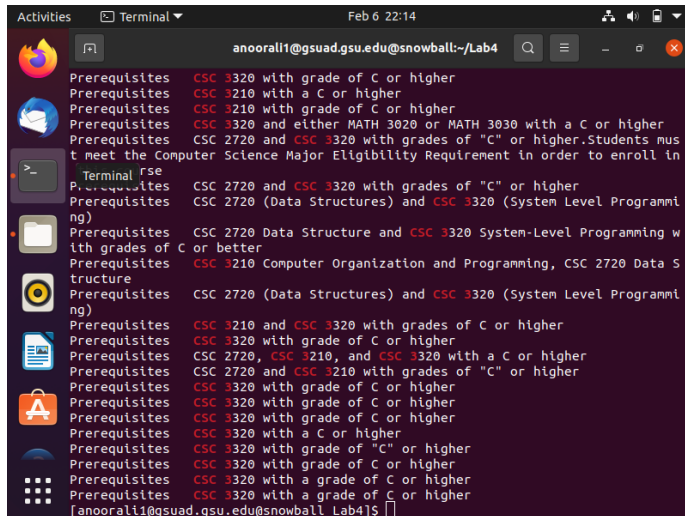


Arman Noorali

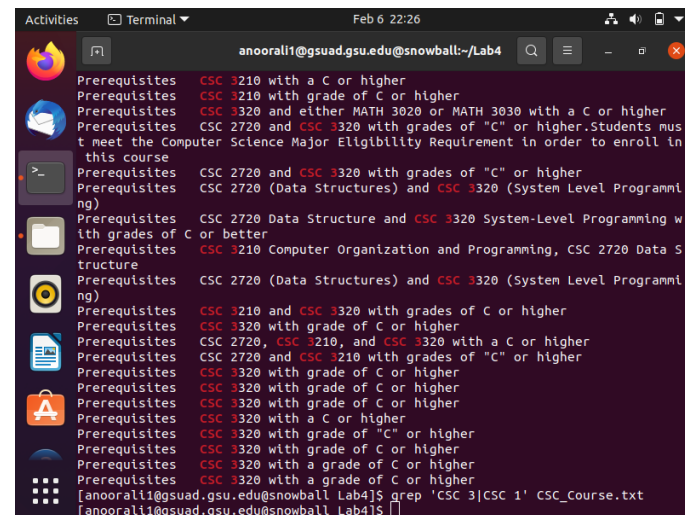
Lab Assignment 4-In-Lab

4. Output the lines containing the string “CSC 3”



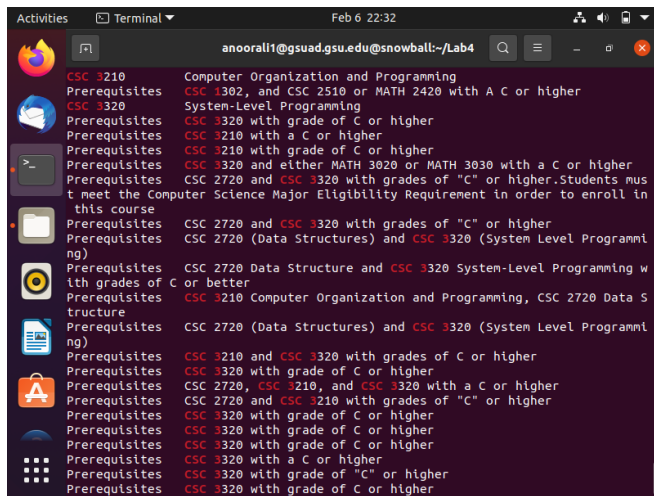
```
anoorali1@gsuad.gsu.edu@snowball:~/Lab4
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3210 with a C or higher
Prerequisites CSC 3210 with grade of C or higher
Prerequisites CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming with grades of C or better
Prerequisites CSC 3210 Computer Organization and Programming, CSC 2720 Data Structure
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 2720 and CSC 3210 with grades of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
[anoorali1@gsuad.gsu.edu@snowball:~/Lab4]$
```

