TASK 4: MapReduce Tasks by Huang-Yin Tso, Arun Santhosh, Vipul Kumar and Gaurav Sharma

File used: yellow_tripdata_2017-01.csv

Task a: Which vendors have the most trips, and what is the total revenue generated by that vendor?

Out put: Vendor 2 has most trips

```
C:\Users\A_R_U_N\mrjob_project>python vendor_analysis.py yellow_tripdata_2017-01.csv
No configs found; falling back on auto-configuration
No configs specified for inline runner
Creating temp directory C:\Users\A_R_U_N\AppData\Local\Temp\vendor_analysis.A_R_U_N.20250208.105934.748527
Running step 1 of 2...
Running step 2 of 2...
job output is in C:\Users\A_R_U_N\AppData\Local\Temp\vendor_analysis.A_R_U_N.20250208.105934.748527\output
Streaming final output from C:\Users\A_R_U_N\AppData\Local\Temp\vendor_analysis.A_R_U_N.20250208.105934.748527\output...
"Vendor with Most Trips: 2"     [5312899,82859254.39585336]
Removing temp directory C:\Users\A_R_U_N\AppData\Local\Temp\vendor_analysis.A_R_U_N.20250208.105934.748527...

C:\Users\A_R_U_N\mrjob_project>
```

Task b: Which pickup location generates the most revenue?

Out put: Location 132 generates the most revenue.

```
 Command Prompt          ×   +  ∨

C:\Users\A_R_U_N\mrjob_project>python mrtask_b.py yellow_tripdata_2017-01.csv
No configs found; falling back on auto-configuration
No configs specified for inline runner
Creating temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_b.A_R_U_N.20250209.040640.168390
Running step 1 of 2...
Running step 2 of 2...
job output is in C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_b.A_R_U_N.20250209.040640.168390\output
Streaming final output from C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_b.A_R_U_N.20250209.040640.168390\output...
"132"   12660835.900003651
Removing temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_b.A_R_U_N.20250209.040640.168390...

C:\Users\A_R_U_N\mrjob_project>
```

Task c: What are the different payment types used by customers and their count? The final results should be in a sorted format.

Out put: Payment through payment type 1(credit card) has done more often than others.

```
C:\Users\A_R_U_N\mrjob_project>python mrtask_c.py yellow_tripdata_2017-01.csv
No configs found; falling back on auto-configuration
No configs specified for inline runner
Creating temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_c.A_R_U_N.20250209.042912.559891
Running step 1 of 2...
Running step 2 of 2...
job output is in C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_c.A_R_U_N.20250209.042912.559891\output
Streaming final output from C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_c.A_R_U_N.20250209.042912.559891\output...
"1"     6506189
"2"     3144926
"3"     46257
"4"     13447
"5"     1
Removing temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_c.A_R_U_N.20250209.042912.559891...

C:\Users\A_R_U_N\mrjob_project>
```

Task d: What is the average trip time for different pickup locations?

Out put:

```
Command Prompt                                                           —  □  ×

No configs found; falling back on auto-configuration
No configs specified for inline runner
Creating temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_d.A_R_U_N.20250209.044647.468001
Running step 1 of 2...
Running step 2 of 2...
job output is in C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_d.A_R_U_N.20250209.044647.468001\output
Streaming final output from C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_d.A_R_U_N.20250209.044647.468001\output...
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"105"   19.40833333333333
"106"   15.4503142909996497
"107"   13.273235501114344
"108"   12.6501207729446854
"109"   3.7916666666666665
"11"    17.70366666666667
"110"   3.183333333333333
"111"   11.235416666666666
"112"   14.4818143074581146
"113"   13.788297132548124
"114"   14.790087024232573
"115"   14.6332446808851067
"116"   14.9980081705258097
"117"   33.35520833333334
"118"   5.041666666666666
"119"   15.006369047619053
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"122"   28.110416666666666
"123"   13.053313253012034
"124"   20.71592039800995
"125"   14.2842043293371406
"126"   25.727339181286542
"127"   14.98296836982968
"128"   14.837820512820512
"129"   14.0781667541863377
"13"    17.313059781525972
"130"   29.10791896869243
```

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Command Prompt                                                           —  □  ×

