Introduction to UniFLEX™

Technical Systems Consultants, Inc.

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UniFLEX™ (a trademark of Technical Systems Consultants, Inc.) is a very friendly and powerful operating system. Its applications include systems development, text processing, business applications, and educational use. This document is intended to be an introduction to the system, providing the reader with enough information to start using the system effectively. Many of the examples are presented in a form which may be exactly duplicated on the system, therefore, it is highly recommended that this manual be used in conjunction with one of the system computer terminals. The best way to learn is by doing, so feel free to experiment with the various topics presented here.

To get started, find a system connected terminal which no one is using and power it on, if it is not already. At the bottom of the screen (or page) there should be a message 'Login:'. UniFLEX is requesting your 'user name' which should have been assigned to you by the system manager. Without a valid user name, you will not be able to obtain access to the system. In response to the 'login' message, type your user name in all lower case letters if possible. After the name, you must type the RETURN key. This tells the system that all of your name has been entered. If all goes well, the system will now respond with 'Password:'. When you were assigned your user name, you should also have received a password. This password is the key to your protection on the system, so guard it with your life. Type your password into the system at this time, followed by the usual RETURN. Notice that the characters of your password are not displayed on the terminal as you type them. This is to keep some passerby from discovering it. The system will now check the validity of your name and password, and if all is well, you will see the 'message of the day' printed at your terminal, followed by the system prompt '++'. The two plus signs signify that UniFLEX is ready to accept commands. If the system does not respond this way, you probably better seek out someone familiar with the system to get assistance.

After using the system you will eventually want to quit. Terminating an operating session is known as 'logging off'. To do this, simply type 'log' and a RETURN in response to the prompt. The terminal should end up in the state you first found it, with the 'Login:' message displayed. It is very important that you log off of the system before leaving the terminal. If you do not, someone may start using the terminal with your user name. They may damage information you have entered into the system or other nasty things, so always log off!

Once you have successfully logged on, and the two plus sign prompt is displayed, try typing 'date'. Again, type the RETURN key after 'date' to inform the system you have completely entered your request. The system should respond with something like this:

```
++ date
10:51:46 Tue July 8 1980
++
```

This demonstrates the execution of the 'date' command. Notice that the name of the command gave you an idea ahead of time as to what might happen. This is true of most of the commands on the system. What would have happened if you would have mistyped 'date'. Try it! For example:

```
++ datf
Can't execute 'datf'
++
```

Of course you may mistype a command name which ends up being another existing command name in the system. If this happens, more or less unpredictable results may occur.

It is possible to correct typing mistakes on an entered line before the RETURN is typed. The 'control H' character will act as a backspace. Typing one will delete the previous character typed, typing two will delete the previous two characters typed, etc. The control H is entered by depressing the 'control' key and the 'H' key simultaneously. Some keyboards may also have a 'backspace' key to perform the same operation. A second special character for typing corrections is the line cancel character defined as a 'control X'. Typing a line cancel will effectively delete all of the characters entered so far on the current line. The system's 'ttyset' command may be used to redefine these two characters but details will not be given here.

One other special character you should be familiar with is the 'control C'. If at anytime, a command is entered which you need to stop prior to its completion, type a control C. This is known as the 'interrupt character' and is quite useful. To show that the program stopped prematurely, the string 'INTERRUPT!' will be displayed on your terminal. In some programs, such as the text editor, the interrupt character will stop what the program is doing but leave you in the program. If you wish to momentarily stop a program which is printing on the terminal, the 'escape' key may be typed. Pressing 'escape' once will stop the output, pressing it again will restart it. One last feature concerning typing at your terminal is 'type-ahead'. This allows you to type data at anytime, even if the system is printing on your terminal at the same time. Since the characters you type are displayed as you enter them, they will be mixed in with the characters the system is printing, but the system will get them in the correct sequence. This feature means you may type in commands before the previous command has finished!

