**Java:**

Time trials for array and ArrayList of size 10

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Elapsed time in nanoseconds for initializing a Java primitive array of 10 elements: 500

DEMO: Elapsed time in milliseconds for initialzing a Java primitive array of 10 elements: 0

Initial state - intArray isShuffled: false

Array contents: 1 2 3 4 5 6 7 8 9 10

Swapping 7 with 3

Swapping 7 with 2

Swapping 8 with 1

Swapping 3 with 10

Swapping 3 with 3

Swapping 6 with 4

Swapping 10 with 7

Swapping 5 with 1

Swapping 8 with 9

Swapping 8 with 3

Post-shuffle state - intArray isShuffled: true

Array contents: 9 10 2 6 1 4 7 5 3 8

Elapsed time in nanoseconds for shuffling a Java primitive array of 10 elements: 196000

Elapsed time in nanoseconds for initializing an ArrayList of 10 elements: 22700

ArrayList contents: 1 2 3 4 5 6 7 8 9 10

Initial state - integerArrayList isShuffled: false

Swapping 1 with 10

Swapping 1 with 7

Swapping 4 with 9

Swapping 1 with 3

Swapping 3 with 3

Swapping 5 with 6

Swapping 5 with 2

Swapping 3 with 2

Swapping 10 with 8

Swapping 2 with 10

Post-shuffle state - integerArrayList isShuffled: true

ArrayList contents: 8 5 1 9 6 3 10 2 4 7

Elapsed time in nanoseconds for shuffling an ArrayList of 10 elements: 159200

Time trials for array and ArrayList of size 100

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Elapsed time in nanoseconds for initializing a Java primitive array of 100 elements: 900

DEMO: Elapsed time in milliseconds for initialzing a Java primitive array of 100 elements: 0

Initial state - intArray isShuffled: false

Array contents: 1, 2, 3 ... 98, 99, 100

Post-shuffle state - intArray isShuffled: true

Array contents: 80, 2, 22 ... 41, 79, 24

Elapsed time in nanoseconds for shuffling a Java primitive array of 100 elements: 51300

Elapsed time in nanoseconds for initializing an ArrayList of 100 elements: 13800

ArrayList contents: 1, 2, 3 ... 98, 99, 100

Initial state - integerArrayList isShuffled: false

Post-shuffle state - integerArrayList isShuffled: true

ArrayList contents: 46, 2, 45 ... 1, 68, 42

Elapsed time in nanoseconds for shuffling an ArrayList of 100 elements: 304200

Time trials for array and ArrayList of size 1000

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Elapsed time in nanoseconds for initializing a Java primitive array of 1000 elements: 41100

DEMO: Elapsed time in milliseconds for initialzing a Java primitive array of 1000 elements: 0

Initial state - intArray isShuffled: false

Array contents: 1, 2, 3 ... 998, 999, 1000

Post-shuffle state - intArray isShuffled: true

Array contents: 281, 687, 761 ... 556, 485, 999

Elapsed time in nanoseconds for shuffling a Java primitive array of 1000 elements: 209400

Elapsed time in nanoseconds for initializing an ArrayList of 1000 elements: 266700

ArrayList contents: 1, 2, 3 ... 998, 999, 1000

Initial state - integerArrayList isShuffled: false

Post-shuffle state - integerArrayList isShuffled: true

ArrayList contents: 1, 672, 225 ... 18, 598, 163

Elapsed time in nanoseconds for shuffling an ArrayList of 1000 elements: 425300

Time trials for array and ArrayList of size 10000

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Elapsed time in nanoseconds for initializing a Java primitive array of 10000 elements: 101900

DEMO: Elapsed time in milliseconds for initialzing a Java primitive array of 10000 elements: 0

Initial state - intArray isShuffled: false

Array contents: 1, 2, 3 ... 9998, 9999, 10000

Post-shuffle state - intArray isShuffled: true

Array contents: 1682, 9513, 8707 ... 9367, 6138, 529

Elapsed time in nanoseconds for shuffling a Java primitive array of 10000 elements: 948000

Elapsed time in nanoseconds for initializing an ArrayList of 10000 elements: 383000

