

CSC3320 System Level Programming  
Program Challenge 2  
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1) Use cat to display the content in CSC\_Course.txt.

```
cat CSC_Course.txt
```

2) Count the characters, words and lines in CSC\_Course.txt.

```
wc CSC_Course.txt -l -m -w
```

3) Open the manual page for command cat.

```
man cat
```

4) What is the option for numbering the output lines?

```
-b
```

Quit the manual page.

Display CSC\_Course.txt again with line numbers.

Can you see the first line for CSC\_Course.txt? If yes, what is the first line (attach a screen shot)?



```
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ man wc
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ wc CSC_Course.txt
 195  2723 19491 CSC_Course.txt
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ man wc
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ man wc
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ wc CSC_Course.txt -l
 195 CSC_Course.txt
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ wc CSC_Course.txt -l -m
 195 19491 2723 CSC_Course.txt
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ man wc
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ wc CSC_Course.txt -l -m -w
 195  2723 19491 CSC_Course.txt
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ clear

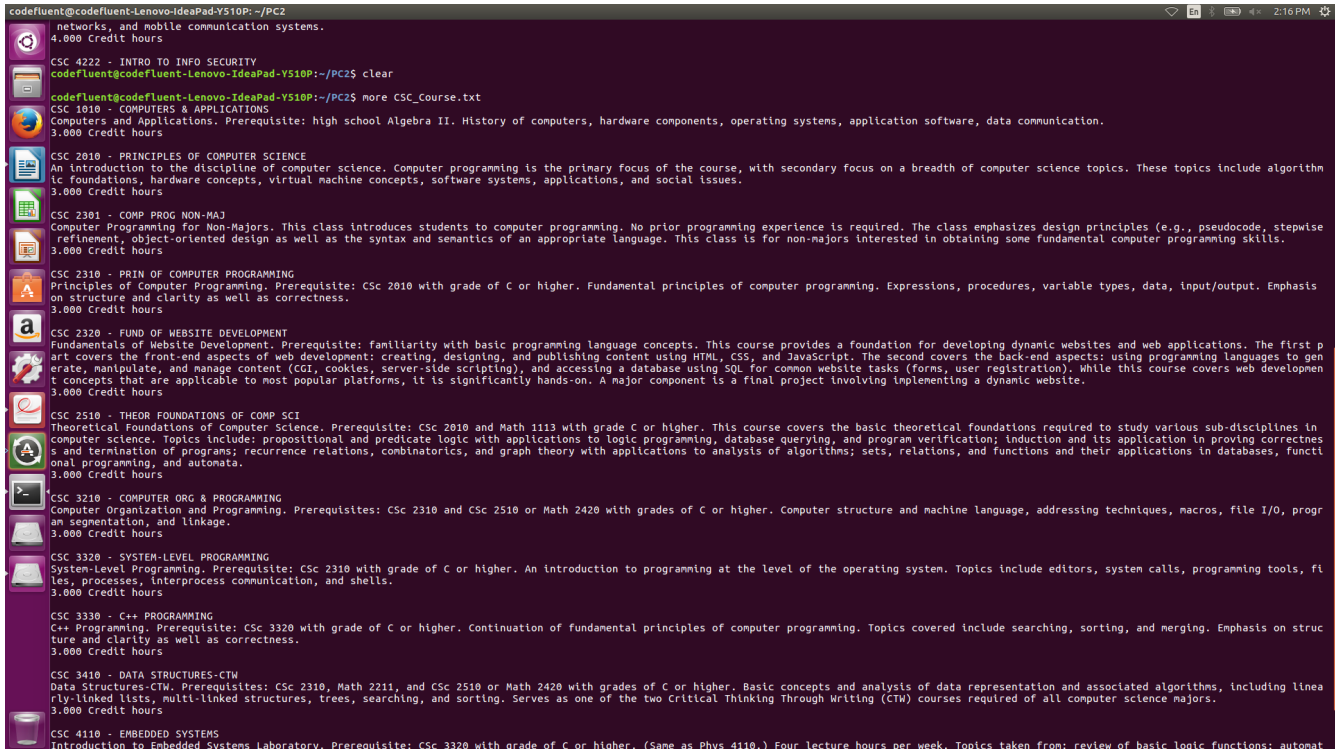
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ man cat
codefluent@codefluent-Lenovo-IdeaPad-Y510P: ~/PC2$ cat CSC_Course.txt -b
 1 CSC 1010 - COMPUTERS & APPLICATIONS
 2 Computers and Applications. Prerequisite: high school Algebra II. History of computers, hardware components, operating systems, application software, data communication.
 3 3.000 Credit hours
 4
 5 CSC 2010 - PRINCIPLES OF COMPUTER SCIENCE
 6 An introduction to the discipline of computer science. Computer programming is the primary focus of the course, with secondary focus on a breadth of computer science topics. These topics include a
 7 logarithmic foundations, hardware concepts, virtual machine concepts, software systems, applications, and social issues.
 8 3.000 Credit hours
 9
10 CSC 2301 - COMP PROG NON-MAJ
11 Computer Programming for Non-Majors. This class introduces students to computer programming. No prior programming experience is required. The class emphasizes design principles (e.g., pseudocode,
