Introduction to Programming

How Many Steps?

Note: The procedure defined in the question should be familiar. If not, think again. You have done something similar already.

Mrs. Chambers always has her class line up in height order (shortest at the front of the line). Every September a new class of exactly 20 3rd graders arrive, all of different height. For the first few days it takes a long time to get the kids in height order, since no one knows where they should be in the line. Needless to say, there is quite a bit of jockeying around. This year Mrs. Chambers decided to try a new method to minimize this ordering chaos. One student would be selected to be the first person in line. Then, another student is selected and would find the first person in the line that is taller than him, and stand in front of that person, thereby causing all the students behind him to step back to make room. If there is no student that is taller, then he would stand at the end of the line. This process continues, one student at-a-time, until all the students are in line, at which point the students will be lined up in height order.

For this problem, you will write a program that calculates the total number of steps taken back during the ordering process for a given class of students.

These are pretty big kids. Here is the list with their heights before Mrs. Chambers arranges them in height order using her algorithm described above.

kids=[900,919,901,918,902,917,903,916,904,915,910,905,914,906,913,907,912,908,911,909]

Test your program on the list kids above.