**Exercise for sorting**

1. Implement bubble sort, selection sort and insertion sort on array of 10 elements
2. Modify ex1 with array of 1000 elements (generate random elements)
3. Modify ex2 with 3 different situations (best case, worst case, average case). Measure the execution time for each Use the code given below to measure the time.

Instant start = Instant.now();

Instant end = Instant.now();

System.out.println(Duration.between(start, end));

* 1. Implement bubble sort on
     1. random array (its average case)
     2. sorted array (its best case)
     3. reverse sorted array (its worst case)
  2. Implement Selection sort on
     1. random array
     2. sorted array
     3. reverse sorted array
  3. Implement insertion sort on
     1. random array
     2. sorted array
     3. reverse sorted array

1. Fill the table given below

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Best case | | | Avg Case | | | Worst Case | | |
|  | Time | # Comparisons | # Exchanges | Time | # Comparisons | # Exchanges | Time | # Comparisons | # Exchanges |
| bubble sort | 0.003S | 500500 | 0 | 0.022S | 500500 | 182729 | 0.042S | 500500 | 499500 |
| Selection sort | 0.008S | 500499 | 999 | 0.01S | 500499 | 999 | 0.006S | 500499 | 999 |
| Insertion sort | 0.001S | 998 | 1997 | 0.003S | 998 | 1997 | 0.002S | 998 | 1997 |