Much of the time spent on the system will be spent creating or modifying files. A file is simply a collection of information or data kept on the system and given a name for later reference. The 'text editor' is the program which allows you to easily work with these files. There is a complete manual describing the use of the editor ("The UniFLEX Text Editor") but for right now, we will use it simply to create some short files. Lets start with a file named 'myfile' by typing the command 'edit myfile'. The screen should look like this:

```
++ edit myfile
New file being created
    1.00=
```

The command name is 'edit' and you are telling the system to edit the file 'myfile'. The system reports that you are creating a new file and prompts with line numbers to let you know which line you are entering. In this file, type your name on one line, then your address on the next. Since you typed two lines (each ending with the RETURN key) the system will now be prompting for line 3 (3.00=). As the first 2 characters on this line, type '#s' followed by the RETURN key. This tells the editor you are all finished. Your screen should now look something like this:

```
++ edit myfile
New file being created
    1.00=Your name here
    2.00=Your address here
    3.00=#s
++
```

Note that the two plus signs are back, signifying the system is ready to accept another command. Now that you have mastered this, try creating another file in exactly the same manner, but give this one the name 'file2'.

You have now created two files, 'myfile' and 'file2'. To verify this, type the 'dir' command. The results should be something like this:

```
++ dir
file2           myfile
++
```

The dir command tells the system to display the contents of your directory. A directory is simply a place in the system where a collection of files is kept. Notice that your two files are listed by name, and sorted in alphabetical order. Now type 'dir +l' ('el', not one) which should produce something like:

```
++ dir +l
file2       1    1  rw-rw-  user    11:52 Jul 16 1980
myfile      1    1  rw-rw-  user    11:48 Jul 16 1980
++
```

The '+' is normally used to specify optional additional information to a command. This method of specifying options is very common in most of the UniFLEX commands. In this case, the '+l' informs the dir command to produce a long listing of your files. Notice that not only have the file names been displayed, but also the date it was last changed, the file owner's name (in this example, 'user'), a file size indicator (the number after the name), and the 'rw-rw-' which designate the permissions associated with each file. In this case, both the owner of the file and all others may read and write the file.

As time goes on, you will probably collect many files in your directory. It is often desirable to display or list the contents of a file to refresh your memory as to its contents. The 'list' command will do this for you. Typing the command:

```
++ list myfile
```

will display the contents of the file you previously created using the editor. This same command may be used to list several files, one right after the other. As an example:

```
++ list myfile file2
```

will display the contents of both files as if they were one larger file. The 'page' command is another command which will display the contents of files. Not only will each line be listed, but the lines will be grouped into pages, each page having a header which includes the file's name, the date and time, and a page number.

```
++ page myfile file2
```

This will display your files in a page formatted form. This command does not run the files together as the 'list' command does, but instead, will start each file at the top of a new page.

It is often desirable to rename existing files. Lets suppose you decide the name 'file2' is not very descriptive. A better name might be 'testfile'. Instead of having to use the text editor and re-typing the entire file, you can use the rename command.

```
++ rename file2 testfile
```

The file that used to be called 'file2' now has the new name. To verify this fact, execute the dir command again. You should see the following:

```
++ dir
myfile          testfile
```

You can also try to 'list' testfile just to prove the file is unchanged. Another way to rename a file is to 'move' it. This has exactly the same effect as renaming it but may be looked at a little differently. The 'move' command will move a specified file to another file. Therefore, we could have done our file renaming this way:

```
++ move file2 testfile
```

You would have ended up with exactly the same results. It is also possible to make a copy, or exact duplicate of a file. The copy will of course have to have a different name, but the contents of the file will be the same. If you type the command:

```
++ copy myfile junk
```

Doing a 'list' of junk will show that it is exactly the same as 'myfile'. Note that 'myfile' still exists. Since it is not a good idea to keep a lot of unused files around in the system, the 'kill' command should be used to delete them. As an example:

```
++ kill junk
```

will delete the copy of the file which was just made. You are now back to your original two files, 'myfile' and 'testfile'. It should be noted that the 'kill' command will delete the files you specify without any prompting, so be sure you really want a file deleted before using this command. Once it is gone, there is no getting it back!