ArrayList contents: 1, 2, 3 ... 9998, 9999, 10000

Initial state - integerArrayList isShuffled: false

Post-shuffle state - integerArrayList isShuffled: true

ArrayList contents: 7596, 4373, 3 ... 2192, 3542, 5365

Elapsed time in nanoseconds for shuffling an ArrayList of 10000 elements: 1141200

Time trials for array and ArrayList of size 100000

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Elapsed time in nanoseconds for initializing a Java primitive array of 100000 elements: 658400

DEMO: Elapsed time in milliseconds for initialzing a Java primitive array of 100000 elements: 1

Initial state - intArray isShuffled: false

Array contents: 1, 2, 3 ... 99998, 99999, 100000

Post-shuffle state - intArray isShuffled: true

Array contents: 42387, 2, 72488 ... 99998, 14328, 96683

Elapsed time in nanoseconds for shuffling a Java primitive array of 100000 elements: 7287500

Elapsed time in nanoseconds for initializing an ArrayList of 100000 elements: 3444600

ArrayList contents: 1, 2, 3 ... 99998, 99999, 100000

Initial state - integerArrayList isShuffled: false

Post-shuffle state - integerArrayList isShuffled: true

ArrayList contents: 79173, 2, 29538 ... 56239, 82110, 1725

Elapsed time in nanoseconds for shuffling an ArrayList of 100000 elements: 11481000

Time trials for array and ArrayList of size 1000000

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Elapsed time in nanoseconds for initializing a Java primitive array of 1000000 elements: 1632700

DEMO: Elapsed time in milliseconds for initialzing a Java primitive array of 1000000 elements: 1

Initial state - intArray isShuffled: false

Array contents: 1, 2, 3 ... 999998, 999999, 1000000

Post-shuffle state - intArray isShuffled: true

Array contents: 839613, 76678, 3 ... 340983, 999999, 74876

Elapsed time in nanoseconds for shuffling a Java primitive array of 1000000 elements: 42593600

Elapsed time in nanoseconds for initializing an ArrayList of 1000000 elements: 9344900

ArrayList contents: 1, 2, 3 ... 999998, 999999, 1000000

Initial state - integerArrayList isShuffled: false

Post-shuffle state - integerArrayList isShuffled: true

ArrayList contents: 409768, 559012, 807084 ... 713824, 156338, 533075

Elapsed time in nanoseconds for shuffling an ArrayList of 1000000 elements: 139925700

**C++:**

Default clock ticks per second: 1000

Time trials for array and vector of size 10

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Elapsed time in nanoseconds for initializing a C++ primitive array of 10 elements: 400

DEMO: Elapsed time in milliseconds for initializing a C++ primitive array of 10 elements: 0

Initial state - arr isShuffled: false

Array contents: 1 2 3 4 5 6 7 8 9 10

Swapping 3 with 3

Swapping 5 with 6

Swapping 6 with 2

Swapping 10 with 5

Swapping 9 with 4

Swapping 10 with 10

Swapping 1 with 7

Swapping 5 with 7

Swapping 7 with 2

Swapping 8 with 1

Post-shuffle state - arr isShuffled: true

Array contents: 5 6 3 9 7 10 8 1 4 2

Elapsed time in nanoseconds for shuffling a C++ primitive array of 10 elements: 1427200

Elapsed time in nanoseconds for initializing a C++ vector of 10 elements: 3400

Initial state - v isShuffled: false

Vector contents: 1 2 3 4 5 6 7 8 9 10

Swapping 10

Swapping 4

Swapping 7

Swapping 7

Swapping 1ith

Swapping 3h

Swapping 3

Swapping 10

Swapping 7

Swapping 8th

Post-shuffle state - v isShuffled: true

Vector contents: 2 1 4 7 5 10 6 3 8 9

Elapsed time in nanoseconds for shuffling a C++ vector of 10 elements: 5528700

Time trials for array and vector of size 100

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Elapsed time in nanoseconds for initializing a C++ primitive array of 100 elements: 400

DEMO: Elapsed time in milliseconds for initializing a C++ primitive array of 100 elements: 0

Initial state - arr isShuffled: false

Array contents: 1, 2, 3 ... 98, 99, 100

Post-shuffle state - arr isShuffled: true

Array contents: 3, 30, 60 ... 88, 59, 33

Elapsed time in nanoseconds for shuffling a C++ primitive array of 100 elements: 4200