5. Output the lines containing the string either “CSC 3” or “CSC 1”



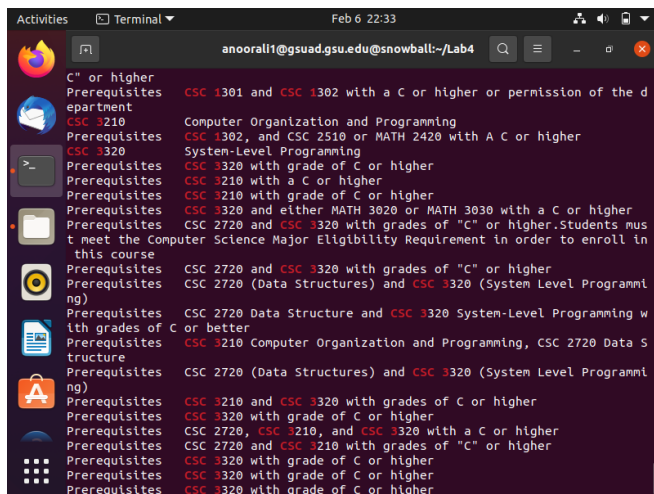
```
anoorali1@gsuad.gsu.edu@snowball:~/Lab4
Prerequisites CSC 3210 with a C or higher
Prerequisites CSC 3210 with grade of C or higher
Prerequisites CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming with grades of C or better
Prerequisites CSC 3210 Computer Organization and Programming, CSC 2720 Data Structure
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 2720 and CSC 3210 with grades of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
[anoorali1@gsuad.gsu.edu@snowball:~/Lab4]$ grep 'CSC 3|CSC 1' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball:~/Lab4]$
```

6. Output the lines containing the string either “CSC 3” or “CSC 1”



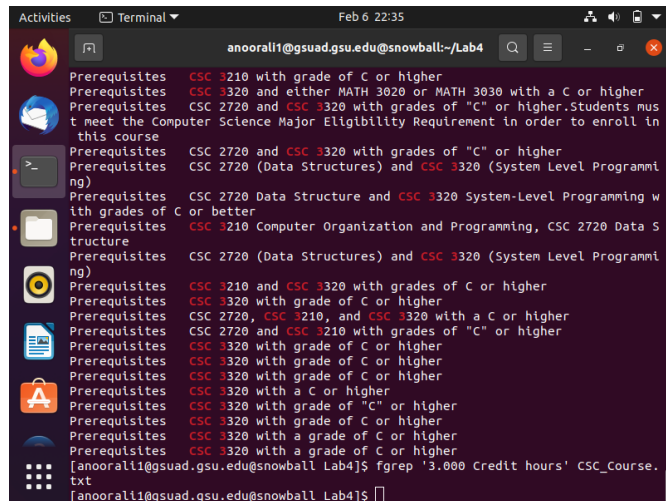
```
anoorali1@gsuad.gsu.edu@snowballi:~/Lab4
CSC 3210 Computer Organization and Programming
Prerequisites CSC 1302, and CSC 2510 or MATH 2420 with A C or higher
CSC 3320 System-Level Programming
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3210 with a C or higher
Prerequisites CSC 3210 with grade of C or higher
Prerequisites CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students mus
t meet the Computer Science Major Eligibility Requirement in order to enroll in
this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programmi
ng)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming w
ith grades of C or better
Prerequisites CSC 3210 Computer Organization and Programming, CSC 2720 Data S
tructure
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programmi
ng)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 2720 and CSC 3210 with grades of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
```