As you use the system, more and more of its features will become useful to you. One of the very convenient offerings is the 'mail' service provided. This service allows you to send mail or messages to other users on the system. In order to receive mail, it is necessary to install a mailbox in which your mail will be placed. A mailbox is nothing more than a file which has the special name '.mail'. To create this mail box file, type:

```
++ create .mail
```

The create command will create an empty file and give it the name specified. Once you have done this, anyone on the system may send you mail. Notice that the dir command will normally not display this file name. This will be explained shortly.

How do you know when you have received mail? Thats easy! Everytime you log in, the system automatically checks to see if there is anything in your mailbox (.mail file). If it finds something, the message:

```
You have mail.
```

will be printed on your terminal immediately following the message of the day. To view your mail, simply type the command 'mail'. Your messages will be displayed on your terminal and then you will be asked if you want your mail saved. Usually you will respond with an 'n' for no and a RETURN, but other responses are possible. You should consult the complete description of the mail command in 'UniFLEX Utility Commands' for complete details.

Sending mail to someone else is also very easy. Let's suppose the mail is to go to john, and 'john' is his user name. Typing the command:

```
     ++ mail john
```

will allow you to type your message. No prompts will be issued until your message is complete. To signify the end of the message, type a 'control D' as the first character of a new line. The UniFLEX prompt should then be displayed. The control D is a common character in the system and is used to signify 'end of file'. It tells the mail command that there is no more information. You will not be able to send mail to someone who has not installed a mailbox (created the .mail file) and the mail command will issue a message if this is the case. For practice, you can send mail to yourself (which is also a handy way to send yourself little reminders). This is not the only way to send mail. There are more details in the complete 'mail' command description as mentioned earlier.

After creating your '.mail' file, you might notice that executing the 'dir' command does not display that file name. This is a feature of dir, and is provided to avoid cluttering up your display with files you do not need constant reminding of. This command will normally not display any file name which starts with a period. If you use the '+a' optin with dir, you will see your file:

```
     ++ dir +a
     .          ..          .mail        myfile      testfile
```

might be the response. Notice that not only your '.mail' file is there, but also two additional files, '.' and '..'. These files are in every directory and are provided for convenience. The '.' file represents the directory, and the '..' file represents its parent. More on these two file later.

The mail command is used to send a message to another user who is not necessarily on the system at the time. The 'send' command may be used to directly communicate with another user who is currently logged in. To find out who is currently on the system, type the 'who' command which will display something like:

```
++ who
john    tty06    10:42 Jul 16 1980
mike    tty08    12:13 Jul 16 1980
user    tty09    12:17 Jul 16 1980
```

This will tell you the user names of those logged in, as well as the system's name for their terminal and the time at which they started. To 'send' a message to john, type:

```
++ send john
```

Then type your message. If john were to 'send' to you, the string:

```
Message from john
```

would appear on your terminal, followed by his message. It is possible to carry on a two way communications if each user 'sends' to the other. See the full description of this command for more details.

As you learn to use more commands on the system, it may be hard to remember the exact calling sequence of some of them. The 'help' command is available to offer assistance. For example:

```
++ help who
```

will provide a short description of the 'who' command and how to call it.

```
++ help list date
```

will give you information about the 'list' and 'date' commands. If you forget a command name you can type:

```
++ help
```

which will give you the names of most of the commands on the system. It will then prompt you for the name of a command with which you need help. Typing only a RETURN will exit the help command.

