```
Q | = |
                                       psc@psc-virtual-machine: ~
                                                                                                 psc@psc-virtual-machine:-5 ts
ex_lseek ex_read ex_user_read moss.pl
ex_lseek.c ex_read.c ex_user_read.c mymsg.txt
ex_lseek.c ex_read.c ex_write newfile.txt
ex_open ex_user ex_write newfile.t
ex_open.c ex_user.c ex_write.c user.dat
psc@psc-virtual-machine: $ cat ex_open.c
#include <stdio.h>
#include <stdlib.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
int main(void){
     int fd = 0;
     char * pathname = "./newfile.txt";
     fd = open(pathname, O_CREAT | O_RDWR, PERMS);
     if (fd == -1) {
    perror("open() error!");
    exit(-1);
     printf("fd of %s is : %d", pathname, fd);
     close(fd);
     return 0;
psc@psc-virtual-machine: $ ./ex_open
fd of ./newfile.txt is : 3psc@psc-virtual-machine: $
```

```
Q = _ _
                                    psc@psc-virtual-machine: ~
psc@psc-virtual-machine:~$ ls
                                                               공개
다운로드
문서
바탕화면
                                                                           비디오
ex_lseek ex_read ex_user_read
                                               moss.pl
                                                                           사진
음악
템플릿
ex_lseek.c ex_read.c ex_user_read.c mymsg.txt
ex_open ex_user ex_write newfile.tx
                                               newfile.txt
                                               user.dat
ex_open.c ex_user.c ex_write.c
psc@psc-virtual-machine: $ cat ex read.c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
#define MAX_BUF_SIZE 1024
int main(void) {
     int fd = 0;
     char * pathname = "./mymsg.txt";
     char buf[MAX_BUF_SIZE + 1] = { '\0', };
    ssize_t rsize = 0;
ssize_t tsize = 0;
     fd = open(pathname, O_RDONLY, PERMS);
    if(fd == -1) {
    perror("open() error!");
         exit(-1);
     }
     do{
         memset(buf, '\0', MAX_BUF_SIZE + 1);
rsize = read(fd, buf, MAX_BUF_SIZE);
         if (rsize == -1) {
              perror("read() error!");
exit(-2);
         }
         printf("%s", buf);
tsize += rsize;
     } while (rsize > 0);
     printf("fd: %d, total rsize: %ld \n", fd, tsize);
     close(fd);
```

```
psc@psc-virtual-machine: ~
                                                                        Q ≡
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
#define MAX BUF SIZE 1024
int main(void) {
     int fd = 0:
     char * pathname = "./mymsq.txt";
     char buf[MAX_BUF_SIZE + 1] = { '\0', };
     ssize_t rsize = 0;
ssize_t tsize = 0;
     fd = open(pathname, O_RDONLY, PERMS);
     if(fd == -1) {
    perror("open() error!");
          exit(-1);
     }
     dof
         memset(buf, '\0', MAX_BUF_SIZE + 1);
rsize = read(fd, buf, MAX_BUF_SIZE);
         if (rsize == -1) {
    perror("read() error!");
              exit(-2);
          printf("%s", buf);
tsize += rsize;
     } while (rsize > 0);
     printf("fd: %d, total rsize: %ld \n", fd, tsize);
     close(fd);
     return 0;
psc@psc-virtual-machine:~$ ./ex_read
Hello World!Bonjour!
fd: 3, total rsize: 21
psc@psc-virtual-machine:~$
```

```
psc@psc-virtual-machine: ~
                                                            Q ≡
                                                                           psc@psc-virtual-machine:~$ ls
                      ex_user_read
                                                     공개
다운로드
                                                               비디오
ex_lseek ex_read
                                       moss.pl
                                                               사진
음악
템플릿
ex_lseek.c ex_read.c ex_user_read.c mymsg.txt
                                                     문서
          ex_user
                      ex_write
                                       newfile.txt
ex_open
ex_open.c ex_user.c ex_write.c use
psc@psc-virtual-machine:-$ cat ex_write.c
                                                     바탕화면
                                       user.dat
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
int main(void) {
   int fd = 0;
    char * pathname = "./mymsg.txt";
    char * msg = "Hello World!";
    ssize_t wsize = 0;
    fd = open(pathname, 0_CREAT | 0_TRUNC | 0_RDWR, PERMS);
    if(fd == -1) {
        perror("open() error!");
        exit(-1);
    wsize = write(fd, (char *)msg, strlen(msg));
    if(fd == -1) {
        perror("write() error!");
        exit(-2);
   }
   printf("fd: %d, wsize: %ld \n", fd, wsize);
   close(fd);
   return 0;
psc@psc-virtual-machine: $ ./ex write
fd: 3, wsize: 12
psc@psc-virtual-machine:-$
```

```
FI.
