

Homework 14 & Homework 15

郭天魁
信息科学技术学院
1300012790

December 12, 2014

1 Homework 14

1.1 10.6

fd2 = 4

1.2 10.7

```
1 #include "csapp.h"
2
3 int main(int argc, char **argv) {
4     int n;
5     rio_t rio;
6     char buf[MAXBUF];
7
8     Rio_readinitb(&rio, STDIN_FILENO);
9     while ((n = Rio_readnb(&rio, buf, MAXBUF)) != 0)
10         Rio_writen(STDOUT_FILENO, buf, n);
11
12     return 0;
13 }
```

1.3 10.9

只考虑input（路径在input_file中）的情况，output同理。

```
1 if (Fork() == 0) { /* Child */
2     int input_fd = Open(input_file, O_RDONLY, 0);
3     Dup2(input_fd, STDIN_FILENO);
4     Close(input_fd);
5     Execve("fstatcheck", argv, envp);
6 }
```

更好的做法是利用fcntl提供的close-on-exec flag或更方便的O_CLOEXEC标记，即

```

1 if (Fork() == 0) { /* Child */
2     int input_fd = Open(input_file, O_RDONLY | O_CLOEXEC, 0);
3     Dup2(input_fd, STDIN_FILENO);
4     Execve("fstatcheck", argv, envp);
5 }

```

2 Homework 15

2.1 9.11

A. Virtual address format

13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	1	0	0	1	1	1	1	1	0	0

B. Address translation

Parameter	Value
VPN	0x9
TLB index	0x1
TLB tag	0x2
TLB hit?	N
Page fault?	N
PPN	0x17

C. Physical address format

11	10	9	8	7	6	5	4	3	2	1	0
0	1	0	1	1	1	1	1	1	1	0	0

D. Physical memory reference

Parameter	Value
Byte offset	0
Cache index	0xF
Cache tag	0x17
Cache hit?	N
Cache byte returned	-

2.2 9.12

A. Virtual address format

13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	1	1	1	0	1	0	1	0	0	1

B. Address translation

Parameter	Value
VPN	0xE
TLB index	0x2
TLB tag	0x3
TLB hit?	N
Page fault?	N
PPN	0x11

C. Physical address format

11	10	9	8	7	6	5	4	3	2	1	0
0	1	0	0	0	1	1	0	1	0	0	1

D. Physical memory reference

Parameter	Value
Byte offset	1
Cache index	0xA
Cache tag	0x11
Cache hit?	N
Cache byte returned	-

2.3 9.13

A. Virtual address format

13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0

B. Address translation

Parameter	Value
VPN	0x1
TLB index	0x1
TLB tag	0x0
TLB hit?	N
Page fault?	Y
PPN	-

2.4 9.14

```
1 #include <unistd.h>
2 #include <sys/mman.h>
3 #include <fcntl.h>
4
5 int main() {
6     int fd = open("hello.txt", O_RDWR);
7     char *content = mmap(NULL, 1, PROT_WRITE | PROT_READ,
8         MAP_SHARED, fd, 0);
9     content[0] = 'J';
10    munmap(content, 1);
11    close(fd);
12    return 0;
13 }
```