matrix) is typed in Notepad, and then saved as DataFromText.txt.


**Figure 4-6: Data saved as .txt file.**

Next, two forms of the load command are used to import the data in the text file to the Workspace of MATLAB. In the first command the data is assigned to a variable named DfT. In the second command the data is automatically assigned to a variable named DataFromText, which is the name of the text file where the data was saved.

```
>> DfT=load('DataFromText.txt')
DfT =
   56.0000   -4.2000
    3.0000    7.5000
   -1.6000  198.0000
>> load DataFromText.txt
>> DataFromText
DataFromText =
   56.0000   -4.2000
    3.0000    7.5000
   -1.6000  198.0000
```

Load the file DataFromText and assign the loaded data to the variable Dft.

Use the load command with the file DataFromText.

The data is assigned to a variable named DataFromText.

Importing data to (or exporting from) other applications can also be done, with MATLAB commands that are presented in the next section.