Random Class

- [http://docs.oracle.com/javase/7/docs/api/java/util/Random.html](http://docs.oracle.com/javase/7/docs/api/java/util/Random.html)

- Create an object for `Random()`
  - Random `r = new Random();`

- Use method `.nextInt(n)` to generate a pseudorandom, uniformly distributed int value between 0 (inclusive) and the specified value `n` (exclusive)
Evaluation by Time

- [http://docs.oracle.com/javase/7/docs/api/java/lang/System.html](http://docs.oracle.com/javase/7/docs/api/java/lang/System.html)

- `System.nanoTime();`

- `System.currentTimeMillis();`
Practice: Inversion

- Let int A[] be an array of distinct integers. There are len = A.length distinct integers.

- If i<j and A[i]>A[j], then the pair (i, j) is called an inversion of A.

- There exists many such pairs in A. Compute how many inversions in A.
Practice: Inversion

- Intuitive method: $O(n^2)$
Practice: Inversion

- Maximal number of inversions?
- Find an efficient algorithm

- When the array is partly sorted, to determine how many inversions are caused by a number, we do not need to compare every pair of numbers. For instance, in array \{1,3,5,7,2,4,6,8\}, consider the number of inversions caused by 2.
Practice: Inversion

- Use the process similar to merge sort