系級:　　　　　　姓名:　　　　　　學號:

1. (a) (15%) How many i-nodes will be used if we create a file and create 2 hard links to the file? (b) (30%) We first create a file ABC, and then create a hard link HL to ABC, and another soft link SL to HL. Now, we remove ABC (rm -rf ABC in Linux). Can we use the hard link HL? Can we use the soft link SL? The reasons have to be provided to support your answers.

Answer: (a) 1 i-node. Creating the file uses an i-node, and the 2 hard links share the i-node.
　　　　 (b) HL: Yes, it just refers to the some i-node to use the original file.
　　　　　　 SL: Yes, it refers to the path of HL, and HL still exists.

2. (15%) A file GRADING is belonging to an owner TEACHER and a group OSP. Now, TEACHER would like to read and write the file (no execution), students in the OSP group can only read the file, and the other users have no authority to access the file. How does TEACHER set the mode of the file GRADING?

Answer: chmod 640 GRADING

3. (a) (15%) How many i-nodes will be used if we create a file and create 4 soft links to the file? (b) (30%) We first create a file DEF, and then create a hard link HL to DEF, and another soft link SL to DEF. Now, we remove DEF (rm -rf DEF in Linux). Can we use the hard link HL? Can we use the soft link SL? The reasons have to be provided to support your answers.

Answer: (a) 5 i-node. Creating the file uses an i-node, and the 4 soft links uses another 4 i-nodes.
　　　　 (b) HL: Yes, it just refers to the some i-node to use the original file.
　　　　　　 SL: No, it refers to the path of DEF, and DEF is removed.

4. (15%) A file EXHIBITION is belonging to an owner TEACHER and a group OSP. Now, TEACHER would like to read and write the file (no execution), students in the OSP group can read and write the file (no execution), and the other users have the authority to read the file. How does TEACHER set the mode of the file ~~GRADING~~ EXHIBITION?

Answer: chmod 664 EXHIBITION
　　　　 or chmod 664 GRADING
　　　　 or chmod 664
　　　　 or 664