Project 6

Write a java program to sort a list of integers using 'in place' Quicksort algorithm.

Generate the list randomly every time using the java.util.Random class.

Allow the user to choose the size of the array. The program should display the result of sorting the array of that size using different pivot choices. In particular, try these 4 choices –
- First element as pivot
- Randomly choosing the pivot element
- Choosing the median of 3 randomly chosen elements as the pivot
- Median of first center and last element (book technique).

Try your program on lists of size 100, 1000, 5000, 10000 and 50000. (You may try other sizes as well.) Is there a noticeable difference? Note how much of a difference is there for different sizes, you should record this in your 'readme' file

Both the unsorted and sorted lists must be written to two output files   named 'sorted' and 'unsorted'.
Attempt to gauge the run time of your sort *experimentally*, print these results on the console.