Master vs Columnar vs Columnar minmax vs Elasticsearch vs Clickhouse.

* Longest 1st / fastest 5th query are highlighted
* Before testing each query against each engine OS cache is dropped (echo 3 > /
proc/sys/vm/drop_caches) on the host and the engine is stared cleanly (in docker
with no swapping allowed and memory limit = as shown in the test results which
includes OS cache inside the container)
* Query cache is disabled for Manticore
* In Elasticsearch it's additionally cleaned before each query using http://
localhost:9200/hackernews/_cache/clear
* Clickhouse is limited to use 1 thread (but it can use more even after forcing
merging a table)
* Elasticsearch's config is default
* Index/table in all engines was compacted to 1 table/index/segment

root@**bench** /bench/perf/test_basic **#** php test.php
Query: select count(*) from hackernews where comment_ranking=100
        Memory: 1000m
                master: `31848ms`,33912ms,30069ms,30215ms,30040ms
                columnar: 7865ms,8745ms,7886ms,8465ms,5772ms
                columnar_minmax: 8152ms,6625ms,6611ms,6662ms,5168ms
                elasticsearch: 804ms,35ms,29ms,26ms,`25ms`
                clickhouse: 1368ms,362ms,379ms,353ms,350ms
        Memory: 3000m
                master: `29256ms`,34036ms,28214ms,30890ms,29398ms
                columnar: 7929ms,5491ms,5570ms,5454ms,5537ms
                columnar_minmax: 8231ms,4696ms,4686ms,4691ms,5269ms
                elasticsearch: 837ms,35ms,27ms,29ms,`27ms`
                clickhouse: 1235ms,367ms,375ms,352ms,349ms
        Memory: 5000m
                master: `29680ms`,846ms,847ms,847ms,849ms
                columnar: 7977ms,5477ms,5476ms,5407ms,5374ms
                columnar_minmax: 8463ms,4756ms,4823ms,4748ms,4790ms
                elasticsearch: 963ms,35ms,27ms,25ms,`27ms`
                clickhouse: 1469ms,389ms,372ms,371ms,356ms
Query: select count(*) from hackernews where comment_ranking=200
        Memory: 1000m
                master: `37422ms`,38399ms,34377ms,33748ms,33448ms
                columnar: 8052ms,8405ms,7805ms,7478ms,5821ms
                columnar_minmax: 4178ms,2717ms,3102ms,2842ms,2831ms
                elasticsearch: 800ms,29ms,28ms,25ms,`19ms`
                clickhouse: 1376ms,353ms,359ms,363ms,374ms
        Memory: 3000m
                master: `35416ms`,34089ms,34791ms,33281ms,34090ms
                columnar: 7987ms,5482ms,5556ms,5465ms,6498ms
                columnar_minmax: 4051ms,2720ms,2793ms,2896ms,2870ms
                elasticsearch: 846ms,32ms,26ms,28ms,`19ms`
                clickhouse: 1501ms,355ms,371ms,349ms,356ms
        Memory: 5000m
                master: `34357ms`,356ms,358ms,357ms,357ms
                columnar: 7929ms,5472ms,5563ms,5421ms,5497ms
                columnar_minmax: 4938ms,2734ms,2793ms,2695ms,2819ms
                elasticsearch: 816ms,31ms,29ms,29ms,`23ms`
                clickhouse: 1865ms,355ms,354ms,351ms,363ms
Query: select count(*) from hackernews where comment_ranking=500
        Memory: 1000m
                master: `27568ms`,20239ms,18676ms,17275ms,17832ms
                columnar: 7590ms,7851ms,7288ms,7370ms,5636ms
                columnar_minmax: 1346ms,647ms,648ms,659ms,657ms
                elasticsearch: 744ms,22ms,20ms,19ms,`17ms`
                clickhouse: 1393ms,349ms,350ms,346ms,344ms
        Memory: 3000m
                master: `25513ms`,18679ms,19352ms,4373ms,75ms
                columnar: 7601ms,4199ms,4413ms,4201ms,4450ms
                columnar_minmax: 1302ms,666ms,656ms,674ms,653ms
                elasticsearch: 919ms,31ms,28ms,20ms,`20ms`