7. Output the lines containing the string either “CSC 3” or “CSC 1”



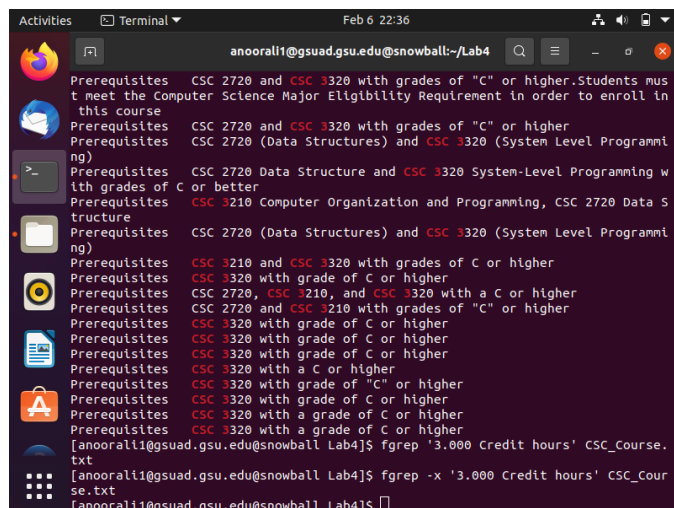
```
anoorali1@gsuad.gsu.edu@snowballi:~/Lab4
C" or higher
Prerequisites CSC 1301 and CSC 1302 with a C or higher or permission of the d
epartment
CSC 3210 Computer Organization and Programming
Prerequisites CSC 1302, and CSC 2510 or MATH 2420 with A C or higher
CSC 3320 System-Level Programming
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3210 with a C or higher
Prerequisites CSC 3210 with grade of C or higher
Prerequisites CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students mus
t meet the Computer Science Major Eligibility Requirement in order to enroll in
this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programmi
ng)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming w
ith grades of C or better
Prerequisites CSC 3210 Computer Organization and Programming, CSC 2720 Data S
tructure
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programmi
ng)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 2720 and CSC 3210 with grades of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
```

8. Output the lines containing the string "3.000 Credit hours".



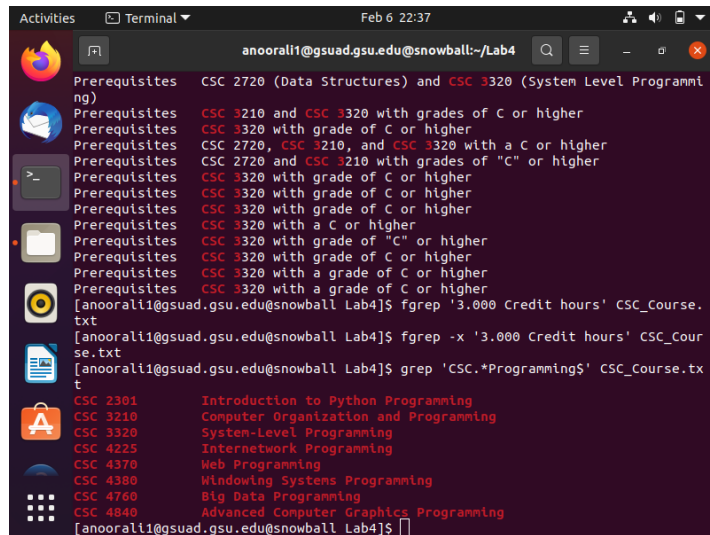
```
anoorali1@gsuad.gsu.edu@snowball:~/Lab4
Prerequisites CSC 3210 with grade of C or higher
Prerequisites CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming with grades of C or better
Prerequisites CSC 3210 Computer Organization and Programming, CSC 2720 Data Structure
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 2720 and CSC 3210 with grades of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ fgrep '3.000 Credit hours' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$
```

