System Commands, Week 1

Graded Assignment

Problem 1

The option used along with 'ls' command to display the hidden files is ..... (Do not add hyphen). (NAT)

Answer

a

Problem 2

Which directory contains the information related to host specific system configuration files?

A. /bin
B. /opt
C. /media
D. /etc

Answer

(D)

Problem 3

What does the first column of the output of the command "ls -l" represent? (CQ)

A. Name of the user
B. Name of the group
C. Type of files and permissions
D. Number of hard links

Answer

(C)

Problem 4

Given below is the output of the command `ls -l`. What can you know about the file/directory `abc.ab` from the output?

```
total 4
drwxr-xr-x 1 runner runner  0 Dec 20 09:37 abc.ab
-rw-r--r-- 1 runner runner 16 Sep 23 02:52 main.sh
```

(MSQ)

A. All users can execute the file `abc.ab`.
B. All users can cd into the directory `abc.ab`, i.e. make it their working directory.
C. All users can edit the contents of the directory `abc.ab`.
D. All users can list the contents of the directory `abc.ab`.
E. Only the owner can read the file `abc.ab`.
F. All users can read the file `abc.ab`.
G. Only the owner can read the directory `abc.ab`.

Answer

(B) and (D)

Problem 5

What is the command to change the permission of the file `myfile.sh` such that the owner has full access, the group has read and execute access and other users have only read access? (MCQ)

A. chmod 457 myfile.sh
B. chmod 754 myfile.sh
C. chmod 751 myfile.sh
D. chmod 157 myfile.sh

Answer

(B)

Problem 6

What is the expected output of the command `date myfile.txt`? (MCQ)

A. Displays the date at which file was last edited.
B. Modifies the time stamp of the file.
C. date: invalid date ‘myfile.txt’
D. None of the above

Answer

(C)

Problem 7

The file "longFile.txt" has 5000 lines. From the commands given below which command can be used to read the file in a page by page manner? (MSQ)

A. more
B. less
C. cat
D. echo

Answer

(A) and (B)

Problem 8

Match the following:

Commands	Uses
1. mv	A. Delete a file
2. rm	B. Display the type of file
3. file	C. See memory statistics
4. free	D. rename a file

A. 1-B, 2-D, 3-A, 4-C
B. 1-D, 2-A, 3-C, 4-B
C. 1-C, 2-B, 3-D, 4-A
D. 1-D, 2-A, 3-B, 4-C

Answer

(D)

Problem 9

A workstation is being shared by two users who are on different groups.

When the User 1 runs `ls -l` on their terminal, the output is

```
--w-r--r-- 1 user_1  group_a  4148 Jan  8 10:50 FileA.txt
-r--r--r-- 1 user_1  group_a  3888 Jan 20 16:00 FileB.txt
--w-r--r-- 1 user_1  group_a  3849 Jan 10 13:33 FileC.txt
-rw-r--r-- 1 user_1  group_a  5952 Jan 10 11:40 FileD.txt
-rw-r--r-- 1 user_1  group_a  3053 Jan 10 23:11 FileE.txt
-rw-r--r-- 1 user_1  group_a  5450 Feb 15 10:40 FileF.txt
d---------  4 user_1  group_a   128 Feb 17 17:30 More_Files
```

When the User 2 runs `ls -l` on their terminal, the output is

```
-r--r--r-- 1 user_2  group_b  4148 Jan  8 10:50 FileA.txt
-rw-r--r-- 1 user_2  group_b  3888 Jan 20 16:00 FileB.txt
-r--r--r-- 1 user_2  group_b  3849 Jan 10 13:33 FileC.txt
-rw-r--r-- 1 user_2  group_b  5952 Jan 10 11:40 FileD.txt
-r--r--r-- 1 user_2  group_b  3053 Jan 10 23:11 FileE.txt
-rwxr--r-- 1 user_2  group_b  5450 Feb 15 10:40 FileF.txt
dr--r-----  4 user_2  group_b   128 Feb 17 17:30 More_Files
```

Which of the following commands can be run by User 1?

(A) `cat FileA.txt`

(B) `cat FileD.txt`

(C) `echo "Hello World" >> FileB.txt`

(D) `ls More_Files`

Answer

(B)

Problem 10

Ram is new to Linux, and wants to delete a file `file_to_delete.txt` in the current directory, using command line. Upon using the command `rm ./file_to_delete.txt`, he was unsuccessful. If the output of `ls -l` is as follows, then which of the following commands must be run inorder to delete the file?

```
-rwxr--r--@ 1 ram  staff  104706 Nov 17 17:00 file_1.sh
-rw-r--r-- 1 ram  staff  119125 Nov 17 17:00 file_2.sh
-r--r--r-- 1 ram  staff       0 Nov 17 17:00 file_to_delete.txt
-rwxr-xr-x@ 1 ram  staff       0 Nov 17 17:00 test.sh
```

(A)

```
chmod 110 file_to_delete.txt
rm file_to_delete.txt
```

(B)

```
chmod 400 file_to_delete.txt
rm file_to_delete.txt
```

(C)

```
chmod 600 file_to_delete.txt
rm file_to_delete.txt
```

(D)

```
chmod 500 file_to_delete.txt
rm file_to_delete.txt
```

Answer

(C)

System Commands Week 2

Graded Assignment

Problem 1

The command **apropos** is equivalent to the command.**(MCQ)**

a. man -f b. ls -l c. man -k d. alias

Answer

c: man -k

Problem 2

Consider two files "file1" and "file2" in the home directory. Choose all the statements that are true regarding symbolic links in this directory. **(MSQ)**

a. The command **"ln file1 file2"** creates soft link to file1. b. "file1" and "file2" will have different inode numbers. c. The command **"ln -s file1 file2"** makes file2 a symbolic link of file1. d. The symbolic link is still usable if you remove the source file or transfer it to another location.

