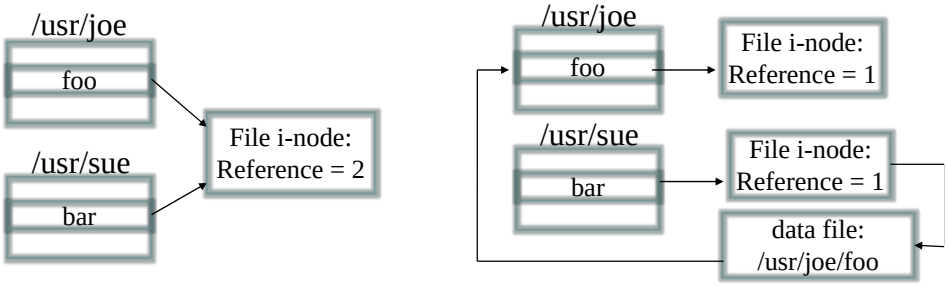
# 長庚大學109學年度第二學期 作業系統實務 第一次小考

系級: 姓名: 學號:

1. (80%) (a) How many i-nodes will be used if we create a file and create 2 hard links to the file? (b) How many i-nodes will be used if we create a file and create 4 soft links to the file? (c) We first create a file AAA, and then create a hard link BBB to AAA and a soft link CCC to AAA. Now, we remove AAA. Can we use the hard link BBB? Can we use the soft link CCC? The reasons have to be provided to support your answers.

   Hints: the pictures of a hard link and a soft link




Answer: (a) 1 i-node. Creating the file uses an i-node, and the 2 hard links share the i-node.
(b) 5 i-nodes. Creating the file uses an i-node, and the 4 symbolic links use another 3 i-nodes.
(c) BBB: Yes, it just refers to the some i-node to use the original file.
CCC: No, it refers to the path of AAA, and AAA is removed.

2. (40%) For file allocation methods, let's make some comparison between contiguous allocation and indexed allocation. What is the disadvantage of contiguous allocation? What is the disadvantage of indexed allocation?

Answer: The random read/write performance of the contiguous allocation is poor.
For a small file, the indexed allocation still need an extra storage block to keep the index block of the file.