Back when the original two files were created, we more or less picked arbitrary names for them. File names may be just about anything but can not contain more than 14 characters. It is normally a good idea to make the name meaningful or somewhat descriptive of the file's contents. It is also wise to avoid certain characters in names which have special meaning elsewhere. Some examples of this are the '+' character which is used to specify options and the characters '*', '?', and '[' which are described below. There are other special characters you will run into as time goes on, but for the most part, these are the ones to avoid. Some common sense can also be put to good use when assigning file names. For example, if you are writing a book, you may want to make each chapter a different file for easy reference. Naming the files 'chapter1', 'chapter2', 'chapter3', etc., would keep them neatly organized. If you wanted to list all of the chapters you could type:

```
++ list chapter1 chapter2 chapter3 ....
```

but as you can see, if your book contained 25 chapters, this would be quite tedious. An easier way to accomplish this is by typing:

```
++ list chapter*
```

The '*' tells UniFLEX to look for anything in this part of the file name. Since the string 'chapter' was specified, only file names which start with 'chapter' will be looked at, but the names may end with anything. In this way, all of the file names we want will be provided to the list command for processing. It should be noted that once the qualifying file names are found, they are sorted alphabetically before being passed on to the command. In this case, 'chapter1' will come before 'chapter2' and so on, just as we want! This feature is not particular to the 'list' command but is system wide. We could have just as easily typed:

```
++ page chapter*
```

to get a page formatted listing of the chapters. As another example:

```
++ list *
```

will display the contents of all files in your directory. Something just as easy, and very, very dangerous is:

```
++ kill *
```

which will delete all of your files! Do not experiment with this one, it really works! Another example of the name matching feature is:

```
++ list *file*
```

will list all files which contain the string 'file' as any part of the file name. The * is very useful and you should learn to make good use of it. There are some other name matching characters available. One of these is the '?' which will match any single character. For example:

```
++ list test?
```

will list all files whose names start with the string 'test' and have exactly one additional character in the name. The command:

```
++ list ?
```

will list all files whose names consist of a single character. There is one more name matching facility which allows you to specify a class of characters. For example, if you wanted to list chapters 3 through 7 and chapter 9 of your book you could type:

```
++ list chapter[345679]
```

The square brackets inform UniFLEX to match any of the characters contained between them. Another way to do the same thing is:

```
++ list chapter[3-79]
```

A range of consecutive letters or digits may be specified by separating them with a hyphen. This feature can be quite a time saver!

Now that you understand the basics of file names we will look at them a little closer. As mentioned earlier, all of your files are in a directory, which is nothing more than a collection of files. The system has many directories contained in it. Each user has a directory specifically assigned to him. This directory is called your 'login directory' and usually has the same name as your login name. Yes, directories have names, just as do regular files. The fact that you have your own directory, different from another user's, is why you can be assured that typing 'list myfile' will list your file called 'myfile' and not someone else's. This implies that there can be more than one file with the same name in the system, as long as they reside in different directories. Whenever you create a file, it will be placed in your current directory, unless you instruct the system otherwise.

The directories of the system are arranged like a family tree. All directories have a 'parent' directory with the exception of the 'root' directory which forms the root or base of the tree. To get an idea of this structure, type the command 'path'. You should get something similar to:

```
++ path
/usr/your-name
```

The path command prints the complete 'path name' of your current directory. A path name, is the path you need to take through the tree to get to a directory or file. In this example, you must start at the 'root' directory which is designated by the first '/' in the path name. Following is the name 'usr' which is the name of a directory in the root directory. In this case, the root is the parent directory of the directory 'usr'. The next '/' character is simply a path name separator and is only a convention used by the system. Only a leading '/' represents the root. The next item in the path is 'your-name' which should be the name of your directory (the same name as your login name). Its parent is 'usr'. To get a feel for the path name, type:

```
++ dir /usr/your-name
```

Of course you should substitute your actual user name for the string 'your-name'. This instructs the system to display the contents of the directory specified, in this case, your login directory. The results should be exactly the same as typing 'dir' without a name since this command displays your current directory by default.