Answer

b: file1 and file2 have different inode numbers c: The command **ln -s file1 file2** makes file2 a symbolic link of file1

Problem 3

```
-rw-r--r-- 1 user1 staff 5300 Dec  9 20:36 testfile
```

The long listing of a file **testfile** is given above.

The number of file system blocks actually used by **testfile**, in units of **1024 bytes**, where partial units are rounded up to the next integer value, is given by the command:

```
$ ls -s testfile
```

The number of file system blocks actually used by **testfile** is: (Enter a number) **(NAT)**

Answer

8

Problem 4

Considering a user **User1** and the current working directory to be **/home/User1/Dir1**.

```
$ echo This displays '$PWD' and "$USERNAME"
```

The output of the above command is: **(MCQ)**

a. This displays /home/User1/Dir1 and User1 b. This displays $PWD and User1 c. This displays /home/User1/Dir1 and $USERNAME d. This displays $PWD and $USERNAME

Answer

b. This displays $PWD and User1

Problem 5

The command used to turn a shell variable into an environment variable is **(MCQ)**

a. echo b. expand c. export d. eval

Answer

c: export

Problem 6

The command

```
$ echo *
```

gives the same output as; **(MCQ)**

a. ls * b. ls c. df * d. df

Answer

b: ls

Problem 7

Choose the correct options. **(MSQ)**

a. The **printenv** command can request the values of individual variables. For example:

```
$ printenv PATH
```

b. The **env** command can output a list of all shell variables, environmental variables, local variables, and shell functions c. The **set** command can set environment and execute command, or print environment. d. The

$PWD variable is for the current working directory of the shell e. The **$HOSTNAME** is for the current logged in user

Answer

(a) and (d)

Problem 8

With regards to the **ps** command in Ubuntu, match the following **(MCQ)**

Command	Function
1. **ps -A**	a. Display information about other users' processes, including those without controlling terminals.
2. **ps -a**	b. View all processes like **ps -A** but excludes session leaders
3. **ps -d**	c. Display information about other users' processes as well as your own. This will skip any processes which do not have a controlling terminal, unless the **-x** option is also specified.
4. **ps -t**	d. Display information about processes attached to the specified terminal devices.
5. **ps -r**	e. Display information about processes which match the specified process IDs.
6. **ps -p**	f. Sort by current CPU usage, instead of the combination of controlling terminal and process ID.

a. 1—>a; 2—>b; 3—>c; 4—>d; 5—>f; 6—>e; b. 1—>a; 2—>c; 3—>b; 4—>f; 5—>d; 6—>e; c. 1—>a; 2—>b; 3—>c; 4—>f; 5—>e; 6—>; d. 1—>a; 2—>c; 3—>b; 4—>d; 5—>f; 6—>e;

Answer

d. 1—>a; 2—>c; 3—>b; 4—>d; 5—>f; 6—>e;

Problem 9

In the current directory, the following output is obtained using the "**ls**" command

```
$ ls
Applications    LibOntology.owl     VirtualBoxVMs
Desktop         Movies              get-pip.py
Documents       Music               m1
Downloads       Pictures            mtest
Library         Public              texput.log
```

What is the output obtained on executing the following command?

```
$ echo m*
```

(MCQ)

a. m1 b. Applications Desktop Documents Downloads Library LibOntology.owl Movies Music Pictures Public VirtualBoxVMs get-pip.py m1 mtest texput.log

c. m1 mtest

d. Movies Music m1 mtest

Answer

c. m1 mtest

Problem 10

Match the following **(MCQ)**

Flags set in Bash	
1. H	a. locate and hash commands
2. B	b. commands are read from arguments
3. i	c. interactive mode
4. m	d. brace expansion enabled
5. h	e. ! style history substitution enabled
6. s	f. commands are read from stdin
7. c	g. job control enabled

a. 1—>e; 2—>d; 3—>c; 4—>g; 5—>a; 6—>f; 7—>b; b. 1—>a; 2—>d; 3—>c; 4—>g; 5—>e; 6—>f; 7—>b; c. 1—>a; 2—>d; 3—>c; 4—>g; 5—>f; 6—>e; 7—>b; d. 1—>a; 2—>b; 3—>c; 4—>g; 5—>f; 6—>e; 7—>d;

Answer

a. 1—>e; 2—>d; 3—>c; 4—>g; 5—>a; 6—>f; 7—>b;

SYSTEM COMMANDS WEEK 3

Graded Programming Questions.

Week 3

Problem 1

What is the output of the following command?[NAT]

```
echo "3+4*(5/4)" | bc
```

Answer

7

Problem 2

```
ls; date || cal; ps && file *
```

Which of the following commands in the options will have the same output as the command above. [MSQ]

(1) `ls; date; ps ; file *`

(2) `ls; cal;ps ; file *`

(3) `ls; date; cal; ps`

(4) `ls; date; cal; ps ; file *`

Answer

(1)

Problem 3

Which of the following commands will print the lines from 4 to 11 from top of a file `longfile.txt`? [MCQ]

(1)

```
cat longfile.txt | head -4 | tail -11
```

(2)

```
cat longfile.txt | head -11 | tail -7
```

(3)

```
cat longfile.txt | tail -7 | head -11
```

(4)

```
cat longfile.txt | tail -11 | head -4
```

Answer

(2)

