10.2

The output is c = f. Because fd1 and fd2 are both open the file “foobar.txt” and both read the same size of buf. But they have different position for the file. The first Read send the first letter in the file of fd1 to c which is ‘f’, and the second Read send the first letter in the file of fd2 to c which is still ‘f’.

10.3

The output is c = o. There is only a file open named fd, so the parent and child process are reading the same file position. In the child process, it read the first letter in the file of fd and then upgrade the position. After reap the child, parent read one byte from the file of fd, which is the second letter in the file and print it out.

10.5

The output is c= o. First fd1 and fd2 open the file in the different position. Then read a letter from fd2 file and update the position for that file. Dup2 make fd1 use the same file position as fd2, so when read a letter from fd1, it is reading a letter from the file of fd2, which is o.

10.6

The output is fd2 = 4. Open will return a file descriptor for the named file that is the lowest file descriptor not currently open for than process, and the number of 0, 1, 2 have already been used, so the fd1 and fd2 should equal to 3 and 4. After close the fd2, the number 4 become unused, so when reopen the fd2, it will still use the number 4.