Elapsed time in nanoseconds for initializing a C++ vector of 100 elements: 8500

Initial state - v isShuffled: false

Vector contents: 1, 2, 3 ... 98, 99, 100

Post-shuffle state - v isShuffled: true

Vector contents: 42, 2, 3 ... 15, 48, 100

Elapsed time in nanoseconds for shuffling a C++ vector of 100 elements: 2900

Time trials for array and vector of size 1000

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Elapsed time in nanoseconds for initializing a C++ primitive array of 1000 elements: 1000

DEMO: Elapsed time in milliseconds for initializing a C++ primitive array of 1000 elements: 0

Initial state - arr isShuffled: false

Array contents: 1, 2, 3 ... 998, 999, 1000

Post-shuffle state - arr isShuffled: true

Array contents: 444, 327, 272 ... 553, 167, 94

Elapsed time in nanoseconds for shuffling a C++ primitive array of 1000 elements: 22700

Elapsed time in nanoseconds for initializing a C++ vector of 1000 elements: 19100

Initial state - v isShuffled: false

Vector contents: 1, 2, 3 ... 998, 999, 1000

Post-shuffle state - v isShuffled: true

Vector contents: 197, 945, 3 ... 822, 679, 475

Elapsed time in nanoseconds for shuffling a C++ vector of 1000 elements: 36100

Time trials for array and vector of size 10000

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Elapsed time in nanoseconds for initializing a C++ primitive array of 10000 elements: 17200

DEMO: Elapsed time in milliseconds for initializing a C++ primitive array of 10000 elements: 0

Initial state - arr isShuffled: false

Array contents: 1, 2, 3 ... 9998, 9999, 10000

Post-shuffle state - arr isShuffled: true

Array contents: 2786, 7561, 3461 ... 1746, 4980, 10000

Elapsed time in nanoseconds for shuffling a C++ primitive array of 10000 elements: 539300

Elapsed time in nanoseconds for initializing a C++ vector of 10000 elements: 103800

Initial state - v isShuffled: false

Vector contents: 1, 2, 3 ... 9998, 9999, 10000

Post-shuffle state - v isShuffled: true

Vector contents: 1755, 6662, 5450 ... 9348, 7075, 2136

Elapsed time in nanoseconds for shuffling a C++ vector of 10000 elements: 273600

Time trials for array and vector of size 100000

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Elapsed time in nanoseconds for initializing a C++ primitive array of 100000 elements: 138800

DEMO: Elapsed time in milliseconds for initializing a C++ primitive array of 100000 elements: 0

Initial state - arr isShuffled: false

Array contents: 1, 2, 3 ... 99998, 99999, 100000

Post-shuffle state - arr isShuffled: true

Array contents: 97771, 76487, 14406 ... 84661, 7732, 76178

Elapsed time in nanoseconds for shuffling a C++ primitive array of 100000 elements: 2324000

Elapsed time in nanoseconds for initializing a C++ vector of 100000 elements: 575100

Initial state - v isShuffled: false

Vector contents: 1, 2, 3 ... 99998, 99999, 100000

Post-shuffle state - v isShuffled: true

Vector contents: 68154, 32141, 40986 ... 99998, 40744, 14289

Elapsed time in nanoseconds for shuffling a C++ vector of 100000 elements: 1786900

Time trials for array and vector of size 1000000

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Elapsed time in nanoseconds for initializing a C++ primitive array of 1000000 elements: 1569400

DEMO: Elapsed time in milliseconds for initializing a C++ primitive array of 1000000 elements: 2

Initial state - arr isShuffled: false

Array contents: 1, 2, 3 ... 999998, 999999, 1000000

Post-shuffle state - arr isShuffled: true

Array contents: 1, 611970, 485684 ... 619668, 439471, 5631

Elapsed time in nanoseconds for shuffling a C++ primitive array of 1000000 elements: 23622900

Elapsed time in nanoseconds for initializing a C++ vector of 1000000 elements: 4440300

Initial state - v isShuffled: false

Vector contents: 1, 2, 3 ... 999998, 999999, 1000000

Post-shuffle state - v isShuffled: true

Vector contents: 1, 78273, 947828 ... 243119, 109257, 251802

Elapsed time in nanoseconds for shuffling a C++ vector of 1000000 elements: 30681100