Problem 4

In which of the following cases the output obtained will be the number `3`? [MCQ]

(1) `(((echo $BASH_SUBSHELL));)`

(2) `(((echo $BASH_SUBSHELL););)`

(3) `(((echo $BASH_SUBSHELL);))`

(4) `(((echo $BASH_SUBSHELL)))`

Answer

(2) `(((echo $BASH_SUBSHELL););)`

Problem 5

Which of the following options are correct with respect to the below command? [MSQ]

```
ls ~ >file_1.txt >>file_2.txt 2>file_3.txt
```

(1) file_1.txt is overwritten and file_2.txt is appended

(2) file_1.txt and file_2.txt are appended

(3) file_1.txt is the stdout and file_2.txt is the stderr

(4) file_1.txt is stdout and file_3.txt is stderr

Answer

(1) file_1.txt is overwritten and file_2.txt is appended

(4) file_1.txt is stdout and file_3.txt is stderr

Problem 6

Where will the output of the following command be directed?[MCQ]

```
echo "Random Text" | tee /dev/null >file
```

(1) To file `file` only.

(2) To `/dev/null` and file `file` only.

(3) To `/dev/null`, file `file` and the terminal.

(4) To `/dev/null` and the terminal only.

Answer

(2)

Problem 7

Jack wants to store the output of the ls command in the file out as well as display it on the screen. Which of the following commands will achieve the goal? [MCQ]

(1) `ls | echo >out`

(2) `ls >out | echo`

(3) `ls | tee out`

(4) `ls >out`

Answer

(3) `ls | tee out`

Problem 8

Which of the following commands will list all the `.txt` files in the current directory as well as delete them? [MSQ]

(1) `ls *.txt || rm *.txt`

(2) `rm *.txt || ls *.txt`

(3) `ls *.txt; rm *.txt`

(4) `ls *.txt && rm *.txt`

Answer

(3) `ls *.txt; rm *.txt`

(4) `ls *.txt && rm *.txt`

Problem 9

Which of the following command will print the number of files/directories present in the current directory? [MCQ]

(1) `ls -l | wc -l`

(2) `ls | tee | wc -l`

(3) `wc -l $(ls)`

(4) `wc -l \`ls\``

Answer

(2) `ls | tee | wc -l`

Problem 10

Which of the following is the correct syntax to store the output of the command `ls` to the variable `dirs`? [MSQ]

(1) `dirs = ls`

(2) `dirs=ls`

(3) `dirs=\`ls\``

(4) `dirs=$(ls)`

Answer

(3) `dirs=\`ls\``

(4) `dirs=$(ls)`

Week-4 Graded MCQ_MSQ

Problem 1

What will the following `vi` editor command do.

```
:%s/UNIX/Linux/gci
```

A. Replace all the occurrences of "Linux" with "UNIX" but is case-insensitive and will ask for confirmation. B. Replace all the occurrences of "UNIX" with "Linux" but is case-insensitive and will ask for confirmation. C. Replace all the occurrences of "UNIX" at the beginning of a line with "Linux" but is case-insensitive and asks for confirmation D. Replace all the occurrences of "UNIX" with "Linux" but is case-sensitive and will asks for confirmation.

Answer

(B)

Problem 2

```
echo ${arr[@]/*[aA]*/}
```

Select the statements which are true for the above command. **(MSQ)**

a. All the elements in the original `arr` having the character `a` or `A` will be replaced with ""(null). b. All the elements in the array `arr` not having the character `a` or `A` will be printed. c. It does not alter the original array elements. d. All the elements in the array `arr` having the character `a` or `A` will be printed.

Answer

(b), (c)

Problem 3

The file "NameList.csv" has the names of the students, one on each line. What will the following command do? [MCQ]

```
egrep '\b[rR]aj\b' RollList.csv
```

A. Gives the names with the 'raj' or 'Raj' in them

B. Gives the names with the word 'raj' or 'Raj' but not 'Raja'

C. Gives the names with the 'raj' or 'Raj' in the beginning of the line

D. None of the above

Answer

B) Gives the names with the word 'raj' or 'Raj' but not 'Raja'

Problem 4

```
var1=`echo Today is a good day`
echo ${#var1}
```

What is the output of the above command sequence? (Enter only an integer. For example: 13) **(NAT)**

Answer

19

Problem 5

Match the following commands to their use with respect to the vi editor.

Options	Uses
1 :q!	A. Allows to execute commands in terminal
2 :set number	B. Save and quit
3 :x	C. Display line numbers
4 :!	D. Force exit without saving

A. 1-D, 2-C, 3-A, 4-B B. 1-D, 2-C, 3-B, 4-A C. 1-B, 2-C, 3-D, 4-A D. 1-B, 2-C, 3-A, 4-D

Answer

B) 1-D, 2-C, 3-B, 4-A

Problem 6

Select the correct options with respect to the following command? [MSQ]

```
grep -no gnu gnu_history.txt
```

A. Performs grep but output is displayed on terminal. B. Prints the line numbers that contain the word gnu. C. Performs grep but the error messages are turned off. D. Prints the line numbers that do not have the word gnu

Answer

B. Prints the line number along with the word "gnu"

Problem 7

The file "CellNumbers.txt" has a list of phone numbers(10 digits), credit card numbers(16 digits) and usernames(single word string) in each line in the specified order. The entries in a row are separated by spaces. For e.g. one entry could be `2897442728 5688372212331253 user24` . Which of the following command will extract the credit card numbers and usernames from the file.[MSQ]

