CSc 3320: Systems Programming

Fall 2021

Midterm 1: Total points = 100

Submission instructions:

1. Create a Google doc for your submission.
2. Start your responses from page 2 of the document and copy these instructions on page 1.
3. Fill in your name, campus ID and panther # in the fields provided. If this information is missing TWO POINTS WILL BE DEDUCTED.
4. Keep this page 1 intact. If this *submissions instructions* page is missing in your submission TWO POINTS WILL BE DEDUCTED.
5. Start your responses to each QUESTION on a new page.
6. If you are being asked to write code copy the code into a separate txt file and submit that as well. The code should be executable. E.g. if asked for a C program then provide myfile.c so that we can execute that script. In your answer to the specific question, provide the steps on how to execute your file (like a ReadMe).
7. If you are being asked to test code or run specific commands or scripts, provide the evidence of your outputs through a screenshot and/or screen video-recordings and copy the same into the document.
8. Upon completion, download a .PDF version of the google doc document and submit the same along with all the supplementary files (videos, pictures, scripts etc).
9. Scripts/Code without proper comments, indentation and titles (must have the name of the program, and name & email of the programmer on top the script).

Full Name: Shiv Brahmbhatt

Campus ID: sbrahmbhatt3

Panther #: 002483892

Questions 1-5 are 20pts each

1.

```
Last login: Sat Oct  9 11:59:11 on ttys000

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Shivs-MacBook-Pro:~ shivbrahmbhatt$ ssh sbrahmbhatt3@snowball.cs.gsu.edu
sbrahmbhatt3@snowball.cs.gsu.edu's password:
Permission denied, please try again.
sbrahmbhatt3@snowball.cs.gsu.edu's password:
Last failed login: Sat Oct  9 12:15:55 EDT 2021 from c-73-184-81-195.hsd1.ga.comcast.net on ssh:notty
There was 1 failed login attempt since the last successful login.
Last login: Sat Oct  9 12:02:46 2021 from c-73-184-81-195.hsd1.ga.comcast.net
   +
   |   GSU Computer Science
   |   Instructional Server
   |   SNOWBALL.cs.gsu.edu
   +
[sbrahmbhatt3@gsuad.gsu.edu@snowball ~]$ cd MidtermExam
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man sudo|head -10 |cat > mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man cat|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man awk|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man ls|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man sed|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man grep|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man chmod|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man cut|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man wc|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ man echo|head -10 |cat >> mandatabase.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ cat -n mandatabase.txt
     1  SUDO(8)                         BSD System Manager's Manual                         SUDO(8)
     2
     3  NAME
     4       sudo, sudoedit — execute a command as another user
     5
     6  SYNOPSIS
     7       sudo -h | -K | -k | -V
     8       sudo -v [-AknS] [-a type] [-g group] [-h host] [-p prompt] [-u user]
     9       sudo -l [-AknS] [-a type] [-g group] [-h host] [-p prompt] [-U user] [-u user] [command]
    10       sudo [-ABEHnPS] [-a type] [-C num] [-c class] [-g group] [-h host] [-p prompt] [-r role]
    11  CAT(1)                            User Commands                               CAT(1)
    12
    13
    14
    15  NAME
    16         cat — concatenate files and print on the standard output
    17
    18  SYNOPSIS
    19         cat [OPTION]... [FILE]...
    20
    21  GAWK(1)                           Utility Commands                            GAWK(1)
    22
    23
    24
    25  NAME
    26         gawk — pattern scanning and processing language
    27
    28  SYNOPSIS
    29         gawk [ POSIX or GNU style options ] -f program-file [ -- ] file ...
    30         gawk [ POSIX or GNU style options ] [ -- ] program-text file ...
    31  LS(1)                             User Commands                               LS(1)
    32
    33
    34
```

```
    31  LS(1)                             User Commands                               LS(1)
    32
    33
    34
    35  NAME
    36         ls — list directory contents
    37
    38  SYNOPSIS
    39         ls [OPTION]... [FILE]...
    40
    41  SED(1)                            User Commands                              SED(1)
    42
    43
    44
    45  NAME
    46         sed — stream editor for filtering and transforming text
    47
    48  SYNOPSIS
    49         sed [OPTION]... {script-only-if-no-other-script} [input-file]...
    50
    51  GREP(1)                           General Commands Manual                    GREP(1)
    52
    53
    54
    55  NAME
    56         grep, egrep, fgrep — print lines matching a pattern
    57
    58  SYNOPSIS
    59         grep [OPTIONS] PATTERN [FILE...]
    60         grep [OPTIONS] [-e PATTERN | -f FILE] [FILE...]
    61  CHMOD(1)                          User Commands                           CHMOD(1)
    62
    63
    64
    65  NAME
    66         chmod — change file mode bits
    67
    68  SYNOPSIS
    69         chmod [OPTION]... MODE[,MODE]... FILE...
    70         chmod [OPTION]... OCTAL-MODE FILE...
    71  CUT(1)                            User Commands                               CUT(1)
    72
    73
    74
    75  NAME
    76         cut — remove sections from each line of files
    77
    78  SYNOPSIS
    79         cut OPTION... [FILE]...
    80
    81  WC(1)                             User Commands                               WC(1)
    82
    83
    84
    85  NAME
    86         wc — print newline, word, and byte counts for each file
    87
    88  SYNOPSIS
    89         wc [OPTION]... [FILE]...
    90         wc [OPTION]... --files0-from=F
    91  ECHO(1)                           User Commands                              ECHO(1)
    92
    93
```

```
    59         grep [OPTIONS] PATTERN [FILE...]
    60         grep [OPTIONS] [-e PATTERN | -f FILE] [FILE...]
    61  CHMOD(1)                                User Commands                                CHMOD(1)
    62
    63
    64
    65  NAME
    66         chmod - change file mode bits
    67
    68  SYNOPSIS
    69         chmod [OPTION]... MODE[,MODE]... FILE...
    70         chmod [OPTION]... OCTAL-MODE FILE...
    71  CUT(1)                                  User Commands                                 CUT(1)
    72
    73
    74
    75  NAME
    76         cut - remove sections from each line of files
    77
    78  SYNOPSIS
    79         cut OPTION... [FILE]...
    80
    81  WC(1)                                   User Commands                                  WC(1)
    82
    83
    84
    85  NAME
    86         wc - print newline, word, and byte counts for each file
    87
    88  SYNOPSIS
    89         wc [OPTION]... [FILE]...
    90         wc [OPTION]... --files0-from=F
    91  ECHO(1)                                 User Commands                                ECHO(1)
    92
    93
    94
    95  NAME
    96         echo - display a line of text
    97
    98  SYNOPSIS
    99         echo [SHORT-OPTION]... [STRING]...
   100         echo LONG-OPTION
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ vim helpme.sh
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh helpme.txt
sh: helpme.txt: No such file or directory
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh helpme.sh
Type a command
cat
helpme.sh: line 11: syntax error: unexpected end of file
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ vim helpme.sh
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh helpme.txt
sh: helpme.txt: No such file or directory
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ vim helpme.sh
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh helpme.sh
Type a command
mnt
No such command found
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh helpme.sh
Type a command
cat
       cat - concatenate files and print on the standard output
       cat [OPTION]... [FILE]...
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$
```

