Command Simulation

Q3(a) To simulate **ls** command using UNIX system calls.

Algorithm:

1. Store path of current working directory using **getcwd** system call.
2. Scan directory of the stored path using **scandir** system call and sort the resultant array of structure.
3. Display **dname** member for all entries if it is not a hidden file.
4. Stop.

Q3(b) To simulate **grep** command using UNIX system call.

Algorithm:

1. Get filename and search string as command-line argument.
2. Open the file in read-only mode using **open** system call.
3. If file does not exist, then stop.
4. Let length of the search string be *n*.
5. Read line-by-line until end-of-file
   a. Check to find out the occurrence of the search string in a line by examining Characters in the range 1–n, 2–n+1, etc.
   b. If searched string exists, then print the line.
6. Close the file using close system call.
7. Stop

Q3(c) To simulate **cp** command using UNIX system call.

Algorithm:

1. Get source and destination *filename* as command-line argument.
2. Declare a buffer of size 1KB
3. Open the source file in readonly mode using open system call.
4. If file does not exist, then stop.
5. Create the destination file using creat system call.
6. If file cannot be created, then stop.
7. File copy is achieved as follows:
   a. Read 1KB data from source file and store onto buffer using read system call.
   b. Write the buffer contents onto destination file using write system call.
   c. If end-of-file then step 8 else step 7a.
8. Close source and destination file using close system call.
9. Stop.

Q3(d) To simulate **rm** command using UNIX system call.

Algorithm:

1. Get *filename* as command-line argument.
2. Open the file in read-only mode using read system call.
3. If file does not exist, then stop.
4. Close the file using close system call.
5. Delete the file using unlink system call.
6. Stop.