"13"    17.313059781525972
"130"   29.10791896869243
"131"   17.36936274509803
"132"   38.26379071272224
"133"   15.3006835937499993
"134"   14.38194774346793
"135"   11.6285470085470066
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"137"   13.353342392047915
"138"   32.28895195950945
"139"   14.464035087719298
"14"    14.2222376973073337
"140"   13.38248979232191
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"148"   15.7383363938015
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"159"   15.084479707252162
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"181"    15.202416673536103
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"195"    16.5585637480079873
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"201"    2.8062500000000004
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"224"    12.7689151105563759
"225"    15.550650609080812
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"227"    13.803794037940376
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"236"    12.037728719665072
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"30"     136.475
"31"     82.13181818181818
"32"     13.172000000000002
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"30"     136.475
"31"     82.13181818181818
"32"     13.172000000000002
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"56"     15.090886524822691
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"63"     14.189825046040516
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"66"     16.907783882783885
"67"     36.44548022598871
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"64"    10.6965517241379933
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"67"    36.44548022598871
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"69"    13.858131868131874
"7"     13.2462012751499819
"70"    22.002420520231215
"71"    20.416666666666668
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"74"    12.191454745175994
"75"    12.02848793243018
"76"    30.242199999999998
"77"    18.081541121863799
"78"    12.039600000000002
"79"    14.476169740886986
"8"     15.732533333333338
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"81"    15.578571428571427
"82"    14.155175114469171
"83"    15.8010471864474896
"84"    0.3166666666666665
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"86"    16.1755555555555555
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"9"     37.352
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"92"    13.510080058224172
"93"    24.18193076693526
"94"    12.031856540084386
"95"    16.24543767736299
"96"    20.000666666666667
"97"    14.9451558029984614
"98"    13.5928104575163360
Removing temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_d.A_R_U_N.20250209.044647.468001...

C:\Users\A_R_U_N\mrjob_project>
```

Task e: Calculate the average tips to revenue ratio of the drivers for different pickup locations in sorted format.

Out put:

```
PS C:\Users\A_R_U_N\mrjob_project> python .\mrtask_e.py .\yellow_tripdata_2017-01.csv
No configs found; falling back on auto-configuration
No configs specified for inline runner
Creating temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_e.A_R_U_N.20250209.192849.006489
Running step 1 of 2...
Running step 2 of 2...
job output is in C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_e.A_R_U_N.20250209.192849.006489\output
Streaming final output from C:\Users\A_R_U_N\AppData\Local\Temp\mrtask_e.A_R_U_N.20250209.192849.006489\output...
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"138"   0.07845878305748948
"206"   0.0729082631420676
"10"    0.0609565345756421864186
"2"     0.05916251236129192
"120"   0.0587585307113013344
"215"   0.0572094059058720235
"172"   0.05696072035767649
"208"   0.047786606171114601
"130"   0.047398225528921044
"93"    0.047353740857530502
"28"    0.0462975103620700485
"156"   0.04553118630557603
"219"   0.044531294172276038
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"8"     0.0312578580471044535
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"195"   0.029314168924977779
"157"   0.028136052477418072
"95"    0.024932961382256008
"14"    0.0248986948914112184218
"214"   0.0239956686518067898
"105"   0.023778920308848329
"154"   0.023175607757222622
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"39"   0.012460719588381906
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"165"   0.011475662218780065
"21"   0.011050246765988788
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"174"   0.00924771161324906
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"147"   0.0057702882149988842
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"227"    0.004791024321873175
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"264"    0.004635887967182808
"205"    0.004515206033736479
"12"     0.004453472026378418
"29"     0.004407183816627612
"218"    0.004353089340625094
"242"    0.004303467747669954
"116"    0.004271963278290834
"162"    0.004233446966470674
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"7"      0.004188263498606739
"67"     0.004152254841175962
"161"    0.004125374623062778
"149"    0.004088941121931061
"159"    0.004004225435534812
"100"    0.003990455806307709
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"262"    0.003280800962118856
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"163"    0.003030979947850043
"166"    0.003033042652389418
"198"    0.002972642592914666
"35"     0.002896763148645626
"136"    0.002892522779746781
"20"     0.002888315707076665
"68"     0.002862731700182375
"167"    0.002835107089652831
"186"    0.002816312256594679
"246"    0.002723469754840206
"48"     0.002656569301362313
"24"     0.002621182176204134
"263"    0.002582229503009457
"50"     0.002567720955646829
"107"    0.002544233213809914
"52"     0.002533013059410225
"77"     0.002455548169747602
"254"    0.002409345127817063
"224"    0.002403102517656669
"234"    0.002372959191765064
"94"     0.002363260993555615
"139"    0.002333207188169576
"57"     0.002327672411619874
"108"    0.002304359107475662
"193"    0.002303284970694535
"158"    0.002302998911876345
"36"     0.002274392200547139
"151"    0.002268312643313938
"125"    0.002237221411847269
"202"    0.002169852576262003
"90"     0.002143775116474477
"238"    0.002086457303731356
"181"    0.002078899751162846
"140"    0.002061817367905262
"171"    0.002036510142114588
"209"    0.002031478894604212
"146"    0.001839661098188772
```

Command Prompt - python — top window (Windows PowerShell tab):

"209"   0.0020314788946044212
"146"   0.001839661098188772
"229"   0.0018151404569351462
"231"   0.0018066680147676131
"43"   0.0017531763374701167
"18"   0.0017294183520521924
"239"   0.0017268712407700019
"236"   0.001677635711041594
"143"   0.0016182627952717786
"37"   0.0015918621317406898
"142"   0.0014489156458398873
"188"   0.0014483944019026114
"249"   0.0014421989782292085
"177"   0.0014393059263796378
"113"   0.0014240639037609052
"141"   0.0013697505338692373
"51"   0.0012468378930690217
"79"   0.0012346249366421073
"80"   0.0012150041394070816
"255"   0.0011299358511985943
"237"   0.0010732268917000588
"211"   0.001065631776438122
"61"   0.0010503206432828881
"153"   0.0009870155784552671
"232"   0.0009511201773471821
"4"   0.00088499899707746723
"114"   0.0008553216460033221
"17"   0.0007969138037130172
"49"   0.0007644195753725848
"47"   0.0007536184568505823
"72"   0.0007172895260192243
"45"   0.0007170336440203508
"144"   0.0006768451962474262
"71"   0.0006464471080243456
"189"   0.00064624661964573047
"62"   0.0006035034524329234
"34"   0.000602447572918362
"66"   0.00059217043942639994
"148"   0.0005693219083551428
"85"   0.00053320900826612
"190"   0.0005240786581722127

Command Prompt - python — bottom window (Windows PowerShell tab):

"47"   0.0007536184568505823
"72"   0.0007172895260192243
"45"   0.0007170336440203508
"144"   0.0006768451962474262
"71"   0.0006464471080243456
"189"   0.00064624661964573047
"62"   0.0006035034524329234
"34"   0.000602447572918362
"66"   0.00059217043942639994
"148"   0.0005693219083551428
"85"   0.00053320900826612
"190"   0.0005240786581722127
"256"   0.0004874093768398072
"97"   0.00045560468304984994
"65"   0.00043460767742975898
"25"   0.0003189177469320702
"33"   0.0003035907433452868
"217"   0.0001692200085738138
"225"   0.00013968818772478703
"86"   0.0
"84"   0.0
"73"   0.0
"59"   0.0
"58"   0.0
"5"   0.0
"46"   0.0
"38"   0.0
"251"   0.0
"245"   0.0
"204"   0.0
"19"   0.0
"187"   0.0
"185"   0.0
"176"   0.0
"126"   0.0
"122"   0.0
"118"   0.0
"111"   0.0
"110"   0.0
"109"   0.0
"101"   0.0

Task f: How does revenue vary over time? Calculate the average trip revenue per month - analysing it by hour of the day (day vs night) and the day of the week (weekday vs weekend).

Out put:

