

## Chapter V

### Conclusions and Further Development

#### Conclusions

This thesis was developed on a UNIX like operating system. The computer used in this development has the following specifications :

1. Machine Type : IBM AT (compatible)  
CPU Type : Intel 80386  
Math Co-processor : Intel 80387  
Memory : 8 MB  
OS : LINUX version 1.1.59 (POSIX)
  
2. Sun Sparc server  
Machine Type : Sparc 20  
CPU : Sparc  
Memory : 60 MB  
OS : Solaris Version 2.3  
(UNIX(R) SYS V Release 4.0)

With regard to LINUX, there are some system features, which are useful for this development :

1. Compatible with UNIX standard for instance; IEEE POSIX.1, System V and BSD.
2. A complete multitasking and multi-user operating system.
3. Providing basic built-in shell command.
4. Providing a complete UNIX programming environment such as standard libraries, programming tools, compilers and so on.

### Findings

Concerning the development procedure, it was found that there were many useful utilities such as system calls, built-in shell commands and C library functions provided by UNIX. Therefore, these tools can be chosen and integrated together for effective implementation of the screen-based file utilities program on UNIX.

When running and using this program, it was found that it worked smoothly and its output was not different between manipulating file(s) or directory(ies) via screen-based program and directly use via shell prompt. Furthermore, users can master file(s) and directory(ies) via menu by using arrow key or entering a menu number, if they cannot remember the proper shell command. Thus, this feature can reduce or may eliminate some users' mistake on UNIX system.

Since this program uses curses capabilities, the developer need not worry about the variety of terminal screens on which the program might be run. This program is terminal independent and is portable to other UNIX systems.

### Problems and Limitations

Due to the variety of UNIX systems, any programmer who uses UNIX as a development environment should be concerned with the portability of the final product.

During the early phase of this development, it was found that some machines did not have the curses libraries installed. Or, some machines only contained the small module called "mini curses". This caused the program to not compile and link properly.

With regard to the testing of this application, the speed is related to the machine architecture and the amount of available memory. Moreover, to install and to compile this program in any computer, it is suggested that programmer should check a set of commands in curses library. It may be need to edit some lines and recompile before linking to the curses-based program.

### Suggestions and Further Development

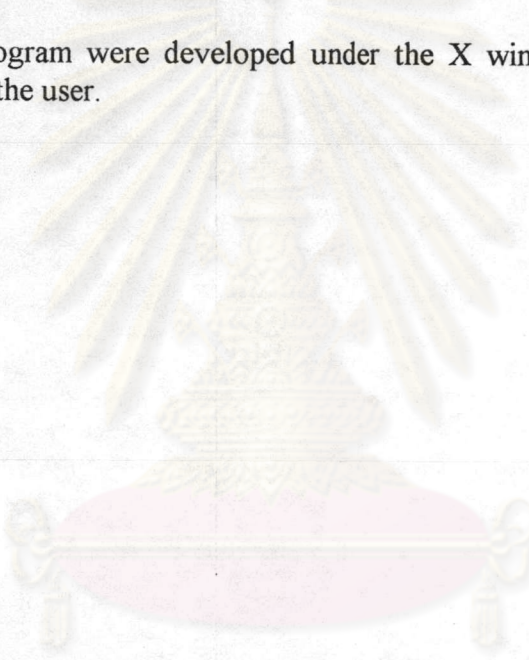
It is known that there are many effective tools and utilities provided by the new version of UNIX. Thus, the developer may include those tools in future implementations of this screen-based, file utilities program.

This development was designed with a text-based, monochrome user interface. Hence, users who are familiar with graphic application programs may not like to use this program. For this reason, the further development may enhance this application by adding color on the user interface screen.

For further development, this program may be improved as follows:

1. Adding "hot key" capabilities.
2. Adding print function to the file utilities.
3. Designing a list of files and directories as a tree structure which user can use arrow-key to select it.
4. Using "function key" button, such as "F1", "F2" and so on, by matching the function key with the operation.
5. Creating "user defined menu" which user can create their own menu.
6. Designing menu as a pull-down menu.
7. Exploiting graphic utilities to the user interface design.
8. Applying Thai languages to the user Interface.

If this program were developed under the X window system, it might be more attractive to the user.



ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย