Assignment No:2

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Assignment Name:Operations on Processes
Date: Submission date:-

Set A

Q.1)Write a C program that behaves like a shell which displays the command prompt 'myshell$'. It
accepts the command, tokenize the command line and execute it by creating the child process.
Also implement the additional command 'count' as
myshell$ count c filename: It will display the number of characters in given file
myshell$ count w filename: It will display the number of words in given file
myshell$ count l filename: It will display the number of lines in given file

Program:

```c
#include<sys/types.h>
#include<sys/stat.h>
#include<fcntl.h>
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
void make_toks(char *s,char*tok[])
{
int i=0;
char*p;
p = strtok(s," ");
while(p!=NULL)
{
tok[i++]=p;
p=strtok(NULL," ");
}
tok[i]=NULL;
}
void count(char *fn,char op)
{
int fh,cc=0,wc=0,lc=0;
char c;
fh = open(fn,O_RDONLY);
if(fh==-1)
{
printf("File %s not found.\n",fn);
return;
}
while(read(fh,&c,1)>0)
{
if(c==' ')wc++;
else if(c=='\n')
```

```c
{
wc++;
lc++;
}
cc++;
}
close(fh);
switch(op)
{
case 'c':
printf("No.of Characters:%d\n",cc-1);
break;
case 'w':
printf("No.of words:%d\n",wc);
break;
case 'l':
printf("No.of lines:%d\n",lc+1);
break;
}
}
int main()
{
char buff[80],*args[10];
int pid;
while(1)
{
printf("myshell$");
fflush(stdin);
fgets(buff,80,stdin);
buff[strlen(buff)-1]='\0';
make_toks(buff,args);
if(strcmp(args[0],"count")==0)
count(args[2],args[1][0]);
else
{
pid = fork();
if(pid>0)
wait();
else
{
if(execvp(args[0],args)==-1)
printf("Bad command.\n");
}
}
}
return 0;
}
```

Output:

```
samarth@samarth-OptiPlex-3040:~ ls
samarth@samarth-OptiPlex-3040:~ cc ass2.c
samarth@samarth-OptiPlex-3040:~ ./a.out
myshell$ count c ass2.txt
```

No.of Characters:59
myshell$ count l ass2.txt
No.of lines:4
myshell$ count w ass2.txt
No.of words:10

SET C

Q.1)Write a C program that behaves like a shell which displays the command prompt 'myshell$'. Itaccepts the command, tokenize the command line and execute it by creating the child process. Also implement the additional command 'typeline' as
myshell$ typeline n filename: It will display first n lines of the file.
myshell$ typeline -n filename: It will display last n lines of the file.
myshell$ typeline a filename: It will display all the lines of the file.
Program:

```
#include<sys/types.h>
#include<sys/stat.h>
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
#include<dirent.h>
#include<unistd.h>
#include<fcntl.h>
int make_toks(char *s,char *tok[]){
int i=0;
char *p;
p=strtok(s," ");
while(p !=NULL){
tok[i++]=p;
p=strtok(NULL," ");
}
tok[i]=NULL;
return i;
}
void typeline(char *op,char *fn){
int fh,
i,
j,
n;
char c;
fh=open(fn,O_RDONLY);
if(fh==-1){
printf("File %s not found.\n",fn);
return;
}
if(strcmp(op,"a")==0){
while(read(fh,&c,1)>0)
printf("%c",c);
close(fh);
return;
}
n=atoi(op);
```

```c
if(n>0){
i=0;
while(read(fh,&c,1)>0){
printf("%c",c);
if(c=='\n')i++;
if(i==n)break;
}
}
if(n<0){
i=0;
while(read(fh,&c,1)>0){
if(c=='\n')i++;
}
lseek(fh,0,SEEK_SET);
j=0;
while(read(fh,&c,1)>0){
if(c=='\n')j++;
if(j==i+n+1)break;
}
while(read(fh,&c,1)>0) {
printf("%c",c);
}
}
close(fh);
}
int main(){
char buff[80],
*args[10];
while(1){
printf("\n");
printf("\nmyshell$");
fgets(buff,80,stdin);
buff[strlen(buff)-1]='\0';
int n=make_toks(buff,args);
switch(n){
case 1:
if(strcmp(args[0],"exit")==0)
exit(1);
if(!fork())
execlp(args[0],args[0],NULL);
break;
case 2:
if(!fork())
execlp(args[0],args[0],args[1],NULL);
break;
case 3:
if(strcmp(args[0],"typeline")==0)
typeline(args[1],args[2]);
else{
if(!fork())
execlp(args[0],args[0],args[1],args[2],NULL);
}
```

```
break;
case 4:
if(!fork())
execlp(args[0],args[0],args[1],args[2],args[3],NULL);
break;
}
}
return 0;
}
```

output:

```
samarth@samarth-OptiPlex-3040:~$ ls
samarth@samarth-OptiPlex-3040:~$ cc v.c
samarth@samarth-OptiPlex-3040:~$ ./a.out

myshell$typeline a vaishu1.txt
hii i am vaishnavi
i like music
i have one brother
my mother is housewife
my father name is santosh


myshell$typeline 3 vaishu1.txt
hii i am vaishnavi
i like music
i have one brother


myshell$typeline -4 vaishu1.txt
my mother is housewife
my father name is santosh
```