9. Output the lines matching the entire string "3.000 Credit hours".

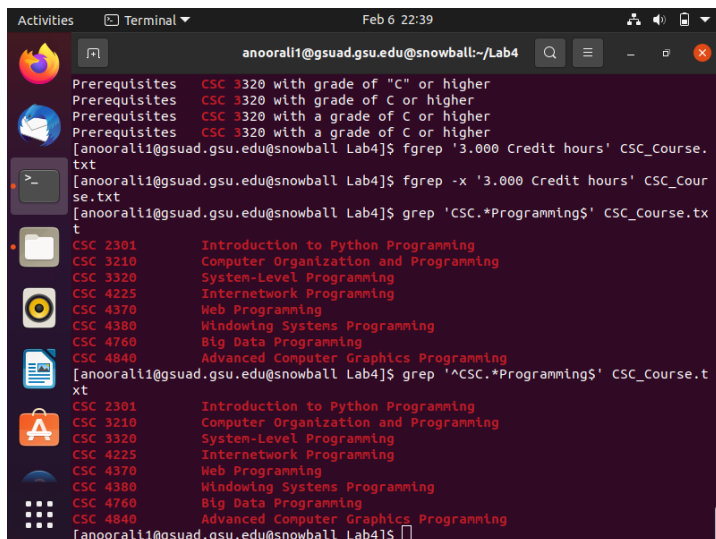


```
anoorali1@gsuad.gsu.edu@snowball:~/Lab4
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming with grades of C or better
Prerequisites CSC 3210 Computer Organization and Programming, CSC 2720 Data Structure
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 2720 and CSC 3210 with grades of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ fgrep '3.000 Credit hours' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ fgrep -x '3.000 Credit hours' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$
```

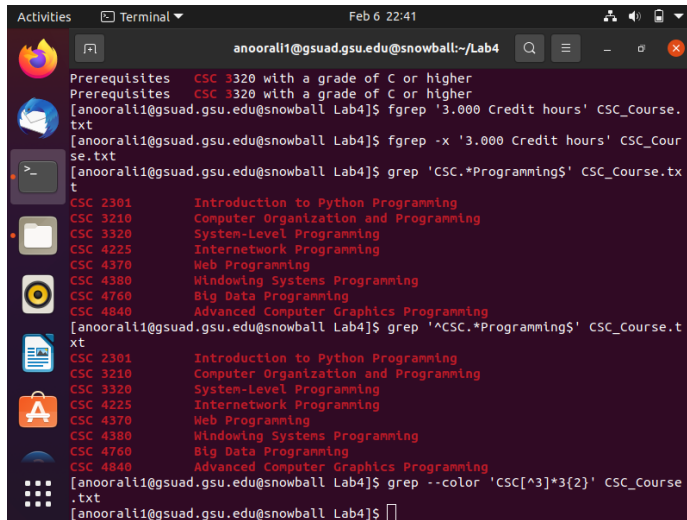
10. Output the lines having strings with "CSC" and ends with "PROGRAMMING " with anything in between.

A terminal window titled 'Terminal' with the date 'Feb 6 22:37' and the user 'anooral1@gsuad.gsu.edu@snowball:~/Lab4'. The terminal shows a list of prerequisites for various courses, followed by three grep commands. The first command filters for '3.000 Credit hours', the second for '-x '3.000 Credit hours'', and the third for 'CSC.*Programming\$'. The output shows a list of courses starting with 'CSC' and ending with 'PROGRAMMING'.

11. Output the lines starting with "CSC" and ends with "PROGRAMMING" with anything in between.

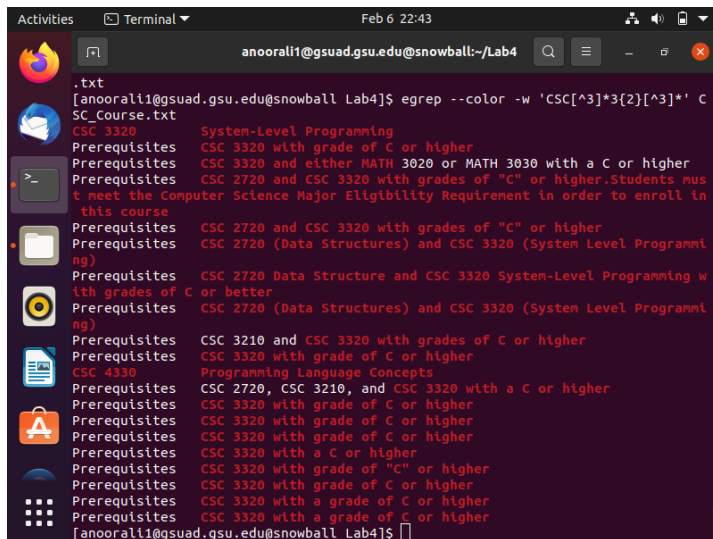
A terminal window titled 'Terminal' with the date 'Feb 6 22:39' and the user 'anooral1@gsuad.gsu.edu@snowball:~/Lab4'. The terminal shows the same list of prerequisites as in the previous screenshot, followed by three grep commands. The first command filters for '3.000 Credit hours', the second for '-x '3.000 Credit hours'', and the third for '^CSC.*Programming\$'. The output shows a list of courses starting with 'CSC' and ending with 'PROGRAMMING'.

