EXAM 2

**2.** Write a UNIX Shell command that eliminates all non-letter characters from file a.txt (i. e. a B, 5-9, ->\*! -> aB59)

**SOLUTION**

sed -E "s/[^a-z0-9]//gi" a.txt

**3.** Write an AWK program that applied to a file containing words separated by spaces calculates the average word count per line.

**SOLUTION**

BEGIN{

count=0

wc=0

}

{

count++

wc+=NF

}

END{

print wc/count

}

**4.** Display all the unique file names (without the path) in a given directory and all its hierarchy of subdirectories.

**SOLUTION**

find -type f | awk -F/ '{print $NF}' | sort | uniq

ls -all | awk '{print $9}' | sort | uniq??

**5.** Write a UNIX shell script that calculates the average number of lines in all the files with the .txt extension in the current directory.

**SOLUTION**

#!/bin/bash

nrFiles=0

nrLines=0

totalNrLines=0

for f in `ls | grep -E ".\*\.txt$"`; do

nrFiles=`expr $nrFiles + 1`

nrLines=`cat $f | wc -l`

totalNrLines=`expr $totalNrLines + $nrLines`

done

result=`expr $totalNrLines / $nrFiles`

echo "Average is: $result"

**8.** What till the code fragment below print to the console?

char\* s[3]={"A","B","C"};

for(i=0; i<3; i++){

execl("/bin/echo","/bin/echo",s[i],NULL);

}

**SOLUTION**

The following code fragment will print to the console only A because after the execution of the execl the code from that process will be wiped out and will be overwritten by the new code generated by the execl.

**9.** What does the system call “read” do when the FIFO contains less data then it is required to read?

**SOLUTION**

It will read the existing data from the FIFO.

**10.** What will the code fragment below print to the console, if no other process opens the “abc” FIFO? Justify your answer.

int r, w, n=0;

r=open(“abc”, O\_RDONLY);

n++;

w=open(“abc”, O\_WRONLY);

n++;

printf(“$d\n”, n);

**SOLUTION**

The following code fragment won’t print anything to the console because it will be locked. It will be locked because after opening the FIFO for reading, the program will wait for the other process to open the FIFO for writing.

**11.** What happens with a process between the moment it finishes and the moment the parent calls wait?

**SOLUTION**

Between the moment it finishes and the moment the parent calls wait, the process will become a zombie process.

**13.** Schedule the following jobs (given as Name/Duration/Deadline) so that the sum of their delays is minimized: A/7/13, B/5/9, C/2/4.

**SOLUTION**

t=0 is the initial time

t=0+2 => C finishes at time 2

t=2+5 => B finishes at time 7

t=7+7 => A finishes at time 14

The possible order is: CBA and the delay is 1.

**14.** Give an advantage and a disadvantage of the set-associative caches versus the associative caches.

**SOLUTION**

The advantage is that the set-associative caches is faster the the associative caches.

The disadvantage of the set-associative caches is that it dosen’t use all the cache lines efficiently.

**15.** What page category has the highest priority in the NRU replacement policy, when choosing a victim page?

**SOLUTION**

The page category which has the highes priority when choosing a victim page is the one where r is 0 and w is 0.

**17.** How many data blocks can be referenced to by the double-indirection of an i-node if a block contains N addresses to other blocks?

**SOLUTION**

**20.** Add the necessary instructions to the code fragment below, so that the standard input of command /bin/pwd to be read form PIPE p.

int p[2];

pipe(p);

if(fork()==0){

execl(“/bin/pwd”, “/bin/pwd”, “NULL);

exit(0);

}