A. `egrep -o '[0-9]{16}\s[Aa-Zz].*' CellNumbers.txt` B. `egrep -v '[0-9]{16}\s[Aa-Zz].*' CellNumbers.txt` C. `egrep -i '[0-9]{16}\s[Aa-Zz].*' CellNumbers.txt` D.`cut -c 12- CellNumbers.txt` E. `cut -d ' ' -f1,2 CellNumbers.txt`

Answer

(A), (D) and (E)

Problem 8

What is the expected output of the below command?

```
grep  -v "^#\|^'\|^\/\/" code.txt
```

A. Prints the lines with `#`,`^`,`\` B. Prints the lines without `#`,`^`,`\` C. Prints the lines starting with `#`,`',//` D. Prints the lines that do not start with `#`,`',//`

Answer

D. Prints the lines that do not start with `#`,`',//`

Problem 9

Which of the following commands can be used to list all thefile names with extension `.cpp`in the current directory? [MSQ]

A. `s -l | egrep "^-" | grep -i "\.cpp"` B. `ls -l | egrep -i "^-|cpp"` C. `find . -type f -name '*.cpp'` D. `find . -type f | grep "\.cpp"`

Answer

(a), (c), (d)

Problem 10

```
declare -A caparray=( [Switzerland]=Bern [Germany]=Berlin [Canada]=Ottawa
[Tokyo]=Japan [Mongolia]=Ulaanbaater)
echo ${!caparray[@]} ; echo ${caparray[Tokyo]:1:2}
```

What is a possible output of the above command sequence? (Keeping in mind that associative arrays are stored in a 'hash' order) **(MCQ)**

a.

```
Switzerland Canada Tokyo Mongolia Germany
ap
```

b.

```
Bern Berlin Ottawa Japan Ulaanbaater
ap
```

c.

```
Bern Berlin Ottawa Japan Ulaanbaater
a
```

d.

```
Switzerland Canada Tokyo Mongolia Germany
Ja
```

Answer

a.

```
Switzerland Canada Tokyo Mongolia Germany
ap
```

Week 5

Graded Assignment 2 (compulsory)

Problem 1

Given below the contents of the bash script `file.sh`. [MSQ]

```
#!/bin/bash

sum=0
for (( i=1 ; i<$1 ; i++ )) ; do
    if [ $((i%2)) -eq 1 ]; then
        sum=$((sum+i))
    fi
done
echo $sum
```

Choose the option(s) for which the expected output matches the script usage.

(1) Usage: `./file.sh 45` | Output: 484

(2) Usage: `./file.sh 45` | Output: 1035

(3) Usage: `./file.sh 57` | Output: 1653

(4) Usage: `./file.sh 45` | Output: 784

Answer

(1) and (4)

Problem 2

What is the expected output of the following bash script? [MCQ]

```
#!/bin/bash
for i in `ls`; do
        echo $(pwd)/$i
done
```

(1) Prints the file names only of all the files in the current directory.

(2) Prints the relative file paths of all the files in the current directory.

(3) Prints the absolute file paths of all the files in the current directory.

(4) None of the above

Answer

(3)

Problem 3

`number` is a shell variable. Which of the following condition checks if `number` is divisible by 3 or not? [MSQ]

(1) `[ $(number%3) -eq 0 ]`

(2) `[ $((number%3)) -eq 0 ]`

(3) `[ $(($number%3)) -eq 0 ]`

(4) `[ number%3 -eq 0 ]`

Answer

(2) `[ $((number%3)) -eq 0 ]`

(3) `[ $(($number%3)) -eq 0 ]`

Problem 4

What of the following scripts will combine the text in all the `.txt` files in the current working directory to a single file? [MCQ]

(1)

```
for file in `ls -l *.txt`; do
    cat $file > ../allfiles.txt
done
```

(2)

```
for file in `ls *.txt`; do
    cat $file > ../allfiles.txt
done
```

(3)

```
for file in `ls *.txt`; do
    cat $file >> ../allfiles.txt
done
```

(4)

```
for file in `ls -l *.txt`; do
    cat $file >> ../allfiles.txt
done
```

Answer

(2)

Problem 5

When the command `ls -l` is run on the current directory, the output is.

```
-rw-r--r--  1 user  group   0 Nov 30 11:08 rand1.txt
-rw-r--r--  1 user  group   0 Nov 29 11:08 rand2.txt
-rw-r--r--  1 user  group   0 Nov 29 11:08 rand3.md
-rw-r--r--  1 user  group   0 Nov 28 11:08 rand4.awk
-rwxr-xr-x 1 user  group   0 Nov 10 14:03 script.sh
-rwxr-xr-x 1 user  group  1 Nov 30 20:44 test.sh
```

What is the correct output on running the below bash script? [MCQ]

```
for file in `ls`; do
        details=`ls -l $file`
        echo $file: ${details:0:10}
done
```

(1)

```
rand1.txt: details:0:10
rand2.txt: details:0:10
rand3.md: details:0:10
rand4.awk: details:0:10
script.sh: details:0:10
test.sh: details:0:10
```

(2)

```
rand1.txt: user
rand2.txt: user
rand3.md: user
rand4.awk: user
script.sh: user
test.sh: user
```

(3)

```
rand1.txt: group
rand2.txt: group
rand3.md: group
rand4.awk: group
script.sh: group
test.sh: group
```

(4)

```
rand1.txt: -rw-r--r--
rand2.txt: -rw-r--r--
rand3.md: -rw-r--r--
rand4.awk: -rw-r--r--
script.sh: -rwxr-xr-x
test.sh: -rwxr-xr-x
```