12. Output the lines with highlighted matching words and it outputs the lines with substring starting with "CSC" and except "3" after "CSC". And end the line with "3" 2 times.



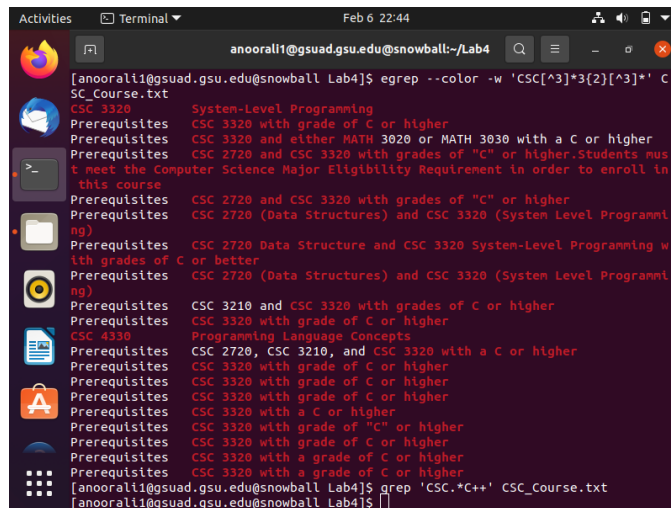
```
anoorali1@gsuad.gsu.edu@snowball:~/Lab4
Prerequisites CSC 3320 with a grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ fgrep '3.000 Credit hours' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ fgrep -x '3.000 Credit hours' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ grep 'CSC.*Programming$' CSC_Course.txt
CSC 2301 Introduction to Python Programming
CSC 3210 Computer Organization and Programming
CSC 3320 System-Level Programming
CSC 4225 Internetwork Programming
CSC 4370 Web Programming
CSC 4380 Windowing Systems Programming
CSC 4760 Big Data Programming
CSC 4840 Advanced Computer Graphics Programming
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ grep '^CSC.*Programming$' CSC_Course.txt
CSC 2301 Introduction to Python Programming
CSC 3210 Computer Organization and Programming
CSC 3320 System-Level Programming
CSC 4225 Internetwork Programming
CSC 4370 Web Programming
CSC 4380 Windowing Systems Programming
CSC 4760 Big Data Programming
CSC 4840 Advanced Computer Graphics Programming
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ grep --color 'CSC[^3]*3{2}' CSC_Course.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$
```

13. Output the lines with highlighted matching words and it outputs the lines having exact string starting with "CSC" and except "3" after "CSC". And end with "3" 2 times then except "3".



