

Problem 1: Read/Write

<pre>int main() { int fd1, fd2; char c; fd1 = open("c.txt", O_RDONLY, 0); if (fork() == 0) read(fd1, &c, 1) read(fd1, &c, 1); printf("%c\n", c); exit(0); }</pre>	Content of a.txt 12345
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Please give all the possible output and one execution order for each. You can use line **Cx** or line **Px** to distinguish the same line of code executed by child and parent.

"1\n3\n": P9->P10->C7->C9->C10

"3\n1\n": P9->C7->C9->C10->P10

"2\n3\n": C7->C9->C10->P9->P10

"3\n2\n": C7->C9->P9->P10->C10

Problem 2: Dup

<pre>int main(){ int fd1, fd2, fd3; char *buf1=(char*)malloc(10); char *buf2=(char*)malloc(10); memset(buf1, 0, 10); memset(buf2, 0, 10); fd1 = open("a.txt", O_RDWR, 0); fd2 = open("b.txt", O_RDWR O_APPEND, 0); fd3 = open("a.txt", O_RDWR, 0); }</pre>	Content of a.txt abcdefg
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<pre> if(fork()==0){ read(fd2, buf1, 2); dup2(fd1, fd2); read(fd2, buf1, 1); exit(0); } waitpid(-1, NULL, 0); read(fd2, buf1, 3); write(fd1, buf1, 3); read(fd1, buf1, 10); printf("%s\n", buf1); read(fd3, buf2, 10); dup2(fd2, 1); printf("%s\n", buf2); free(buf1); free(buf2); exit(0); } </pre>	Content of b.txt: 0123456789
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What will the contents of a.txt and b.txt be after the program completes?

What will be printed on stdout?

a.txt: a234efg

b.txt: 0123456789a234efg\n

efg\n