

Attention on your code design is key. We will be taking a deep look on your implementation, the code standards, unit tests and the overall architecture.

This test should take 1 to 3 hours to finish it, depending on your skill level. When you're ready, **please send the test as an open source repo on GitHub to your contact.**

## Problem:

We need to evaluate our request rate performance and to do that we decided to save the average millisecond (as Integer) per second and evaluate the data for the entire week.

The Integers range is between 0 and 1000, we want to know the median of milliseconds (as Integer).

Simple example, imagine the following data: [4, 1, 6, 3, 7, 8, 7], to calculate the median we need to sort it, [1, 3, 4, 6, 7, 7, 8] and identify the median, in this case the Integer 6. (is the middle index, has 3 items on the left side and 3 on the right side).

Write a Stats class to be able to collect samples (as Integer) and output the median (as Integer).

Feel free to define the architecture, data structure and algorithms, just keep in mind that the amount of data will be huge and memory is going to be a problem. To make the test easier, let's assume that the amount of inputer samples are always **odd**.

Write proper unit tests to validate your implementation.

### Examples of inputs and respective median:

1: [4, 1, 6, 3, 7, 8, 7] **// median 6**

2: [1, 1, 1, 2, 3, 3, 3] **// median 2**

3: [1000, 1000, 1000] **// median 1000**

4: [1, 2, 3, 2000, 2000] **// median 3**

5: [1, 2000, 2000] **// median 1000**

6: [14, 81, 59, 17, 80, 53, 77, 93, 48, 50, 18, 83, 6, 31, 10, 74, 83, 70, 98, 69, 31, 88, 37, 98, 9, 91, 9, 10, 99, 78, 31, 56, 83, 71, 90, 51, 22, 59, 44, 76, 18, 29, 58, 87, 84, 39, 73, 68, 85, 55, 91, 70, 51, 54, 26, 98, 94, 87, 8, 27, 14, 87, 86, 44, 65, 98, 69, 57, 17, 75, 70, 62, 55, 78, 59, 98, 66, 68, 21, 28, 39, 15, 46, 90, 92, 30, 30, 33, 51, 71, 2, 10, 13, 62, 55, 39, 14, 96, 48, 94] **// median 58**