Answer

(4)


```
rand1.txt: -rw-r--r--
rand2.txt: -rw-r--r--
rand3.md: -rw-r--r--
rand4.awk: -rw-r--r--
script.sh: -rwxr-xr-x
test.sh: -rwxr-xr-x
```

Problem 6

John wants to read two numbers from the user and print the sum total in USD(with a $ sign before the number). Which of the following bash scripts can do this? [MCQ]

(1)

```
read "Enter the first value:" a
read "Enter the second value:" b

echo $$((a+b))
```

(2)

```
read "Enter the first value:" a
read "Enter the second value:" b

echo \$$((a+b))
```

(3)

```
echo "Enter the first value:" && read  a
echo "Enter the second value:" && read b

echo $$((a+b))
```

(4)

```
echo "Enter the first value:" && read  a
echo "Enter the second value:" && read b

echo \$$((a+b))
```

Answer

(4)

Problem 7

Consider the following bash script stored as `function.sh`.

```
read var
function operate()
{
    temp=$1
    temp=${temp%.*}
    echo $temp
}

echo $( operate $var )
```

If the script is run from the terminal as `./function.sh` and the then number `45.53` is entered on the terminal, what is the expected output? [NAT]

Answer

45

Question 8

```
for i in file_{A..D}{1..3}
do
    n=$i.txt
    touch $n
done
```

How many files will be created when the above script is executed? [NAT]

Answer

12

Question 9

Select all commands/scripts that will count the number of words in the file named `paragraph`. [MSQ]

(a) `wc -w paragraph`
(b) `wc -w < paragraph`
(c) `sum=0; for i in $(cat paragraph); do ((sum++)); done; echo $sum`
(d)

```
sum=0;
while read line; do
  for word in $line; do
    if [[ $line != "" ]]; then
      ((sum++))
    fi
  done
  shift;
done < paragraph
echo $sum
```

Answer

(a), (b), (c) and (d)

Week 5

Graded Assignment 2 - set 2(Emacs)

Problem 1

Choose the option(s) which incorrectly maps the Emacs command to its function.

Note: `<C-c>` and `<C-p>` represents "Ctrl+c" and "Ctrl+v" respectively. [MSQ]

(1) `C-x C-s` | Save buffer to file

(2) `C-c C-x` | Exit emacs and stop it

(3) `C-x C-c` | Exit emacs and stop it

(4) `C-s C-x` | Save buffer to file

Answer

(2) and (4)

Problem 2

The pointer is currently present in the top of the document opened in emacs editor. In which line and position is the pointer after executing the following emac commands in the order? [MCQ] `C-a C-e C-b C-n C-n C-n`

(1) 3rd Line & second last character.

(2) 4th Line & last character.

(3) 3th Line & Last character.

(4) 4th Line & second last Character.

Answer

(2) 4th Line & 4th Character

Problem 3

What sequence of Emacs commands can be used to move the cursor to 56th line of a file? Here `C-x` means `ctrl+x` and `M-x` means `alt+x`. [MCQ]

(1)

```
M-x goto-line<Enter>
56
```

(2)

```
C-x goto-line<Enter>
56
```

(3)

```
M-x goto-line 56
```

(4)

```
C-x goto-line 56
```

Answer

(1)

Problem 4

Match the following Emacs commands to their use. Here `C-x` means `ctrl+x` and `M-x` means `alt+x`.

Options	Uses
1 M-<	A. Move to end of current line.
2 C-a	B. Move to end of file.
3 M->	C. Move to begining of current line.
4 C-e	D. Move to begining of file.

A. 1-D, 2-C, 3-A, 4-B

B. 1-D, 2-C, 3-B, 4-A

C. 1-B, 2-C, 3-D, 4-A

D. 1-B, 2-C, 3-A, 4-D

Answer

B) 1-D, 2-C, 3-B, 4-A

Problem 5

What command can be used to run for opening the file `file.c` in terminal mode in the Emacs editor ?[MCQ]

(a) `emacs -fn file.c`

(b) `emacs -fw file.c`

(c) `emacs -nw file.c`

(d) `emacs -cr file.c`

Answer

(c)

Week 5

Graded Assignment 1 - Set 1(vi editor)

Problem 1

What is the command in vi editor to copy the character under the cursor and paste it next to itself? Assume that the editor is in insert mode currently.

Note: `<C-c>`, `<C-p>` and `<ESC>` represents "Ctrl+c", "Ctrl+v" and Escape key respectively.

A. `<C-c><C-v>`
B. `<ESC>vyp`
C. `<ESC>vcp`
D. `<ESC>:vyp`

Answer

B. `<ESC>vyp`

Problem 2

What character needs to be pressed when you wish to enter from navigation (normal) mode to insert mode from the beginning of a line in the vi editor?

Answer

I

Problem 3

What one-word command in navigation mode can be used to delete consecutive 8 lines in vi editor?

Answer

8dd

Problem 4

What will the following `vi` editor command do.

```
:%s/UNIX/Linux/gci
```

A. Replace all the occurrences of "Linux" with "UNIX" but is case-insensitive and will ask for confirmation.
B. Replace all the occurrences of "UNIX" with "Linux" but is case-insensitive and will ask for confirmation.
C. Replace all the occurrences of "UNIX" at the beginning of a line with "Linux" but is case-insensitive and asks for confirmation
D. Replace all the occurrences of "UNIX" with "Linux" but is case-sensitive and will asks for confirmation.

Answer

(B)

Problem 5

Match the following commands to their use with respect to the vi editor.

