Jin-Ao Olson Zhang
Z5211414
Question 1:

Assume there is a greedy solution which start from CD1 and put ass many songs as it can to this CD

then move to CD2 and so on ,its take O(n) time

To prove this greedy solution is true , let's say there have another greedy solution which is different to the above one, it can thus be seen that there exist number n that this true greedy solution's nth CD has different song number to above greedy solution.
Also because above greedy solution assume each CD contain songs as much as possible, so songs number in nth CD from above greedy solution will more than the one of the true greedy solution.

So if different happened at nth CD , suppose length for True one is i and assumptive one is j, we can move j-i songs from n+1 th CD to nth CD, this operation does not increase the total number of CDs but will let the true greedy solution becomes to the assumptive greedy solution , which can prove that is one of the most efficient algorithm