7: [232, 782, 477, 786, 215, 549, 771, 499, 331, 88, 973, 784, 1, 917, 278, 62, 194, 687, 432, 253, 165, 356, 910, 199, 537, 770, 610, 567, 117, 816, 341, 553, 683, 907, 808, 809, 962, 939, 546, 976, 452, 44, 581, 205, 972, 164, 580, 378, 496, 717, 338, 66, 648, 290, 810, 988, 644, 810, 301, 318, 532, 859, 802, 767, 223, 646, 608, 427, 877, 400, 268, 929, 992, 216, 507, 868, 623, 425, 704, 562, 743, 283, 255, 115, 528, 558, 615, 245, 764, 244, 311, 324, 807, 479, 71, 227, 296, 471, 51, 96, 542, 564, 592, 431, 668, 255, 169, 15, 844, 91, 719, 327, 917, 613, 770, 994, 272, 39, 708, 448, 420, 740, 27, 191, 59, 456, 958, 884, 96, 870, 164, 271, 281, 466, 826, 915, 234, 931, 141, 553, 50, 528, 198, 207, 230, 281, 944, 636, 920, 754, 259, 840, 274, 215, 928, 658, 376, 662, 604, 52, 984, 473, 255, 444, 356, 150, 84, 394, 284, 7, 558, 950, 163, 248, 47, 151, 244, 619, 842, 304, 739, 109, 97, 497, 133, 847, 969, 672, 471, 763, 540, 947, 460, 330, 145, 508, 616, 70, 945, 622, 991, 448, 785, 533, 482, 68, 966, 326, 22, 934, 453, 289, 510, 383, 800, 125, 766, 235, 263, 551, 30, 960, 32, 412, 11, 411, 338, 534, 552, 143, 277, 175, 329, 222, 292, 226, 826, 837, 647, 925, 565, 430, 839, 676, 279, 382, 837, 34, 392, 770, 585, 688, 110, 224, 670, 690, 535, 437, 545, 904, 621, 291, 818, 685, 770, 350, 795, 736, 423, 92, 375, 331, 365, 704, 459, 467, 148, 907, 13, 848, 873, 755, 927, 925, 614, 66, 181, 872, 236, 101, 690, 998, 768, 303, 164, 734, 875, 159, 933, 212, 961, 996, 189, 850, 485, 905, 327, 192, 422, 635, 657, 880, 788, 256, 152, 695, 699, 373, 438, 50, 402, 766, 691, 393, 363, 615, 245, 841, 249, 15, 45, 894, 552, 110, 293, 205, 143, 652, 398, 777, 154, 832, 49, 186, 475, 188, 877, 696, 362, 611, 597, 204, 243, 26, 631, 676, 719, 886, 271, 194, 375, 302, 858, 443, 563, 302, 945, 596, 125, 803, 615, 422, 31, 573, 106, 566, 462, 768, 912, 919, 753, 983, 348, 903, 259, 347, 365, 956, 877, 241, 268, 193, 997, 371, 706, 671, 241, 590, 398, 714, 750, 802, 642, 605, 284, 469, 507, 292, 537, 686, 403, 994, 592, 3, 294, 382, 504, 239, 199, 322, 545, 112, 923, 625, 720, 615, 998, 533, 90, 828, 13, 272, 516, 888, 285, 10, 852, 392, 118, 156, 461, 927, 356, 936, 687, 135, 982, 849, 626, 879, 395, 407, 3, 811, 410, 220, 206, 823, 785, 766, 993, 271, 916, 467, 829, 722, 714, 530, 311, 289, 811, 365, 371, 669, 511, 699, 810, 867, 125, 31, 540, 345, 657, 61, 99, 436, 339, 912, 894, 877, 16, 472, 666, 695, 22, 398, 180, 499, 439, 102, 941, 326, 527, 914, 841, 935, 98, 382, 528, 93, 664, 669, 778, 330, 243, 491, 199, 706, 715, 500, 213, 974, 140, 836, 633, 930, 498, 565, 96, 838, 992, 125, 572, 145, 886, 147, 856, 856, 855, 507, 856, 448, 190, 427, 677, 167, 84, 51, 225, 270, 564, 625, 526, 84, 374, 769, 579, 665, 669, 602, 948, 219, 29, 904, 407, 101, 388, 393, 695, 236, 928, 693, 191, 204, 786, 390, 275, 838, 40, 501, 258, 925, 57, 989, 460, 529, 740, 844, 14, 190, 37, 179, 658, 570, 72, 298, 227, 139, 389, 295, 843, 273, 393, 86, 452, 954, 957, 880, 700, 659, 390, 75, 678, 147, 985, 119, 992, 804, 287, 801, 296, 822, 221, 360, 604, 680, 429, 627, 812, 561, 46, 440, 608, 603, 885, 47, 773, 981, 449, 698, 286, 728, 850, 625, 611, 386, 37, 531, 520, 810, 550, 778, 121, 706, 661, 817, 955, 697, 808, 586, 693, 395, 689, 729, 781, 744, 799, 345, 573, 244, 792, 753, 508, 402, 999, 301, 306, 277, 316, 871, 920, 661, 559, 147, 780, 434, 176, 806, 981, 462, 752, 172, 305, 386, 747, 945, 314, 190, 472, 605, 704, 311, 574, 677, 357, 157, 991, 952, 488, 811, 264, 519, 679, 377, 828, 224, 131, 680, 363, 798, 495, 897, 146, 749, 941, 857, 811, 100, 864, 637, 742, 639, 830, 5, 799, 387, 187, 982, 451, 691, 971, 35, 706, 520, 394, 880, 867, 411,

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415, 124, 703, 119, 552, 967, 663, 299, 343, 484, 753, 548, 678, 326, 339, 698, 277, 597,  
764, 911] // median 507