PROGRAM 1:

(i) CP

```
#include<stdio.h>
#include<fcntl.h>
#include<stdlib.h>
#include<unistd.h>
int main(int argc, char *argv[])
{
 int fd1,fd2,n;
char buffer[20];
if(argc!=3)
{
printf("incorrect uasge:copy file1 file2 \n");
exit(0);
}
fd1=open(argv[1],O_RDONLY);
fd2=open(argv[2],O_CREAT|O_WRONLY|O_TRUNC|O_EXCL,0600);
while((n=read(fd1,buffer,20))!=0)
write(fd2,buffer,n);
close(fd1);
close(fd2);
}
```

(ii) RM

```
#include<stdio.h>
int main(int argc, char *argv[])
{
if(remove(argv[1])==0)
printf("the file is succesfully deleted\n");
else
printf("unsuccesfull deletion\n");
}
```

(iii) MV

```
#include<stdio.h>
#include<fcntl.h>
#include<stdlib.h>
#include<unistd.h>
int main(int argc, char *argv[])
{
 int fd1,fd2,n;
char buffer[20];
if(argc!=3)
{
printf("unsuccessfull move\n");
exit(0);
}
fd1=open(argv[1],O_RDONLY);
fd2=open(argv[2],O_CREAT|O_WRONLY|O_TRUNC|O_EXCL,0600);
while((n=read(fd1, buffer, 20))!=0)
write(fd2, buffer, n);
close(fd1);
close(fd2);
if(remove(argv[1])==0)
printf("the file is succesfully moved\n");
else
printf("unsuccesfull move\n");
}
```

(iv) LS

```
#include <sys/types.h>
#include <sys/stat.h>
#include <unistd.h>
#include <stdio.h>
#include <stdlib.h>
#include <dirent.h>
#include <time.h>
#include <pwd.h>
#include <grp.h>
```

```
int main(int argc, char* argv[])
{

   DIR *thedirectory;
   struct dirent *thefile;
   struct stat thestat;
   struct passwd *tf;
   struct group *gf;

   char buf[512];

   thedirectory = opendir(argv[1]);

   while((thefile = readdir(thedirectory)) != NULL)
   {
     // sprintf(buf, "%s/%s", argv[1], thefile->d_name);
      stat(thefile->d_name, &thestat);

      switch (thestat.st_mode & S_IFMT) {
         case S_IFBLK:  printf("b"); break;
         case S_IFCHR:  printf("c"); break;
         case S_IFDIR:  printf("d"); break; //It's a (sub)directory
         case S_IFIFO:  printf("p"); break; //fifo
         case S_IFLNK:  printf("l"); break; //Sym link
         case S_IFSOCK: printf("s"); break;
         //Filetype isn't identified
         default:       printf("-"); break;
            }
      printf( (thestat.st_mode & S_IRUSR) ? "r" : "-");
      printf( (thestat.st_mode & S_IWUSR) ? "w" : "-");
      printf( (thestat.st_mode & S_IXUSR) ? "x" : "-");
      printf( (thestat.st_mode & S_IRGRP) ? "r" : "-");
      printf( (thestat.st_mode & S_IWGRP) ? "w" : "-");
      printf( (thestat.st_mode & S_IXGRP) ? "x" : "-");
      printf( (thestat.st_mode & S_IROTH) ? "r" : "-");
      printf( (thestat.st_mode & S_IWOTH) ? "w" : "-");
      printf( (thestat.st_mode & S_IXOTH) ? "x" : "-");
```

```
        printf("\t%lu ", thestat.st_nlink);

        tf = getpwuid(thestat.st_uid);
        printf("\t%s ", tf->pw_name);

        gf = getgrgid(thestat.st_gid);
        printf("\t%s ", gf->gr_name);
        printf("%zu",thestat.st_size);
        printf(" %s", thefile->d_name);
        printf(" %s", ctime(&thestat.st_mtime));
    }
    closedir(thedirectory);
}
```