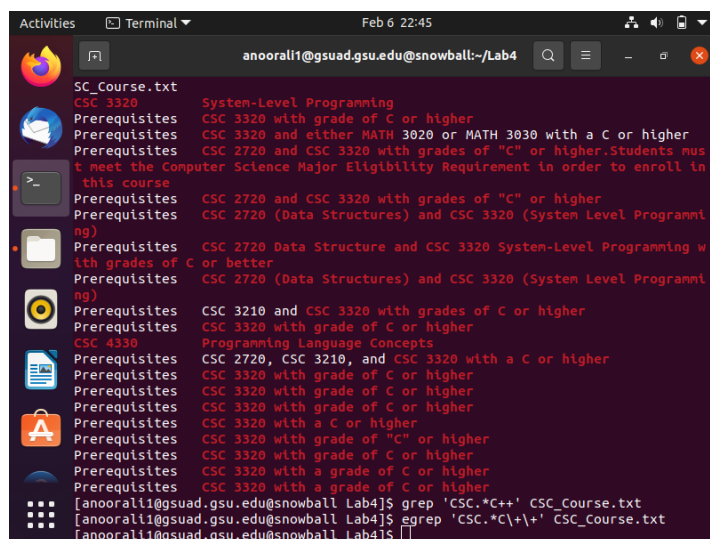
```
anoorali1@gsuad.gsu.edu@snowball:~/Lab4
.txt
[anoorali1@gsuad.gsu.edu@snowball Lab4]$ egrep --color -w 'CSC[^3]*3{2}[^3]* C
SC_Course.txt
CSC 3320 System-Level Programming
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher.Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course
Prerequisites CSC 2720 and CSC 3320 with grades of "C" or higher
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 2720 Data Structure and CSC 3320 System-Level Programming with grades of C or better
Prerequisites CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)
Prerequisites CSC 3210 and CSC 3320 with grades of C or higher
Prerequisites CSC 3320 with grade of C or higher
CSC 4330 Programming Language Concepts
Prerequisites CSC 2720, CSC 3210, and CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
Prerequisites CSC 3320 with a grade of C or higher
[anoorali1@gsuad.gsu.edu@snowball Lab4]$
```

14. Output the lines containing the string starting with "CSC" and ends with "C++"



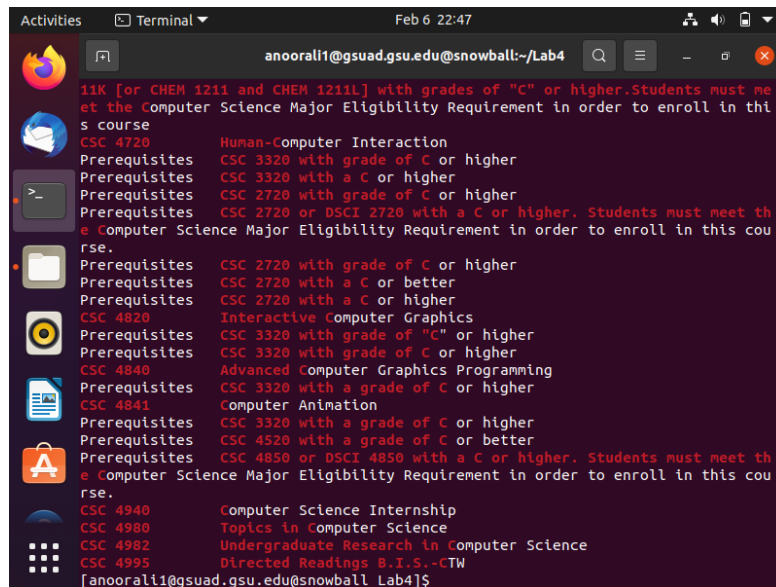
A terminal window titled 'Terminal' with the date 'Feb 6 22:44'. The user is 'anooral1@gsuad.gsu.edu@snowball:~/Lab4'. The command executed is `egrep --color -w 'CSC[^3]*3(2)[^3]*' SC_Course.txt`. The output shows several lines from the file `SC_Course.txt`, all starting with 'CSC 3320'. The lines are: 'System-Level Programming', 'CSC 3320 with grade of C or higher', 'CSC 3320 and either MATH 3020 or MATH 3030 with a C or higher', 'CSC 2720 and CSC 3320 with grades of "C" or higher.Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course', 'CSC 2720 and CSC 3320 with grades of "C" or higher', 'CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)', 'CSC 2720 Data Structure and CSC 3320 System-Level Programming with grades of C or better', 'CSC 2720 (Data Structures) and CSC 3320 (System Level Programming)', 'CSC 3210 and CSC 3320 with grades of C or higher', 'CSC 3320 with grade of C or higher', 'CSC 3320 with grade of C or higher', 'CSC 3320 with grade of C or higher', 'CSC 3320 with a C or higher', 'CSC 3320 with grade of "C" or higher', 'CSC 3320 with grade of C or higher', 'CSC 3320 with a grade of C or higher', 'CSC 3320 with a grade of C or higher', and 'CSC 3320 with a grade of C or higher'. The terminal prompt is `[anooral1@gsuad.gsu.edu@snowball Lab4]$`.