Options	Uses
1 :q!	A. Allows to execute commands in terminal
2 :set number	B. Save and quit
3 :x	C. Display line numbers
4 :!	D. Force exit without saving

A. 1-D, 2-C, 3-A, 4-B
B. 1-D, 2-C, 3-B, 4-A
C. 1-B, 2-C, 3-D, 4-A
D. 1-B, 2-C, 3-A, 4-D

Answer

B) 1-D, 2-C, 3-B, 4-A

Week 6 - Graded Assignment

Problem 1

`file1.txt` is a file containing some text . The command `awk '{print}' file1.txt` is equivalent to which of the following commands, irrespective of the data in `file1.txt`. [MSQ]

(1) cat file1.txt

(2) cut -f 1- file1.txt

(3) head file1.txt

(4) grep "" file1.txt

Answer

(1), (2) and (4)

Problem 2

What is the output of the below command?

```
for i in {1..9}; do echo $i; done | awk 'BEGIN{value=0;}{value += $1*$1;}END{print value;}'
```

[MCQ]

(1) 45

(2) 204

(3) 37

(4) 285

Answer

(4) 285

Problem 3

What is the output of the following bash script?
Note that before executing the below script the file `numbers.txt` is empty. [MCQ]

```
for i in {1..10}; do
  for j in {1..10}; do
    echo $i, $j >> numbers.txt
  done
done

awk 'BEGIN{FS=",";value=0;}{value += $1*$2;}END{print value;}' numbers.txt
```

(1) 3025

(2) 2025

(3) 45

(4) 55

Answer

(1) 3025

Problem 4

In which of the following commands output, the 1st and 2nd column of input will be inverted? In the input, the 1st and 2nd columns are separated by a comma, and in the output too the columns should be separated by a comma.[MSQ]

(1) `awk 'BEGIN{FS=",";}{print$2,$1}'`

(2) `awk '{print$2","$1}'`

(3) `awk 'BEGIN{FS=",";}{print$2","$1}'`

(4) `awk '{print$2,$1}'`

Answer

(3)

Problem 5

The purpose of the following command is to

```
ls -l | egrep -v "^d" | awk '{sum += $5}; END{print sum}'
```

(1) Calculate the number of characters in all the files in the current directory.

(2) Calculate the space occupied by all the files in the current directory in bytes.

(3) Calculate the sum of creation dates of all the files in the current directory.

(4) Calculate the number of lines in all the files in the current directory.

Answer

(2)

Problem 6

```
$ cat employee_details.txt
```

The output of the above command is as follows;

```
A1998001,Ram Kumar,10,Male
B2000002,Sanjay Narayan,7,Male
B2000003,Srishti Rai,10,Female
E1997001,Manoj Pillai,12,Male
G1998001,Preeti Suresh,9,Female
G1999001,Leela L G,16,Female
```

What is the output of the command displayed below?

```
$ awk 'NR==3, NR==5 {print NR,$1}' employee_details.txt
```

[MCQ]

(1)

```
3 B2000003
5 G1998001
```

(2)

```
3 B2000003,Srishti Rai,10,Female
5 G1998001,Preeti Suresh,9,Female
```

(3)

```
3 B2000003
4 E1997001
5 G1998001
```

(4)

```
3 B2000003,Srishti
4 E1997001,Manoj
5 G1998001,Preeti
```

Answer

(4)

Problem 7

Which of the following commands can be used to calculate the number of lines in the file `employee_details.txt`. [MSQ]

(1)

```
$ awk 'END { print NR }' employee_details.txt
```

(2)

```
$ awk 'END {count}' employee_details.txt
```

(3)

```
$ awk '{++value;}END{print value;}' employee_details.txt
```

(4)

```
$ awk 'BEGIN{FS=",";n=0}{n++;print $n}' employee_details.txt
```

Answer

(1) and (3)

Problem 8

```
$ echo To be or not to be | tr " " "\n"
```

Which of the following awk commands will give same output as the command above? **(MCQ)**

Note: `tr " " "\n"` will replace each space by a newline character. i.e. each word in the string "To be or not to be" will be printed on a new line by the command `echo To be or not to be | tr " " "\n"`

(1)

```
$ awk 'BEGIN{sentence="To be or not to be";fieldsep=" "; for(i=1; i<=NR;
i++)printf("$i\n")}'
```

(2)

```
$ awk 'BEGIN{sentence="To be or not to be"; fieldsep=" "; n=split(sentence, array,
fieldsep); for(i=1; i<=n; i++){printf("%s\n", array[i]);}}'
```

(3)

```
$ awk 'BEGIN{echo "To be or not to be"; fieldsep=" "; for(i=1; i<=NR;
i++)printf("$i\n")}'
```

(4)

```
$ awk 'BEGIN{echo "To be or not to be"; fieldsep=" "; n=split(sentence, array,
fieldsep); for(i=1; i<=n; i++){printf("%s\n", array[i]);}}'
```

Answer

(2)

Problem 9

Match the following expr operators to their use.