                                                                  Q
                                  psc@psc-virtual-machine: ~
psc@psc-virtual-machine: $ ls
                                                           공개
다운로드
                                                                      비디오
ex_lseek ex_read ex_user_read
                                            moss.pl
                                                                      비디포
사진
음악
템플릿
ex_lseek.c ex_read.c ex_user_read.c mymsg.txt
                                                           문서
            ex_user ex_write
                                          newfile.txt
ex_open
                                                           바탕화면
ex_open.c ex_user.c ex_write.c us
psc@psc-virtual-machine:~$ cat ex_user.c
                                           user.dat
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
#define MAX_NAME_SIZE 32
struct __User {
    char name[MAX NAME SIZE + 1];
    int age;
typedef struct __User User;
int main(void) {
    int fd = 0;
    char * pathName = "./user.dat";
    ssize_t wSize = 0;
    char userName[MAX_NAME_SIZE + 1] = {'\0',};
    int userAge = 0;
    User * user = (User *)malloc(sizeof(User));
memset(user->name, '\0', MAX_NAME_SIZE + 1);
    user->age = 0;
    printf("Name: ");
scanf("%[^\n]", userName);
    strcpy(user->name, userName);
    printf("Age: ");
    scanf("%d", &userAge);
    user->age = userAge;
    fd = open(pathName, O_CREAT | O_TRUNC | O_RDWR, PERMS);
    if(fd == -1) {
    perror("open() error!");
         exit(-1);
```

```
Q ≡
                                   psc@psc-virtual-machine: ~
typedef struct __User User;
int main(void) {
    int fd = 0;
    char * pathName = "./user.dat";
    ssize_t wSize = 0;
    char userName[MAX_NAME_SIZE + 1] = {'\0',};
    int userAge = 0;
    User * user = (User *)malloc(sizeof(User));
memset(user->name, '\0', MAX_NAME_SIZE + 1);
    user->age = 0;
    printf("Name: ");
    scanf("%[^\n]", userName);
    strcpy(user->name, userName);
    printf("Age: ");
scanf("%d", &userAge);
user->age = userAge;
    fd = open(pathName, O_CREAT | O_TRUNC | O_RDWR, PERMS);
    if(fd == -1) {
    perror("open() error!");
         exit(-1);
    }
    wSize = write(fd, (User *)user, sizeof(User));
    if (wSize == -1) {
    perror("write() error!");
         exit(-2);
    printf("fd: %d, wSize: %ld \n", fd, wSize);
    close(fd);
    free(user);
    return 0;
psc@psc-virtual-machine: $ ./ex_user
Name: park sang cheon
Age: 21
fd: 3, wSize: 40
psc@psc-virtual-machine:-$
```

```
Q = -
                               psc@psc-virtual-machine: ~
psc@psc-virtual-machine: $ ls
ex_lseek ex_read ex_user_read
                                                               시시고
사진
음악
템플릿
ex_lseek.c ex_read.c ex_user_read.c mymsg.txt
                                                     문서
           ex_user ex_write
                                       newfile.txt
                                                     비탕화면
                                       user.dat
ex_open.c
          ex_user.c ex_write.c
psc@psc-virtual-machine: $ cat ex_user_read.c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
#define MAX NAME SIZE 32
struct __User {
    char name[MAX_NAME_SIZE + 1];
    int age;
typedef struct __User User;
int main(void){
    int fd = 0;
    char * pathName = "./user.dat";
    ssize_t rSize = 0;
    User * user = (User *)malloc(sizeof(User));
    memset(user->name, '\0', MAX_NAME_SIZE + 1);
    user->age = 0;
    fd = open(pathName, O_RDONLY, PERMS);
    if (fd == -1) {
        perror("open() error!");
        exit(-1);
    rSize = read(fd, (User *)user, sizeof(User));
    if (rSize == -1)
        perror("read() error!");
        exit(-2);
    printf("fd: %d, rSize: %ld \n", fd, rSize);
    printf("User Name: %s, Age: %d \n", user->name, user->age);
    close(fd);
```

```
Q ≡
                                  psc@psc-virtual-machine: ~
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
#define MAX NAME SIZE 32
struct User {
    char name[MAX NAME SIZE + 1];
    int age;
typedef struct __User User;
int main(void){
    int fd = 0:
    char * pathName = "./user.dat";
    ssize_t rSize = 0;
    User * user = (User *)malloc(sizeof(User));
memset(user->name, '\0', MAX_NAME_SIZE + 1);
    user->age = 0;
    fd = open(pathName, O_RDONLY, PERMS);
    if (fd == -1) {
    perror("open() error!");
         exit(-1);
    rSize = read(fd, (User *)user, sizeof(User));
    if (rSize == -1)
         perror("read() error!");
         exit(-2);
    printf("fd: %d, rSize: %ld \n", fd, rSize);
    printf("User Name: %s, Age: %d \n", user->name, user->age);
    close(fd);
    free(user);
    return 0;
psc@psc-virtual-machine: $ ./ex_user_read
fd: 3, rSize: 40
User Name: park sang cheon, Age: 21 psc@psc-virtual-machine:~$
```

```
psc@psc-virtual-machine: ~
                                                              Q
psc@psc-virtual-machine: $ ls
                                                                  비디오
            ex_read
                       ex_user_read
                                         moss.pl
                                                                 시진
사진
음악
템플릿
ex_lseek.c ex_read.c ex_user_read.c mymsg.txt
           ex_user ex_write
ex_user.c ex_write.c
                                         newfile.txt
ex_open
                                         user.dat
ex open.c
psc@psc-virtual-machine: $ cat ex_lseek.c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <unistd.h>
#include <sys/stat.h>
#include <sys/types.h>
#define PERMS 0644
#define MAX BUF SIZE 32
int main(void) {
    int fd = 0;
    char * pathName ="./mymsg.txt";
    ssize_t wSize = 0;
    char msg[MAX_BUF_SIZE + 1] = "Bonjour!";
    fd = open(pathName, O_RDWR);
    if(fd == -1) {
    perror("open() error!");
        exit(-1);
    lseek(fd, (off_t)0, SEEK_END);
    wSize = write(fd, (char *)msg, strlen(msg));
    if (wSize == -1) {
        perror("write() error!");
        exit(-2);
    printf("fd: %d, wSize: %ld \n", fd, wSize);
    close(fd);
    return 0;
psc@psc-virtual-machine:~$ ./ex_lseek
fd: 3, wSize: 8
psc@psc-virtual-machine:~$
```