19. Write a C program that behaves like a shell (command interpreter). It has its own prompt say "NewShell$".Any normal shell command is executed from your shell by starting a child process to execute the system program corresponding to the command. It should
i) additionally interpret the following command.
ii) search f <pattern> <filename> - search first occurrence of pattern in filename
iii) search c <pattern> <filename> - count no. of occurrences of pattern in filename
iv) search a <pattern> <filename> - search all occurrences of pattern in filename

```
#include<stdio.h>
#include<sys/types.h>
#include<unistd.h>
#include<sys/stat.h>
#include<dirent.h>
#include<fcntl.h>
#include<string.h>
char search(char op,char *pattern,char *fn)
{
     int handle,i=1,j=0,count=0;
     char buff[80],ch,*p;
     handle=open(fn,O_RDONLY);
     if(handle==-1)
     {
          printf("Uable to open file %s\n",fn);
          return 0;
     }
     switch(op)
     {
          case 'f' :
               while(read(handle,&ch,1))
               {
                    if(ch=='\n')
                    {
                         buff[j]='\0';
                         j=0;
                         if(strstr(buff,pattern)!=NULL)
                         {
```

```
                    printf("%d %s\n",i,buff);
                    break;
               }
               i++;
          }
          else
               buff[j++]=ch;
     }
     break;
case 'a' :
     while(read(handle,&ch,1))
     {
          if(ch=='\n')
          {
               buff[j]='\0';
               j=0;
               if(strstr(buff,pattern)!=NULL)
               {
                    printf("%d %s\n",i,buff);

               }
               i++;
          }
          else
               buff[j++]=ch;
     }
     break;
case 'c' :
     while(read(handle,&ch,1))
     {
          if(ch=='\n')
          {
               buff[j]=='\0';
               j=0;
               p=buff;
               while(p==strstr(p,pattern))
               {
                    count++;
                    p++;
               }
          }
          else
               buff[j++]=ch;
     }
```

```
                printf("total occurrences=%d\n",count-1);
                break;
          default :
                printf("Invalid Option");
          break;
     }
     close(handle);
return 0;
}

int main()
{
     char buff[80],t1[30],t2[30],t3[30],t4[30];
     int pid,n;
     while(1)
     {
          printf("\nty54017new@MYSHELL...$");
          fflush(stdin);
          fgets(buff,80,stdin);
          n=sscanf(buff,"%s%s%s%s",t1,t2,t3,t4);
          switch(n)
          {
               case 1 :
                    pid=fork();
                    if(pid==0)
                         execlp(t1,t1,NULL);
                    else
                         wait();
                    break;
               case 2 :
                    pid=fork();
                    if(pid==0)
                         execlp(t1,t1,t2,NULL);
                    else
                         wait();
                    break;
               case 3 :
                    pid=fork();
                    if(pid==0)
                    {
                         if(execlp(t1,t1,t2,t3,NULL)==-1)
                              printf("\nBad command");
                    }
                    else
```

```
                    wait();
               break;
          case 4 :
               if(strcmp(t1,"search")==0)
                    search(t2[0],t3,t4);
               else
               {
                    pid=fork();
                    if(pid==0)
                         execlp(t1,t1,t2,t3,t4,NULL);
                    else
                         wait();

               }
     }
}

/*
shubham@shubham:~/Documents/C Programs$ gcc 19shellsearch.c -o
test
19shellsearch.c: In function ‘main’:
19shellsearch.c:100:6: warning: implicit declaration of
function ‘wait’; did you mean ‘main’? [-Wimplicit-function-
declaration]
      wait();
      ^~~~
      main
shubham@shubham:~/Documents/C Programs$ ./test

ty54017new@MYSHELL...$search f kalyani demo.txt
7 kalyani

ty54017new@MYSHELL...$search c soham demo.txt
total occurrences=4

ty54017new@MYSHELL...$search a soham demo.txt
3 soham
13 soham
14 soham
15 soham
*/
```