Operator	Use
1. index str1 str2	A. Returns the substring y characters in length starting at position x.
2. substr str x y	B. Returns the pattern match if 'str1' matches the pattern in 'str2'
3. match str1 str2	C. Returns the substring 'x' characters in length starting at position 'y'.
	D. Returns the pattern match if 'str2' matches the pattern in 'str1'
	E. Returns the starting position of substring 'str2' if found in the string 'str1'; else return 0
	F. Returns position in 'str1' if any of the characters given in 'str2' is found; else return 0

(1) 1-E, 2-D, 3-C

(2) 1-E, 2-B, 3-C

(3) 1-F, 2-B, 3-A

(4) 1-F, 2-B, 3-A

Answer

(4)

Problem 10

Which of the following scripts will give the output as below.[MSQ]

```
2,10
4,20
6,30
8,40
10,50
```

(1)

```
for (( i=2,j=10; i<11 && j<60; i+=2,j+=10)); do
  echo $i,$j
done
```

(2)

```
for (( i=2,j=10; i<11; i+=2,j+=10)); do
  echo $i,$j
done
```

(3)

```
for (( i=2; i<11; i+=2)); do
  for (( j=10; j<51; j+=10)); do
    echo $i,$j
  done
done
```

(4)

```
for (( i=2,j=10; i<11; i+=2)); do
  echo $i,$j
  j+=10
done
```

(5)

```
for (( i=2,j=10; i<11 || j<60;)); do
  echo $i,$j
  ((j+=10))
  ((i+=2))
done
```

Answer

(2) and (5)

Week 6 - Practice Assignmet

Problem 1

What will be the format of the output of the following command? [MCQ]

```
ls -l | awk '{print $1, $NF}'
```

(1) File Permission string, User

(2) User, File Name

(3) File Permission, File Name

(4) File Permission, File Type

Answer

(3) File Permission, File Name

Problem 2

Which of the following commands will print the file, appending the line number to the starting of each line, irrespective of the data in the file? **[MSQ]**
(1)

```
awk 'END {print NR,$0}' employee_details.txt
```

(2)

```
awk 'BEGIN{FS=","}{print NR,$1}' employee_details.txt
```

(3)

```
$ awk '{print NR,$0}' employee_details.txt
```

Answer

(3)

Problem 3

What is the output of the command given below? **(MCQ)**

```
$ awk 'BEGIN{print index("Ubuntu", "un"); print index("System Commands", "abc")}'
```

(1)

```
3
Error
```

(2)

```
4
Error
```

(3)

```
3
0
```

(4)

```
4
0
```

Answer

(3)

Problem 4

The built in variable `NF` used in awk scripts is used to.

(1) Display the line number.

(2) Display the first field in a line.

(3) Display the last field in a line.

(4) Display the number of fields in a line.

Answer

(4)

Problem 5

What is the output of the following command? **(MCQ)**

```
$ echo "927.8 -8.314 -0.87" | awk 'BEGIN{FIELDWIDTHS="3 4 3"}{print $1,$2,$3}'
```

(1) `927 -8.3 -0.`
(2) `927 .8 - 8.3`
(3) `927 -8.314 -0.87`
(4) `927.8 -8.314 -0.87`

Answer

(4)

##

Week 7 - Sed Assignment

Graded Assignment

Problem 1

Which of the following commands will print the count of lines in the input file `file1`? The expected output is only a number indicating the count of lines.[MSQ]

(1) `awk 'END{print NR}' file1`
(2) `awk '{print NR}' file1`
(3) `sed '$=' file1`

(4) `sed -n '$=' file1`

Answer

(1) and (4)

Problem 2

Match the following sed action characters to their use.[MCQ]

Action	Use
1. d	A. Delete the pattern space.
2. c	B. Insert above current line.
3. a	C. Insert below current line.
4. i	D. Replace current line.

(a) 1-A, 2-D, 3-C, 4-B
(b) 1-A, 2-D, 3-B, 4-C
(c) 1-D, 2-A, 3-B, 4-C
(d) 1-D, 2-A, 3-C, 4-B

Answer

(a)

Problem 3

Which of the following sed commands will give the same output as the command `cat file1 | head -5 | tail -2`? Consider that `file1` contains exactly 10 lines of text.[MSQ]

(a) `sed -n -e '4p' -e '5p' file1`
(b) `sed -n '4,5p' file1`
(c) `sed -n -e '4,5p' file1`
(d) `sed -n -e '4~5' file1`
(e) `sed '1,3d; 6,$d' file1`
(f) None of the above

Answer

(a), (b), (c) and (e)

Problem 4

Which of the following sed commands will give the same output as the command `cat file1 | head -5 | tail -2` irrespective of the number of lines in the file `file1`.[MSQ]

(a) `sed -n -e '4p' -e '5p' file1`
(b) `sed -n '4,5p' file1`
(c) `sed -n -e '4,5p' file1`
(d) `sed -n -e '4~5' file1`
(e) `sed '1,3d; 6,$d' file1`
(f) None of the above

Answer

(f)

Problem 5

Which of the following sed commands can be used to delete the lines containing the word `ram`(case incensitive) in a file `input.txt`? The command should just print the desired output, and not replace the contents of the original file. [MSQ]

(a) `sed -e '/ram/d'`
(b) `sed -e '/ram/Id'`
(c) `sed -e 's/FROM//i' input.txt`
(d) `sed -e 's/FROM//I' input.txt`
(e) `sed -e '/ram/id'`

Answer

(b)

Problem 6

Which of the following sed commands can be used to delete all the occurences of the word `ram`(case incensitive) in a file `input.txt`? The command should just print the desired output, and not replace the contents of the original file. [MSQ]

(c) `sed -e 's/FROM//i' input.txt`
(d) `sed -e 's/FROM//I' input.txt`
(c) `sed -e 's/FROM//ig' input.txt`
(d) `sed -e 's/FROM//Ig' input.txt`
(e) `sed -e 's/FROM//g' input.txt`

Answer

(c) and (d)

Problem 7

Consider a file `twister.txt` as below with contents as below.

```
$ cat twister.txt
How much wood would a woodchuck chuck if a woodchuck could chuck wood?
He would chuck, he would, as much as he could, and chuck as much wood
As a woodchuck would if a woodchuck could chuck wood
```

Given below some commands and outputs, match the command to their output.

