

CMSC125 Operating Systems
CAPSTONE PROJECT

1. You are going to implement a kernel interface; that is, in Linux, the Terminal; or in Windows, the Command Prompt, hereafter will be called as the “**shell**”. You shall implement this using the **C programming language** only. Below are some commands that you should be able to implement in your Shell (meaning minimum requirements, there is no hindrance for you not to implement additional features, but at the very least, you should be able to implement everything stated below):

CD	Displays the name of or changes the current directory.
CHDIR	Changes the current directory.
CLS	Clears the screen.
CMD	Starts a new instance of the command interpreter.
COPY	Copies one or more files to another location.
DATE	Displays or sets the date.
DEL	Deletes one or more files.
DIR	Displays a list of files and subdirectories in a directory.
HELP	Print the list of available commands.
MKDIR	Creates a directory.
MOVE	Moves one or more files from one directory to another directory.
RENAME	Renames a file or files.
RMDIR	Removes a directory.
TIME	Displays or sets the system time.
TYPE	Displays the contents of a text file.

Refer to the Windows Command Prompt help and experiment with the different commands for more information.

2. Grouping:
 - a. Minimum of 1 member (one-man team)
 - b. Maximum of 2 members
3. Schedule:
 - a. Submission of documentation: **December 12, 2018**
 - b. Checking/Grading/Defense: **December 13 & 14, 2018** (anytime by appointment)
4. Basic requirements:
 - a. Working Code
 - b. Documentation
5. Documentation (to be submitted both [a] in print using A4 size bond paper and brown folder and [b] in PDF):
 - a. Cover Page (w/ title, course, names of members, among others)
 - b. Table of Contents
 - c. Project Summary/Description
 - d. Main Function Description and Code Implementation
 - e. List of Supported Commands with Description, Screenshot and Code Implementation
 - f. Challenges (minimum of 2 paragraphs)
 - g. Learnings & Insights (minimum of 3 paragraphs)
6. Group Grade (60%):
 - a. Meets all requirements and runs
 - 0 pts (more than 1 requirement missing, program crashes, or will not compile)
 - 5 pts (missing 1 requirement as listed on the basic requirements and specific game requirements)
 - 10 pts (all requirements met and runs with no errors)
 - b. Documentation (must be turned in prior to checking/grading; see schedule)
 - 0 pts (missing one or more of the document components)

- 5 pts (documents turned in, but contain spelling errors, grammar errors, or incomplete program elements)
- 10 pts (documents are error free and word processed, descriptions include extensive detail)
- c. Project software is released on time
- 0 pts (project software not available during checking/grading)
- 10 pts (project available during checking/grading)
- d. No fatal runtime errors or runtime bugs
- 0 pts (contains more than 1 run time bug or error)
- 5pts (contains 1 run time bug or error)
- 10pts (all requirements met and runs with no errors)
- e. Graphical User Interface
- 0 pts (GUI suffers from more than one of the following: visually distracting objects, clashing colors, inconsistent graphical components, poor alignment, sizing or spacing, non-standard software interface conventions)
- 5 pts (GUI suffers from only one of the following: visually distracting objects, clashing colors, inconsistent software components, poor alignment, sizing or spacing, non-standard software interface conventions)
- 10 pts (GUI satisfies all of the following: visually attractive objects, compatible colors, consistent software components, great alignment, sizing and spacing, standard software interface conventions followed)
- f. Code is commented and documented
- 0 pts (Code contains more than one of the following: undefined variables, procedures or functions without adequate documentation or description)
- 5 pts (Code contains one of the following: undefined variables, procedures or functions without adequate documentation or description)
- 10 pts (Code contains the following: all variables defined and commented, procedures and functions adequately documented and described)
7. Peer Grade (40%)
- At the end, each member will be evaluated by the other member(s) based on the following attributes (except for one-man teams):
- Participated in group discussions.
 - Helped keep the group on task.
 - Contributed useful ideas.
 - How much work was done?
 - Quality of completed work.

The following scales will be used in rating:

Rate	Remarks
5	<i>Superior</i>
4	<i>Above Average</i>
3	<i>Average</i>
2	<i>Below Average</i>
1	<i>Weak</i>

This rubric is adapted from Chad Manis, Teacher-Wri en Eduware, LLC.

8. Sample screenshots

```
C:\Windows\system32\cmd.exe - cmd
C:\Users\paula>cd
C:\Users\paula
C:\Users\paula>cd..
C:\Users>chdir..
C:\>cmd
Microsoft Windows [Version 6.0.6000]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\>d:
'd:' is not recognized as an internal or external command,
operable program or batch file.

C:\>d:
d:\>dir
Volume in drive D has no label.
Volume Serial Number is 782F-8042

Directory of d:\

08/28/2013  12:00 PM                27,136 CMSC 125 Course Project.doc
01/13/2010  04:23 PM                <DIR>      CMSC 128
07/01/2010  03:30 PM                <DIR>      CMSC 132
01/13/2010  04:16 PM                <DIR>      CMSC 140
01/12/2011  01:50 PM                <DIR>      CMSC 142
01/13/2010  04:16 PM                <DIR>      CMSC 198
01/13/2010  04:23 PM                <DIR>      CMSC 21
01/13/2010  04:16 PM                <DIR>      CS 191
08/26/2013  01:34 AM                 247 detox.txt
06/17/2012  03:22 PM      1,609,216 Developing an Effort Estimation Model for
Alliance Software.ppt
10/29/2012  03:09 PM                <DIR>      eBooks
05/21/2013  12:11 PM                <DIR>      Games
04/21/2013  11:25 PM      2,121,663 iPod_shuffle_4thgen_User_Guide.pdf
01/13/2010  04:19 PM                <DIR>      Java 1.2 docs and api
06/22/2013  09:17 PM                <DIR>      mana
11/12/2012  12:30 AM      2,595,328 SEA Conference Presentation.ppt
07/07/2010  05:18 PM                <DIR>      teaching demo
07/26/2011  01:37 PM                <DIR>      undergrad SP
06/25/2011  10:25 AM                <DIR>      UPLGradSchool
          5 File(s)          6,353,590 bytes
         14 Dir(s)      76,234,637,312 bytes free

d:\>
```

```
C:\Windows\system32\cmd.exe - cmd
d:\>date
The current date is: Wed 08/28/2013
Enter the new date: (mm-dd-yy) 08-28-2013
A required privilege is not held by the client.

d:\>time
The current time is: 12:04:20.28
Enter the new time:

d:\>
```

```
C:\Windows\system32\cmd.exe - cmd
d:\>type hahaha.txt
ekwjrfdskdkjgkufdhgkjxcn
sdfgkdjgkfd
dfgjkdfjghkfd
dfgkjdfn
hahahaha
d:\>rename hahaha.txt haha.txt

d:\>type hahaha.txt
The system cannot find the file specified.

d:\>type haha.txt
ekwjrfdskdkjgkufdhgkjxcn
sdfgkdjgkfd
dfgjkdfjghkfd
dfgkjdfn
hahahaha
d:\>
```

```
C:\Windows\system32\cmd.exe - cmd
d:\>copy haha.txt e:
1 file(s) copied.

d:\>dir e:
Volume in drive E has no label.
Volume Serial Number is 944A-B851

Directory of E:\

08/28/2013  12:06 PM                72 haha.txt
          1 File(s)                72 bytes
          0 Dir(s)  82,739,478,528 bytes free

d:\>del e:\haha.txt

d:\>dir e:
Volume in drive E has no label.
Volume Serial Number is 944A-B851

Directory of E:\

File Not Found

d:\>
```