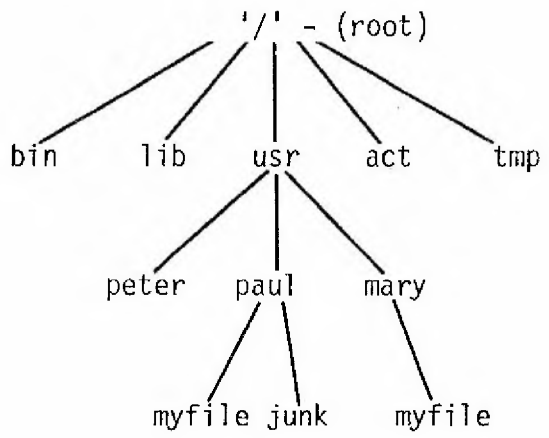
You can verify your path through the tree by first typing 'dir /' to display the root directory. You will get back something like:

```
++ dir /
act          bin          dev          etc          lib
tmp          usr          usr2
```

The files you will see may vary slightly since they are system dependent. The key here is that you will find a file named 'usr' which was the second element of your login directory's path name. Now enter 'dir /usr'. You should see a list (sometimes quite long) of all of the various user names on your system. Among the names you should find your own. This completes the path! As another example of path names, type:

```
++ list /usr/your-name/myfile
```

This should display the contents of your 'myfile' (assuming it still exists). Since a picture is worth a thousand words, and this manual should be kept brief, here is a pictorial representation of the directory tree structure.



This is just a partial picture but you should be able to get an idea of how the different names are related. Notice that the file 'myfile' in 'paul' is completely different than the file 'myfile' in 'mary'.

The two file names '.' and '..' were mentioned previously. These are primarily for convenience. If you remember, the file '.' represents the directory in which it is contained, and the file '..' represents its parent. If you type the commands 'dir .' and 'dir ..' you will see how these work. Remember that the directory 'usr' is the parent of your login directory.

Now that the directory structure is becoming clear, lets look at some things we can do with it. If you wish to look at someone else's directory, you simply need to specify the path name of the directory to 'dir'. As an example:

```
++ dir /usr/mary
```

will display the contents of mary's directory. To copy a file from mary's directory:

```
++ copy  /usr/mary/file  yourfile
```

The last two examples assume that you have permission to look at this directory and permission to read mary's file. If you remember back to the long listing obtained from dir using the '+l' option, you saw the characters 'rw-rw-' associated with each file. The full set of characters you will run into are:

```
rwxrwx
```

which represent the permissions associated with a file or directory. The first three characters are the permissions for the owner of the file and represent 'read', 'write', and 'execute' permission respectively. The second set of three characters represent the permissions for all others. If you want to copy or list someone else's file, you will have to have 'read' permission in that file. If you want do a 'dir' on someone else's directory, you will need read permission for the directory. In this way, you may protect your files from others by setting the permissions as desired. The command to set or change permissions is 'perms' and is covered separately in the 'UniFLEX Utility Commands' manual.

As the number of files you collect grows, you will probably find your directory getting quite cluttered. UniFLEX offers the ability to create sub-directories in your login directory to help organize your files. For example, when writing your book, it might be desirable to create a directory which will contain nothing but your book. To do this, try:

```
++ crdir book
```

You will now have a subdirectory in your login directory named book. If you now execute 'dir +l' you will see the name 'book' listed. Notice that after the size number (the 1 right after the name) there is the character 'd'. The 'd' informs you that 'book' is not a regular file, but instead a directory. If you execute:

```
++ dir book
```

you will see that no files are displayed, showing that the directory is empty.