1. `sed '1,2 s/wood/WOOD/' twister.txt`
2. `sed 's/wood/WOOD/g' twister.txt`
3. `sed '2,3 s/wood/WOOD/2' twister.txt`
4. `sed 's/wood/WOOD/3g' twister.txt`

Output A

```
How much WOOD would a WOODchuck chuck if a WOODchuck could chuck WOOD?
He would chuck, he would, as much as he could, and chuck as much WOOD
As a WOODchuck would if a WOODchuck could chuck WOOD
```

Output B

```
How much wood would a woodchuck chuck if a woodchuck could chuck wood?
He would chuck, he would, as much as he could, and chuck as much wood
As a woodchuck would if a WOODchuck could chuck wood
```

Output C

```
How much WOOD would a woodchuck chuck if a woodchuck could chuck wood?
He would chuck, he would, as much as he could, and chuck as much WOOD
As a woodchuck would if a woodchuck could chuck wood
```

Output D

```
How much wood would a woodchuck chuck if a WOODchuck could chuck WOOD?
He would chuck, he would, as much as he could, and chuck as much wood
As a woodchuck would if a woodchuck could chuck WOOD
```

(a) 1-B, 2-A, 3-C, 4-C
(b) 1-C, 2-A, 3-B, 4-D
(c) 1-B, 2-D, 3-C, 4-A
(d) 1-D, 2-C, 3-A, 4-B

Answer

(b)

Problem 8

`sed '$s/\(.*\)wood/\1WOOD/g' twister.txt`

The above command will print the file `twister.txt` after:

(1) Replacing all occurrences of "wood" with "WOOD" in every line of the file.

(2) Replacing all occurances of "wood" with "WOOD" in last line of the file.

(3) Replacing last occurance of "wood" with "WOOD" in every line of the file.

(4) Replacing last occurance of "wood" with "WOOD" in last line of the file.

(5) Replacing first occurance of "wood" with "WOOD" in every line of the file.

(6) Replacing first occurance of "wood" with "WOOD" in last line of the file.

Answer

(4)

Problem 9

What is the expected outuput of the following command

```
echo "hello world" | sed -e "s/\b\(.\)/\U\1/g"
```

(1) HELLO WORLD

(2) u 1

(3) helloworld

(4) Hello World

Answer

(4) Hello World

Problem 10

What will the following command do?

```
sed '/[bB]reak$/a #####' file1
```

(a) Inserts five hashes on a new line before every line that ends with the word "break", the matching will be case incesitive.

(b) Inserts five hashes on a new line after every line that ends with the word "break", the matching will be case incesitive.

(c) Inserts five hashes on a new line before every line that ends with the word "break" or "Break".

(d) Inserts five hashes on a new line after every line that ends with the word "break" or "Break".

Answer

(c)

Practice Questions

Problem 1

Which of the following commands will replace the word "teach"(but not change anything in the word "teaching") with the word "reach"?

(1) `echo "teaching you how to teach" | sed -e "s/^teach$/reach/"`

(2) `echo "teaching you how to teach" | sed -e "s/$teach^/reach/"`

(3) `echo "teaching you how to teach" | sed -e "s/\bteach\b/reach/"`

(4) `echo "teaching you how to teach" | sed -e "s/teach\b/reach/"`

Answer

(3) `echo "teaching you how to teach" | sed -e "s/\bteach\b/reach/"`

(4) `echo "teaching you how to teach" | sed -e "s/teach\b/reach/"`

Problem 2

Match the following `sed` option with their use

Option	Use
1. -n	(a) Use extended regular expressions in the script.
2. -r	(b) To run/execute sed script stored in a file.
3. -f	(c) Add the scripts to the commands to be executed.
4. -e	(d) Run in quiet mode, i.e. suppress automatic printing of lines in input.

(a) 1-a, 2-c, 3-d, 4-b
(b) 1-d, 2-c, 3-b, 4-a
(c) 1-a, 2-d, 3-c, 4-b
(d) 1-d, 2-a, 3-b, 4-c

Answer

(d)

Problem 3

The file 'dates.txt' has a list of dates in MM/DD/YYYY format. Which of the following commands can be used to convert it to YYYY-MM-DD format?

(1) `sed 's/\([0-9]{2}\)\/\([0-9]{2}\)\/\([0-9]{4}\)/\3-\1-\2/' dates.txt`

(2) `sed 's/([0-9]{2})/([0-9]{2})/([0-9]{4})/\3-\1-\2/' dates.txt`

(3) `sed 's/\([0-9]\{2\}\)\/\([0-9]\{2\}\)\/\([0-9]\{4\}\)/\4-\2-\2/' dates.txt`

(4) `sed 's/\([0-9]\{2\}\)\/\([0-9]\{2\}\)\/\([0-9]\{4\}\)/\3-\1-\2/' dates.txt`

Answer

(4) `sed 's/\([0-9]\{2\}\)\/\([0-9]\{2\}\)\/\([0-9]\{4\}\)/\3-\1-\2/' dates.txt`

Problem 4

Which of the following are the buffers maintained in `sed`? [MSQ]

(a) Input space
(b) Output space
(c) Pattern space
(d) Auxiliary hold space

Answer

(c) and (d)

Problem 5

The varible `var` contains a string. Which of the following commands is/are equivalent to the command `echo ${var^^}`?[MSQ]

(1) `echo $var | sed 's/\(.*\)/\U&/g'`

(2) `echo $var | sed 's/\(.*\)/\L&/g'`

(3) `echo $var | sed 's/\(.*\)/\U\1/g'`

(4) `echo $var | sed 's/\(.*\)/\L\1/g'`

Answer

(1) and (3)