

```

/*
 * mmap() 함수와 low level function 을 이용한 file copy
 *
 *          1ndr4 ( "indra.kr"."\x40"."gmail.com")
 *          http://indra.linuxstudy.pe.kr
 *          2003.05.27
 *          (코멘트 수정일 : 2005. 10. 6.)
 *
 * bash-2.03# ./mmapcp src dst
 * file size:
 * 440825562 bytes.
 * 430493 KB.
 * 420 MB.
 * total 12.837420 seconds.
 * bash-2.03#
 */
#include <stdio.h>
#include <unistd.h>
#include <stdlib.h>
#include <string.h>
#include <fcntl.h>
#include <sys/errno.h>
#include <sys/mman.h>

#define MAXMMAP      102400

#define ERR(func, line) { \
    printf("[error] %s() function error. (line : %d)\n", \
        func, line); \
}

// 시간 체크를 위한 루틴
struct timeval chkstart, chkend;
double init = 0.0;

double result()
{
    double start, end, tot;

    start = (double)chkstart.tv_sec + (double)chkstart.tv_usec/(1000*1000);
    end = (double)chkend.tv_sec + (double)chkend.tv_usec/(1000*1000);
    tot = end - start;
    init += tot;
    if(tot == 0.0) tot = .0001;
    return tot;
}

int start()
{
    gettimeofday(&chkstart, NULL);
}

int end()
{
    gettimeofday(&chkend, NULL);
}

int main(int argc, char *argv[])
{
    int      rfd,
            wfd;
    int      total = 0,
            remain = 0,
            size = 0;
    char      *src,
            *dst;

    if(argc != 3) {
        printf("Usage: %s <src-file> <dst-file>\n", argv[0]);
    }

```

```

    exit(0);
}

if((rfd = open(argv[1], O_RDONLY)) == 0) {
    ERR("open", __LINE__);
    exit(-1);
}

size = lseek(rfd, 0, SEEK_END);
remain = size;

if((wfd = open(argv[2], O_RDWR|O_CREAT, 0600)) == 0) {
    ERR("open", __LINE__);
    exit(-1);
}

lseek(wfd, size - 1, SEEK_SET);

if(write(wfd, " ", 1) != 1) {
    ERR("write", __LINE__);
    exit(-1);
}

start();

for(;;) {
    if(remain < MAXMMAP) {
        src = mmap((char*)total, remain, PROT_READ, MAP_SHARED, rfd, 0);
        dst = mmap((char*)total, remain, PROT_READ|PROT_WRITE, \
                    MAP_PRIVATE, wfd, 0);
        if((int)src == ENODEV || (int)dst == ENODEV) {
            printf("This machine is not support to %s\n", argv[0]);
            exit(-1);
        }
        memcpy(dst, src, remain);
        munmap(src, remain);
        munmap(dst, remain);
        break;
    }
    else {
        src = mmap((char*)total, MAXMMAP, PROT_READ, MAP_SHARED, rfd, 0);
        dst = mmap((char*)total, MAXMMAP, PROT_READ|PROT_WRITE, \
                    MAP_PRIVATE, wfd, 0);
        if((int)src == ENODEV || (int)dst == ENODEV) {
            printf("This machine is not support to %s\n", argv[0]);
            exit(-1);
        }
        memcpy(dst, src, MAXMMAP);
        munmap(src, MAXMMAP);
        munmap(dst, MAXMMAP);
    }
    total += MAXMMAP;
    remain -= MAXMMAP;

    if(remain <= 0) remain += MAXMMAP;
}

end();

printf("file size: \n");
printf("\t%d bytes.\n", size);
printf("\t%d KB.\n", size/1024);

if(((size/1024)/1024) > 1) printf("\t%d MB.\n", (size/1024)/1024);

printf("total %8.6f seconds.\n", result());
close(rfd);
close(wfd);
}

```