12 stepwise refinement, object-oriented design as well as the syntax and semantics of an appropriate language. This class is for non-majors interested in obtaining some fundamental computer programming skill
13 s.
14 3.000 Credit hours
15
16 CSC 2310 - PRIN OF COMPUTER PROGRAMMING
17 Principles of Computer Programming. Prerequisite: CSC 2010 with grade of C or higher. Fundamental principles of computer programming. Expressions, procedures, variable types, data, input/output. E
18 mphasis on structure and clarity as well as correctness.
19 3.000 Credit hours
20
21 CSC 2320 - FUND OF WEBSITE DEVELOPMENT
22 Fundamentals of Website Development. Prerequisite: familiarity with basic programming language concepts. This course provides a foundation for developing dynamic websites and web applications. The
23 first part covers the front-end aspects of web development: creating, designing, and publishing content using HTML, CSS, and JavaScript. The second covers the back-end aspects: using programming language
24 s to generate, manipulate, and manage content (CGI, cookies, server-side scripting), and accessing a database using SQL for common website tasks (forms, user registration). While this course covers web de
25 velopment concepts that are applicable to most popular platforms, it is significantly hands-on. A major component is a final project involving implementing a dynamic website.
26 3.000 Credit hours
27
28 CSC 2510 - THEOR FOUNDATIONS OF COMP SCI
29 Theoretical Foundations of Computer Science. Prerequisite: CSC 2010 and Math 1113 with grade C or higher. This course covers the basic theoretical foundations required to study various sub-discipli
30 nes in computer science. Topics include: propositional and predicate logic with applications to logic programming, database querying, and program verification; induction and its application in proving co
31 rrectness and termination of programs; recurrence relations, combinatorics, and graph theory with applications to analysis of algorithms; sets, relations, and functions and their applications in databases
32 , functional programming, and automata.
33 3.000 Credit hours
34
35 CSC 3210 - COMPUTER ORG & PROGRAMMING
36 Computer Organization and Programming. Prerequisites: CSC 2310 and CSC 2510 or Math 2420 with grades of C or higher. Computer structure and machine language, addressing techniques, macros, file I/
```

