Fun with File Descriptors 레포트

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양현서
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1 Fun with file Descriptors(1)

```c
#include "csapp.h"

int main(int argc, char * argv[]) {
  int fd1, fd2, fd3;
  char c1, c2, c3;
  char * fname = argv[1];
  fd1 = Open(fname, O_RDONLY, 0);
  fd2 = Open(fname, O_RDONLY, 0);
  fd3 = Open(fname, O_RDONLY, 0);
  Dup2(fd2, fd3);
  Read(fd1, & c1, 1);
  Read(fd2, & c2, 1);
  Read(fd3, & c3, 1);
  printf("c1 = %c, c2 = %c, c3 = %c\n", c1, c2, c3);
  return 0;
}
```

답: c1 = a, c2 = a, c3 = b

2 Fun with file descriptors(2)

```c
#include "csapp.h"

int main(int argc, char * argv[]) {
  int fd1;
  int s = getpid() & 0x1;
  char c1, c2;
  char * fname = argv[1];
  fd1 = Open(fname, O_RDONLY, 0);
  Read(fd1, & c1, 1);
  if (fork()) {
    /* Parent */
    sleep(s);
    Read(fd1, & c2, 1);
    printf("Parent: c1 = %c, c2 = %c\n", c1, c2);
  } else {
    /* Child */
    sleep(1 - s);
    Read(fd1, & c2, 1);
    printf("Child: c1 = %c, c2 = %c\n", c1, c2);
  }
  return 0;
}
```

답:
parent pid가 홀수(s=1)일때:

Child: c1=a, c2=b
Parent: c1=a, c2=c
parent pid가 짝수(s=0)일때:
Parent: c1=a, c2=b
Child: c1=a, c2=c

3 Fun with file descriptors(3)

```c
#include "csapp.h"

int main(int argc, char * argv[]) {
  int fd1, fd2, fd3;
  char * fname = argv[1];
  fd1 = Open(fname, O_CREAT | O_TRUNC | O_RDWR, S_IRUSR | S_IWUSR);
  Write(fd1, "pqrs", 4);
  fd3 = Open(fname, O_APPEND | O_WRONLY, 0);
  Write(fd3, "jklmn", 5);
  fd2 = dup(fd1); /* Allocates descriptor */
  Write(fd2, "wxyz", 4);
  Write(fd3, "ef", 2);
  return 0;
}
```

답: pqrswxyznef