Name: _____ USC ID: _____

Quiz 6: External Sorting (10 points), 10 minutes (Afternoon section)

Consider external-sorting a table R which contains 108 blocks of data, using 4 pages of memory buffer. That is, B(R) = 108 and M = 4.

1. [8 points] For each pass (sorting and merging), state the number of runs and the size of runs generated by the pass.

   Pass 0: First use memory to sort. Generate 27 runs, the size of each run is 4.
   Pass 1: Merge. Generate 9 runs, the size of each run is 12.
   Pass 2: Merge. Generate 3 runs, the size of each run is 36.
   Pass 3: Merge. Generate 1 run, its size: 108.

2. [2 points] What is the total cost (measured by the number of block I/O's) of this external-sorting?

   Total cost: # of passes * 2 * # of blocks = 4*2*108 = 864