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              clickhouse: 1418ms,375ms,352ms,361ms,358ms
        Memory: 5000m
              master: 24162ms,84ms,84ms,84ms,85ms
              columnar: 7381ms,4200ms,4269ms,4397ms,4311ms
              columnar_minmax: 1231ms,676ms,649ms,662ms,650ms
              elasticsearch: 830ms,25ms,22ms,19ms,18ms
              clickhouse: 1720ms,370ms,354ms,376ms,347ms
Query: select count(*) from hackernews where comment_ranking=1000
        Memory: 1000m
              master: 6341ms,1854ms,29ms,26ms,26ms
              columnar: 1473ms,807ms,847ms,823ms,810ms
              columnar_minmax: 805ms,99ms,96ms,92ms,99ms
              elasticsearch: 753ms,25ms,19ms,18ms,17ms
              clickhouse: 2161ms,411ms,366ms,349ms,344ms
        Memory: 3000m
              master: 5229ms,25ms,25ms,25ms,25ms
              columnar: 1396ms,793ms,823ms,799ms,815ms
              columnar_minmax: 660ms,99ms,94ms,93ms,95ms
              elasticsearch: 867ms,27ms,23ms,18ms,18ms
              clickhouse: 1396ms,350ms,349ms,377ms,348ms
        Memory: 5000m
              master: 5369ms,25ms,25ms,25ms,26ms
              columnar: 1366ms,795ms,795ms,799ms,803ms
              columnar_minmax: 1000ms,95ms,94ms,92ms,93ms
              elasticsearch: 859ms,23ms,19ms,25ms,26ms
              clickhouse: 1493ms,348ms,354ms,348ms,355ms
Query: select count(*) from hackernews where comment_ranking > 300 and
comment_ranking < 500
        Memory: 1000m
              master: 34737ms,31956ms,28488ms,27540ms,26240ms
              columnar: 9286ms,9017ms,8041ms,7349ms,6037ms
              columnar_minmax: 10994ms,9900ms,8669ms,6363ms,6109ms
              elasticsearch: 941ms,111ms,107ms,118ms,104ms
              clickhouse: 2026ms,416ms,405ms,432ms,401ms
        Memory: 3000m
              master: 32544ms,29411ms,24707ms,308ms,282ms
              columnar: 8924ms,6267ms,6609ms,6473ms,6042ms
              columnar_minmax: 9747ms,6269ms,6561ms,6985ms,6162ms
              elasticsearch: 1065ms,75ms,55ms,46ms,45ms
              clickhouse: 1450ms,403ms,413ms,412ms,400ms
        Memory: 5000m
              master: 32037ms,334ms,299ms,296ms,293ms
              columnar: 9232ms,6247ms,6257ms,6349ms,6053ms
              columnar_minmax: 9353ms,6621ms,6348ms,6295ms,6069ms
              elasticsearch: 1078ms,65ms,46ms,46ms,43ms
              clickhouse: 1918ms,409ms,400ms,412ms,400ms
Query: select story_author, count(*) from hackernews group by story_author order
by count(*) desc limit 10
        Memory: 1000m
              master: 100873ms,74767ms,75253ms,76804ms,75795ms
              columnar: 86135ms,70511ms,70832ms,71113ms,71673ms
              columnar_minmax: 86275ms,73257ms,71687ms,72071ms,71033ms
              elasticsearch: 22863ms,21399ms,20884ms,20353ms,20373ms
              clickhouse: 3793ms,2068ms,2073ms,2075ms,2044ms
        Memory: 3000m
              master: 94752ms,76077ms,74088ms,72337ms,73413ms
              columnar: 78399ms,66347ms,63092ms,62818ms,62603ms
              columnar_minmax: 75503ms,67995ms,63176ms,62605ms,62550ms
              elasticsearch: 20482ms,16628ms,16678ms,16347ms,16408ms
              clickhouse: 3893ms,2085ms,2072ms,2070ms,2065ms
        Memory: 5000m
              master: 78073ms,69544ms,69853ms,71064ms,72349ms
              columnar: 72397ms,63062ms,62784ms,63708ms,63121ms
              columnar_minmax: 71772ms,63857ms,62622ms,63692ms,63144ms
              elasticsearch: 21775ms,18458ms,18558ms,18538ms,18584ms
              clickhouse: 3751ms,2077ms,2075ms,2036ms,2050ms
```

Query: select story_author, avg(comment_ranking) avg from hackernews group by story_author order by avg desc limit 10
        Memory: 1000m
                master: 109864ms,83430ms,85108ms,86312ms,85412ms
                columnar: 105407ms,91532ms,93322ms,93470ms,93496ms
                columnar_minmax: `110924ms`,95499ms,97220ms,96537ms,97510ms
                elasticsearch: 86779ms,84225ms,88209ms,86354ms,85414ms
                clickhouse: 7578ms,5701ms,6101ms,6782ms,`6724ms`
        Memory: 3000m
                master: `102561ms`,83498ms,81588ms,84020ms,83802ms
                columnar: 94864ms,83713ms,80097ms,78992ms,78814ms
                columnar_minmax: 97687ms,87632ms,82919ms,79721ms,80320ms
                elasticsearch: 59532ms,55879ms,55766ms,55788ms,55866ms
                clickhouse: 6018ms,2511ms,2467ms,2500ms,`2476ms`
        Memory: 5000m
                master: `88902ms`,80375ms,81572ms,79637ms,80195ms
                columnar: 85753ms,78858ms,78989ms,78851ms,79783ms
                columnar_minmax: 87126ms,79968ms,79776ms,79661ms,80077ms
                elasticsearch: 54158ms,49168ms,49230ms,49140ms,49038ms
                clickhouse: 6218ms,2409ms,2395ms,2396ms,`2457ms`