The first line is CSC 1010 – COMPUTERS & APPLICATIONS

5) Use more to display CSC\_Course.txt.

Can you see the first line for CSC\_Course.txt? If yes, what is the first line (attach a screen shot)?

Quit the display.

A terminal window with a dark background and light-colored text. The prompt is 'codefluent@codefluent-Lenovo-IdeaPad-V510P: ~/PC2'. The user has run 'more CSC\_Course.txt'. The first line of the file is 'CSC 1010 - COMPUTERS & APPLICATIONS'. The rest of the file contains descriptions of various computer science courses, each followed by '3.000 Credit hours'. The terminal shows the first line of the file, followed by a blank line, and then the rest of the file content. The user has pressed 'q' to quit the display.

```
codefluent@codefluent-Lenovo-IdeaPad-V510P: ~/PC2
networks, and mobile communication systems.
4.000 Credit hours
CSC 4222 - INTRO TO INFO SECURITY
codefluent@codefluent-Lenovo-IdeaPad-V510P: ~/PC2$ clear
codefluent@codefluent-Lenovo-IdeaPad-V510P: ~/PC2$ more CSC_Course.txt
CSC 1010 - COMPUTERS & APPLICATIONS
Computers and Applications. Prerequisite: high school Algebra II. History of computers, hardware components, operating systems, application software, data communication.
3.000 Credit hours
CSC 2010 - PRINCIPLES OF COMPUTER SCIENCE
An introduction to the discipline of computer science. Computer programming is the primary focus of the course, with secondary focus on a breadth of computer science topics. These topics include algorithmic foundations, hardware concepts, virtual machine concepts, software systems, applications, and social issues.
3.000 Credit hours
CSC 2301 - COMP PROG NON-MAJ
Computer Programming for Non-Majors. This class introduces students to computer programming. No prior programming experience is required. The class emphasizes design principles (e.g., pseudocode, stepwise refinement, object-oriented design as well as the syntax and semantics of an appropriate language. This class is for non-majors interested in obtaining some fundamental computer programming skills.
3.000 Credit hours
CSC 2310 - PRIN OF COMPUTER PROGRAMMING
Principles of Computer Programming. Prerequisite: CSC 2010 with grade of C or higher. Fundamental principles of computer programming. Expressions, procedures, variable types, data, input/output. Emphasis on structure and clarity as well as correctness.
3.000 Credit hours
CSC 2320 - FUND OF WEBSITE DEVELOPMENT
Fundamentals of Website Development. Prerequisite: familiarity with basic programming language concepts. This course provides a foundation for developing dynamic websites and web applications. The first part covers the front-end aspects of web development: creating, designing, and publishing content using HTML, CSS, and JavaScript. The second covers the back-end aspects: using programming languages to generate, manipulate, and manage content (CGI, cookies, server-side scripting), and accessing a database using SQL for common website tasks (forms, user registration). While this course covers web development concepts that are applicable to most popular platforms, it is significantly hands-on. A major component is a final project involving implementing a dynamic website.
3.000 Credit hours
CSC 2510 - THEOR FOUNDATIONS OF COMP SCI
Theoretical Foundations of Computer Science. Prerequisite: CSC 2010 and Math 1113 with grade C or higher. This course covers the basic theoretical foundations required to study various sub-disciplines in computer science. Topics include: propositional and predicate logic with applications to logic programming, database querying, and program verification; induction and its application in proving correctness and termination of programs; recurrence relations, combinatorics, and graph theory with applications to analysis of algorithms; sets, relations, and functions and their applications in databases, functional programming, and automata.
3.000 Credit hours
CSC 3210 - COMPUTER ORG & PROGRAMMING
Computer Organization and Programming. Prerequisites: CSC 2310 and CSC 2510 or Math 2420 with grades of C or higher. Computer structure and machine language, addressing techniques, macros, file I/O, program segmentation, and linkage.
3.000 Credit hours
CSC 3320 - SYSTEM-LEVEL PROGRAMMING
System-Level Programming. Prerequisite: CSC 2310 with grade of C or higher. An introduction to programming at the level of the operating system. Topics include editors, system calls, programming tools, files, processes, interprocess communication, and shells.
3.000 Credit hours
CSC 3330 - C++ PROGRAMMING
C++ Programming. Prerequisite: CSC 3320 with grade of C or higher. Continuation of fundamental principles of computer programming. Topics covered include searching, sorting, and merging. Emphasis on structure and clarity as well as correctness.
3.000 Credit hours
CSC 3410 - DATA STRUCTURES-CTW
Data Structures-CTW. Prerequisites: CSC 2310, Math 2211, and CSC 2510 or Math 2420 with grades of C or higher. Basic concepts and analysis of data representation and associated algorithms, including linearly-linked lists, multi-linked structures, trees, searching, and sorting. Serves as one of the two Critical Thinking Through Writing (CTW) courses required of all computer science majors.
3.000 Credit hours
CSC 4110 - EMBEDDED SYSTEMS
Introduction to Embedded Systems Laboratory. Prerequisite: CSC 3320 with grade of C or higher. (Same as Phys 4110.) Four lecture hours per week. Topics taken from: review of basic logic functions; automata
```

The first line is CSC 1010 – COMPUTERS & APPLICATIONS

6) What is the difference between cat and more command?

cat displays the whole file at once while more allows you to scroll through the file line by line.

7) Output the first 10 lines of "CSC\_Course.txt".

head CSC\_Course.txt

8) Output the last 10 lines of "CSC\_Course.txt".

tail CSC\_Course.txt

9) Display the file type for "CSC\_Course.txt".file

file CSC\_Course.txt

10) Display the long listing information for directory PC2.

`ls -ld`

11) Rename the parent directory PC2 as CSC3320\_PC2. (hint: you can use absolute pathname)

`mv -i PC2 CSC3320_PC2`

12) Rename "CSC\_Course.txt" as "Course.txt".

`mv -i CSC_Course.txt Course.txt`

13) Create a new folder "Backup" and copy "Course.txt" into this folder with a new name "Course.backup".

`mkdir Backup`

`cp Course.txt Backup`

14) Check the file permissions for "Course.txt".

`ls -l Course.txt`

15) What is the meaning for each bit in the file permissions for file "Course.txt".

They specify the read/write permissions the user has on Course.txt

16) For file "Course.txt", set user only read and write permission, set group only read permission, and set other no permissions with using octal number.

`chmod 640 Course.txt`

17) Then for file "Course.txt", add read and write permission for all without using octal number.

`chmod a=rw Course.txt`