From your login directory, it would be necessary to type a path name to specify a file contained in your new sub-directory 'book'. For example:

```
     ++ list /usr/your-name/book/file-name
          -or-
     ++ list book/file-name
```

Both of these will give the same results. The first example specifies the entire path name. Since the first character in the path name is '/', which represents the root, the system will start the file name search at the root, then go to 'usr', then 'your-name', followed by 'book', and finally to the file. The second example will start in your current directory since the root directory was not specified. As you can see, this second form is much more convenient. It is also possible to change your current directory. If you are going to access a lot of files in 'book', it would be even more efficient to 'change directories'. For example:

```
     ++ chd /usr/your-name/book
          -or-
     ++ chd book
```

will change your current directory to 'book'. Now if you type 'dir' without specifying a directory name, you will be shown the contents of 'book'. You can also execute 'dir ..' which will display the contents of your login directory since it is the 'parent' directory of 'book'. Feel free to create as many directories as needed to keep your files organized. This directory structure is one area which makes the system so efficient and easy to use.

You can also delete a directory if you decide it is no longer needed. You can change back to your login directory by:

```
     ++ chd ..
         -or-
     ++ chd /usr/your-name
```

If a directory is empty (no files contained in it except for the two special files '.' and '..', it may be deleted with the 'kill' command:

```
     ++ kill book +d
```

Notice that an option was specified ('+d') which tells 'kill' it should delete directories. Without the '+d', the directory would not be deleted.

Now that you have a good understanding of files and directories, lets look at some more advanced ways of executing commands. The program which is running and accepting your commands is called the 'shell'. It is the one which is printing the '++' on your terminal and issuing your entered commands to the system. The 'shell' will let you enter commands in a variey of ways. For example:

```
     ++ date; list myfile
```

will execute the date command, and when it is finished, execute the 'list' command. The semicolon (';') tells the shell that there is another command following. You may string as many commands together as you desire using the semicolon.

Another feature of the shell is called i/o redirection. The term 'i/o' refers to 'input/output'. As you noticed, most of the commands you have executed so far produce some sort of printing or output on your terminal. It is possible to redirect this output into a file. For example:

```
     ++ who  >outfile
```

will not display anything on your terminal because the output has been redirected to the file named 'outfile'. The '>' is a special character to the shell which causes it to take all standard output from the command it is going to execute and put it in the file specified. As another example:

```
     ++ list myfile testfile >junk
```

will put the contents of the files 'myfile' and 'testfile' one after the other in the file named 'junk'. This is a method of appending two files together.

We can also group several commands together and put all of their output into one common file.

```
     ++ (date; who) >>status
```

The parentheses group the two commands together so that both of their outputs go into the file named 'status'. Without them, only the output from the command 'who' would have been redirected into the file. Notice that in this example, the redirection character was '>>' instead of '>'. This mechanism provides essentially the same results with one exception. The '>' character will always create a new file when it operates, so if a file by the same name previously existed, its contents will be deleted before the command is run. The '>>' characters will not delete the file if it exists, but will append the new output to the end of the file. This can be demonstrated by entering

```
     ++ (date; who) >>status
```

several times and then list the file 'status' to see the results. Input to a command can also be redirected. As an example, the text editor may be used to make a variety of changes to a file. Lets suppose that the same set of changes had to be made to an entire set of files. It would be tedious to have to repeat the same operations for each file involved. Instead, we may create a file which contains all of the editor commands to be used, entered exactly as they would be entered to the editor. Lets call this file 'script'. We can now type the command:

```
++ edit  some-file  <script
```

The argument which starts with the '<' tells the shell to send the contents of the file named 'script' to the editor to be used as input, as opposed to using data entered from the keyboard. This demonstrates input redirection.