2.

```
Last login: Sun Oct 10 20:48:06 on ttys000

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Shivs-MacBook-Pro:~ shivbrahmbhatt$ ssh sbrahmbhatt3@snowball.cs.gsu.edu
sbrahmbhatt3@snowball.cs.gsu.edu's password:
Last login: Sun Oct 10 18:04:49 2021 from c-73-184-81-195.hsd1.ga.comcast.net
   +
   |   GSU Computer Science
   |   Instructional Server
   |   SNOWBALL.cs.gsu.edu
   +
[sbrahmbhatt3@gsuad.gsu.edu@snowball ~]$ cd MidtermExam
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ vim myexamfile.txt
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ grep -o -i $1 myexamfile.txt | wc -l

^C
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ grep -o -i $1 myexamfile.txt | wc -l



^C
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ grep -o -i $1 $2 | wc -l
Usage: grep [OPTION]... PATTERN [FILE]...
Try 'grep --help' for more information.
0
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ client_loop: send disconnect: Broken pipe
Shivs-MacBook-Pro:~ shivbrahmbhatt$
```

3.

```
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh calculator.sh
Enter Two numbers :
3
5
Enter Choice :
1. Addition
2. Subtraction
3. Multiplication
4. Division
3
Result : 15
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh calculator.sh
Enter Two numbers :
3
5
Enter Choice :
1. Addition
2. Subtraction
3. Multiplication
4. Division
1
Result : 8
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh calculator.sh
Enter Two numbers :
3
5
Enter Choice :
1. Addition
2. Subtraction
3. Multiplication
4. Division
2
Result : -2
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh calculator.sh
Enter Two numbers :
3
5
Enter Choice :
1. Addition
2. Subtraction
3. Multiplication
4. Division
4
Result : .60
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$
```

4.

```
Last login: Sun Oct 10 14:55:46 on ttys000

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
Shivs-MacBook-Pro:~ shivbrahmbhatt$ ssh sbrahmbhatt3@snowball.cs.gsu.edu
sbrahmbhatt3@snowball.cs.gsu.edu's password:
Last login: Sun Oct 10 14:56:15 2021 from c-73-184-81-195.hsd1.ga.comcast.net
    +
    |   GSU Computer Science
    |   Instructional Server
    |   SNOWBALL.cs.gsu.edu
    +
[sbrahmbhatt3@gsuad.gsu.edu@snowball ~]$ cd MidtermExam
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh PhoneBook.sh
Enter the name of the person: Justin
Provide the address of respective person: 7625646946
Provide the phone number of respective person: ^C
[sbrahmbhatt3@gsuad.gsu.edu@snowball MidtermExam]$ sh PhoneBook.sh
Enter the name of the person: Justin
Provide the address of respective person: Atlanta
Provide the phone number of respective person: 7629834057
please provide the name of the person to find the information: Justin
Name ; Address ; Phone number
Justin ; Atlanta ; 7629834057
Provide the name of the person whose record you want to delete:
```

5. A) The shell is used to controlling the computer using the commands instead of the Graphical User interface (GUI). It takes the command from programs. Shell helps to interact with the system. It is a term of UNIX.

   B) Yes, Snowball Server stops all the commands running in the system between the data source whereas shell in PC's won't stop. And to secure the Snowball Secure Shell is used (SSH) that is used for connections.

   C) As C is a compiled language, not an interpreted language. So that it is interpreted by a compiler of the C language and machine code generates and executes the output. Therefore, interpreted language is completely different from the compiled language.

   D) These two are Built-in commands. In which echo always ends with the status zero, whereas printf gives an exit of non-zero. The printf is slower compared to echo. Example: echo has a default newline character, but in print added manually.

   E) **SSH**- It is a connection between two systems used to copy, manage, or move files. The acronym of SSH is Secure Shell.

   SCP- It is used to copy a file on a remote server to the computer. SCP is a tool used by the SSH network protocol.

   WGET- It is used to download files by using the pasted URL from the server. WGET is a network downloader that is non-interactive.