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
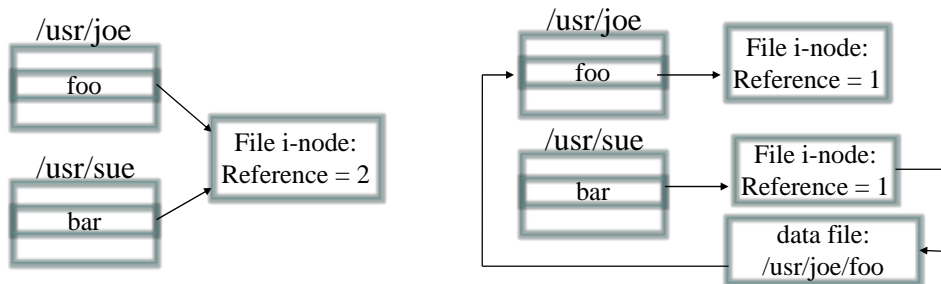
Answer:　(a) 1 i-node. Creating the file uses an i-node, and the 2 hard links share the i-node.

(b) 5 i-nodes. Creating the file uses an i-node, and the 4 symbolic links use another 4 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:　There could be some external fragmentations if continue allocation is used.

For a small file, the indexed allocation still need an extra storage block to keep the index block of the file.