In the previous example, the files we may be editing with the script file may be quite large, and therefore, time consuming. Entering the command as shown will mean you will have to sit and wait for the command to finish. An alternative is to type the command as follows:

```
++ edit  some-file  <script &
```

Notice that the only difference is the '&' character at the end of the line. The ampersand tells the shell that it should not wait for the command to finish, but should immediately issue the prompt. This form of command execution is called 'background' execution. When a command is run in the background, the shell will report back with a line similar to:

```
** T2451 running.
```

The 'T' stands for 'task' and the number following is the 'task identifier' number, known as 'task id' for short. When the command finally does finish, the system will report back with a similar line:

```
** T2451 - ended.
```

to signify that the task has completed. If you decide you do want to wait for the command after all, typing:

```
++ wait
```

will cause the system to act exactly as if the ampersand were not specified initially. In other words, the shell will not accept any more commands until your background task has completed. It is possible to execute more than one background task at a time. If you get several going, the 'jobs' command will give you a list of your current background tasks, their task id's, and the date and time they were started. If you need to stop a task running in the background, you will quickly find out that the 'control C' described earlier does not work. The 'int' command is used for this purpose. It can be used to 'interrupt' or terminate a background task. As an example:

```
++ int 2451
```

will interrupt the background task number 2451.

Another very powerful feature of the shell is known as 'pipes'. Pipes are used to connect small programs together which are usually 'filter' type programs. A filter is a program which is provided some form of input, alters the data in some way or another, and then outputs this changed data. The 'page' command is an example of a filter. As an example:

```
     ++ page file1 file2 file3
```

will list each file starting at the top of a new page. Suppose you want the page formatting that the 'page' command performs, but you want the files all run together, as if they were one file. One way to accomplish this is as follows:

```
     ++ list file1 file2 file3 >temp
     ++ page <temp
     ++ kill temp
```

This sequence will append the three files (using 'list') and put the output into a file called 'temp'. The next line will run the 'page' command, which will get its input from the file 'temp' (input redirection). Finally, since we don't really need the 'temp' file, it is deleted using 'kill'. This is fine, but there is a much easier way to accomplish this:

```
     ++ list file1 file2 file3 | page
```

The vertical bar character (the '^' character may also be used) sets up a 'pipe' and tells the system to take the output from the 'list' command and use it as input to the 'page' command. The page command will then output the information directly to the terminal. The fact that the data is routed through several commands is where the name 'pipe' comes from. Another example of pipes is:

```
     ++ dir +l | page
```

which will give you a page formatted directory listing. Remember that the '+l' specifies the long listing. Pipes may of course be run in the background.

```
     ++ command1 | command2 &
```

Again the ampersand character is used, as described above.

Another feature of the shell is the 'startup' service. You may find yourself repeating the same sequence of commands everytime you login to the system. As an example, you may run the 'who' command to see who else is on the system, followed by the 'dir' command to check the contents of your directory. This can be done automatically by creating a '.startup' file in your login directory which contains the list of commands you want executed. For example:

```
++ edit .startup
New file being created
    1.00=who; dir
    2.00=#s
++
```

You now have a file which lists the two commands you run each time you login. The next time you login, the system will read your '.startup' file and execute the commands you have listed automatically!

The shell can execute other files containing lists of commands as well. Create a file in the following manner:

```
++ edit dw
New file being created
    1.00=date
    2.00=who
    3.00=#s
++
```

To execute this file, simply type:

```
++ shell <dw
```

which runs the shell (after all, it is just another program) but gets its input from the file named 'dw' rather than the terminal. Both of the commands, 'date' and 'who' will be executed, just as if you had typed them in. We can make this even more convenient by telling the system that the file 'dw' is to be made 'executable'. This can be done by:

```
++ perms u+x dw
```

which sets the 'execute' permission for the user (owner) of the file 'dw'. Now all you need to do is enter:

```
++ dw
```

and the date and 'who' information will be displayed.

Quite a bit has been presented in this introduction. Hopefully you have tried most of the examples. If everything is not clear, don't worry. Re-read the parts you had trouble with, and experiment. The best way to learn what the system can and cannot do is by experimenting. In a short time you will probably be calling yourself an expert!