

PART – 3

1. Use the NYSE database to find the average price of stock_price_high values for each stock using MapReduce.(bat file(nyse)) is provided in the folder)

```
mongosh mongodb://127.0.0.1:27020
NYSE> db.average_stock_price_high.find()
[
  { _id: NaN, value: 14.35082247860069 },
  { _id: 'AA', value: 52.45968205466997 },
  { _id: 'AAI', value: 10.518446478515186 },
  { _id: 'AAN', value: 19.847593646277858 },
  { _id: 'AAP', value: 44.72131195335273 },
  { _id: 'AAR', value: 19.208936170212784 },
  { _id: 'AAV', value: 12.409408836236933 },
  { _id: 'AB', value: 30.046272975812158 },
  { _id: 'ABA', value: 25.994470108675536 },
  { _id: 'ABB', value: 12.583610986942316 },
  { _id: 'ABC', value: 47.78957406911319 },
  { _id: 'ABD', value: 15.721916592724059 },
  { _id: 'ABE', value: 15.429047379932303 },
  { _id: 'ABH', value: 51.317208457924 },
  { _id: 'ABM', value: 24.52846106112286 },
  { _id: 'ABR', value: 18.430806896551722 },
  { _id: 'ABT', value: 48.188009450679594 },
  { _id: 'ABV', value: 31.9004311040899 },
  { _id: 'ABVT', value: 49.196723604210546 },
  { _id: 'ABX', value: 22.682009677931185 },
]
Type "it" for more
NYSE> it
[
  { _id: 'ACC', value: 25.518320057929017 },
  { _id: 'ACE', value: 42.740929849340884 },
  { _id: 'ACF', value: 16.52363315083927 },
  { _id: 'ACG', value: 9.440827184066031 },
  { _id: 'ACH', value: 42.34216109018827 },
  { _id: 'ACI', value: 25.073691225472015 },
  { _id: 'ACL', value: 99.96112903225813 },
  { _id: 'ACM', value: 27.88095238095237 },
  { _id: 'ACN', value: 28.57822718080194 },
  { _id: 'ACO', value: 15.772344433872547 },
  { _id: 'ACS', value: 47.56931765314035 },
  { _id: 'ACV', value: 32.51821749922424 },
  { _id: 'ADC', value: 20.432540201448685 },
  { _id: 'ADT', value: 29.105212732919263 },
  { _id: 'ADM', value: 20.10427135678396 },
  { _id: 'ADP', value: 47.30339683946279 },
  { _id: 'ADS', value: 42.714979272224745 },
  { _id: 'ADX', value: 12.929566770186279 },
  { _id: 'ADY', value: 10.409450611210504 },
  { _id: 'AEA', value: 10.774021655065722 },
]
Type "it" for more
NYSE>
```