15. Output the lines containing the string starting with "CSC" and ends with "C++".



A terminal window titled 'Terminal' with the date 'Feb 6 22:45'. The user is 'anooral1@gsuad.gsu.edu@snowball:~/Lab4'. The command executed is `grep 'CSC.*C++' SC_Course.txt`. The output shows the same lines as in the previous screenshot, all starting with 'CSC 3320'. The terminal prompt is `[anooral1@gsuad.gsu.edu@snowball Lab4]$`.

16. Output the lines containing the string with "CSC" and ends with "C++".



The image shows a terminal window with a dark background. The title bar at the top reads "Activities", "Terminal", and "Feb 6 22:47". The terminal prompt is "anooral11@gsuad.gsu.edu@snowball:~/Lab4". The output is a list of computer science courses and their prerequisites, with some lines highlighted in red. The courses listed are:

- CSC 4720 Human-Computer Interaction
- CSC 4820 Interactive Computer Graphics
- CSC 4840 Advanced Computer Graphics Programming
- CSC 4841 Computer Animation
- CSC 4940 Computer Science Internship
- CSC 4980 Topics in Computer Science
- CSC 4982 Undergraduate Research in Computer Science
- CSC 4995 Directed Readings B.I.S.-CTW

The prerequisites for each course are listed below the course name. Some prerequisites are highlighted in red, including "CSC 3320 with grade of C or higher", "CSC 3320 with a C or higher", "CSC 2720 with grade of C or higher", "CSC 2720 or DSCI 2720 with a C or higher. Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course.", "CSC 2720 with a C or higher", "CSC 2720 with a C or better", "CSC 3320 with a grade of C or higher", "CSC 3320 with a grade of C or higher", "CSC 4520 with a grade of C or better", and "CSC 4850 or DSCI 4850 with a C or higher. Students must meet the Computer Science Major Eligibility Requirement in order to enroll in this course." The terminal ends with the prompt "[anooral11@gsuad.gsu.edu@snowball Lab4]\$".

```
11K [or CHEM 1211 and CHEM 1211L] with grades of "C" or higher.Students must me
at the Computer Science Major Eligibility Requirement in order to enroll in thi
s course
CSC 4720 Human-Computer Interaction
Prerequisites CSC 3320 with grade of C or higher
Prerequisites CSC 3320 with a C or higher
Prerequisites CSC 2720 with grade of C or higher
Prerequisites CSC 2720 or DSCI 2720 with a C or higher. Students must meet th
e Computer Science Major Eligibility Requirement in order to enroll in this cou
rse.
Prerequisites CSC 2720 with grade of C or higher
Prerequisites CSC 2720 with a C or better
Prerequisites CSC 2720 with a C or higher
CSC 4820 Interactive Computer Graphics
Prerequisites CSC 3320 with grade of "C" or higher
Prerequisites CSC 3320 with grade of C or higher
CSC 4840 Advanced Computer Graphics Programming
Prerequisites CSC 3320 with a grade of C or higher
CSC 4841 Computer Animation
Prerequisites CSC 3320 with a grade of C or higher
Prerequisites CSC 4520 with a grade of C or better
Prerequisites CSC 4850 or DSCI 4850 with a C or higher. Students must meet th
e Computer Science Major Eligibility Requirement in order to enroll in this cou
rse.
CSC 4940 Computer Science Internship
CSC 4980 Topics in Computer Science
CSC 4982 Undergraduate Research in Computer Science
CSC 4995 Directed Readings B.I.S.-CTW
[anooral11@gsuad.gsu.edu@snowball Lab4]$
```