2. Part 3.1 result will not be correct as AVERAGE is a commutative operation but not associative. Use a FINALIZER to find the correct average.

```
mongosh mongodb://127.0.0.1:27020
NYSE> db.stocks.mapReduce(
...   function() {
...     emit(this.stock_symbol, { sum: this.stock_price_high, count: 1 });
...   },
...   function(key, values) {
...     var reducedVal = { sum: 0, count: 0 };
...     values.forEach(function(value) {
...       reducedVal.sum += value.sum;
...       reducedVal.count += value.count;
...     });
...     return reducedVal;
...   },
...   {
...     out: 'nyse_stock_average_high_price',
...     finalize: function(key, reducedVal) {
...       reducedVal.average = reducedVal.sum / reducedVal.count;
...       return reducedVal;
...     }
...   }
... );
DeprecationWarning: Collection.mapReduce() is deprecated. Use an aggregation instead.
See https://docs.mongodb.com/manual/core/map-reduce for details.
{ result: 'nyse_stock_average_high_price', ok: 1 }
NYSE> db.nyse_stock_average_high_price.find()
[
  {
    _id: NaN,
    value: {
      sum: 38560.6600000000054,
      count: 2607,
      average: 14.35082247860069
    }
  },
  {
    _id: 'AA',
    value: {
      sum: 635234.28999999986,
      count: 12109,
      average: 52.45968205466997
    }
  },
  {
    _id: 'AAI',
    value: {
      sum: 41369.050000000023,
      count: 3933,
      average: 10.518446478515186
    }
  },
  {
    _id: 'AAN',
    value: {
      sum: 83717.15000000001,
      count: 4177,
      average: 19.847593646277858
    }
  },
  {
    _id: 'AAP',
    value: {
      sum: 197213.1195335273,
      count: 44,
      average: 44.72131195335273
    }
  },
  {
    _id: 'AAR',
    value: {
      sum: 37699.36170212784,
      count: 19,
      average: 19.208936170212784
    }
  },
  {
    _id: 'AAV',
    value: {
      sum: 149408.836236933,
      count: 12,
      average: 12.409408836236933
    }
  },
  {
    _id: 'AB',
    value: {
      sum: 90462.72975812158,
      count: 30,
      average: 30.046272975812158
    }
  },
  {
    _id: 'ABA',
    value: {
      sum: 64944.70108675536,
      count: 25,
      average: 25.994470108675536
    }
  },
  {
    _id: 'ABB',
    value: {
      sum: 15836.10986942316,
      count: 12,
      average: 12.583610986942316
    }
  },
  {
    _id: 'ABC',
    value: {
      sum: 207895.7406911319,
      count: 47,
      average: 47.78957406911319
    }
  },
  {
    _id: 'ABD',
    value: {
      sum: 21165.92724059,
      count: 15,
      average: 15.721916592724059
    }
  },
  {
    _id: 'ABE',
    value: {
      sum: 23179.932303,
      count: 15,
      average: 15.429047379932303
    }
  },
  {
    _id: 'ABH',
    value: {
      sum: 26845.7924,
      count: 51,
      average: 51.317208457924
    }
  },
  {
    _id: 'ABM',
    value: {
      sum: 10284.6106112286,
      count: 24,
      average: 24.52846106112286
    }
  },
  {
    _id: 'ABR',
    value: {
      sum: 7430.806896551722,
      count: 18,
      average: 18.430806896551722
    }
  },
  {
    _id: 'ABT',
    value: {
      sum: 23300.9450679594,
      count: 48,
      average: 48.188009450679594
    }
  },
  {
    _id: 'ABV',
    value: {
      sum: 10404.311040899,
      count: 31,
      average: 31.9004311040899
    }
  },
  {
    _id: 'ABVT',
    value: {
      sum: 24196.723604210546,
      count: 49,
      average: 49.196723604210546
    }
  },
  {
    _id: 'ABX',
    value: {
      sum: 11185.2009677931185,
      count: 22,
      average: 22.682009677931185
    }
  },
  {
    _id: 'ACC',
    value: {
      sum: 1255.18320057929017,
      count: 25,
      average: 25.518320057929017
    }
  },
  {
    _id: 'ACE',
    value: {
      sum: 1809.29849340884,
      count: 42,
      average: 42.740929849340884
    }
  },
  {
    _id: 'ACF',
    value: {
      sum: 673.52363315083927,
      count: 16,
      average: 16.52363315083927
    }
  },
  {
    _id: 'ACG',
    value: {
      sum: 360.440827184066031,
      count: 9,
      average: 9.440827184066031
    }
  },
  {
    _id: 'ACH',
    value: {
      sum: 1772.34216109018827,
      count: 42,
      average: 42.34216109018827
    }
  },
  {
    _id: 'ACI',
    value: {
      sum: 1036.91225472015,
      count: 25,
      average: 25.073691225472015
    }
  },
  {
    _id: 'ACL',
    value: {
      sum: 9996.112903225813,
      count: 99,
      average: 99.96112903225813
    }
  },
  {
    _id: 'ACM',
    value: {
      sum: 1309.5238095237,
      count: 27,
      average: 27.88095238095237
    }
  },
  {
    _id: 'ACN',
    value: {
      sum: 1578.22718080194,
      count: 28,
      average: 28.57822718080194
    }
  },
  {
    _id: 'ACO',
    value: {
      sum: 236.772344433872547,
      count: 15,
      average: 15.772344433872547
    }
  },
  {
    _id: 'ACS',
    value: {
      sum: 2156.931765314035,
      count: 47,
      average: 47.56931765314035
    }
  },
  {
    _id: 'ACV',
    value: {
      sum: 1325.1821749922424,
      count: 32,
      average: 32.51821749922424
    }
  },
  {
    _id: 'ADC',
    value: {
      sum: 843.2540201448685,
      count: 20,
      average: 20.432540201448685
    }
  },
  {
    _id: 'ADT',
    value: {
      sum: 852.105212732919263,
      count: 29,
      average: 29.105212732919263
    }
  },
  {
    _id: 'ADM',
    value: {
      sum: 704.27135678396,
      count: 20,
      average: 20.10427135678396
    }
  },
  {
    _id: 'ADP',
    value: {
      sum: 2130.339683946279,
      count: 47,
      average: 47.30339683946279
    }
  },
  {
    _id: 'ADS',
    value: {
      sum: 1804.714979272224745,
      count: 42,
      average: 42.714979272224745
    }
  },
  {
    _id: 'ADX',
    value: {
      sum: 612.929566770186279,
      count: 12,
      average: 12.929566770186279
    }
  },
  {
    _id: 'ADY',
    value: {
      sum: 340.409450611210504,
      count: 10,
      average: 10.409450611210504
    }
  },
  {
    _id: 'AEA',
    value: {
      sum: 107.74021655065722,
      count: 10,
      average: 10.774021655065722
    }
  }
]
```

PART - 4

Calculate the average stock price of each price of all stocks using \$avg aggregation.

```
mongosh mongodb://127.0.0.1:27021/nyse
NYSE> db.stocks.aggregate([
...   {
...     $group: {
...       _id: "$stock_symbol",
...       averagePrice: { $avg: "$stock_price_high" }
...     }
...   }
... ]);
[
  { _id: 'MJV', averagePrice: 24.411664948453605 },
  { _id: 'ABB', averagePrice: 12.583610986042324 },
  { _id: 'AJG', averagePrice: 29.47727698066126 },
  { _id: 'NAI', averagePrice: 21.59751867219917 },
  { _id: 'SLT', averagePrice: 15.066436090225565 },
  { _id: 'VMC', averagePrice: 62.970773510409195 },
  { _id: 'PSS', averagePrice: 35.920239193083574 },
  { _id: 'BDC', averagePrice: 23.87252334152334 },
  { _id: 'XFL', averagePrice: 25.740138017565872 },
  { _id: 'BAK', averagePrice: 14.949271095152604 },
  { _id: 'NE', averagePrice: 30.69579736211031 },
  { _id: 'JEC', averagePrice: 41.17475860704393 },
  { _id: 'LOR', averagePrice: 16.71710843373494 },
  { _id: 'SHO', averagePrice: 19.704212893553223 },
  { _id: 'CHE', averagePrice: 32.78927269345238 },
  { _id: 'TYG', averagePrice: 29.51914438502674 },
  { _id: 'VMO', averagePrice: 13.360033723021584 },
  { _id: 'VMW', averagePrice: 47.90546325878594 },
  { _id: 'KVT', averagePrice: 24.412992471769133 },
  { _id: 'FMO', averagePrice: 19.527271317829456 }
]
Type "it" for more
NYSE> |
```