```
Command Prompt    ×    Windows PowerShell    ×    +    ∨                          —    □    ×

C:\Users\A_R_U_N\mrjob_project>python mrjob_e.py yellow_tripdata_2017-01.csv
No configs found; falling back on auto-configuration
No configs specified for inline runner
Creating temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrjob_e.A_R_U_N.20250209.193335.718583
Running step 1 of 1...
job output is in C:\Users\A_R_U_N\AppData\Local\Temp\mrjob_e.A_R_U_N.20250209.193335.718583\output
Streaming final output from C:\Users\A_R_U_N\AppData\Local\Temp\mrjob_e.A_R_U_N.20250209.193335.718583\output...
[1,0,0] 17.51929169633032
[1,0,1] 18.123630421432235
[1,0,2] 17.3589315046607
[1,0,3] 16.6264802395948l6
[1,0,4] 16.703014661253516
[1,0,5] 15.5505494064444684
[1,0,6] 15.4482342189972123
[1,1,0] 17.461791503066678
[1,1,1] 17.0722265450557458
[1,1,2] 16.55492861952615
[1,1,3] 15.6793022247938455
[1,1,4] 16.052486926635606
[1,1,5] 14.981404492508569
[1,1,6] 15.3877991443241022
[1,10,0]        14.863052216909038
[1,10,1]        15.1277066071540434
[1,10,2]        15.186626217363893
[1,10,3]        15.3499648974120633
[1,10,4]        15.16458493725983
[1,10,5]        12.6098429162764442
[1,10,6]        13.490205609938638
[1,11,0]        14.480895520161702
[1,11,1]        14.8886449637664478
[1,11,2]        15.189027604271173
[1,11,3]        15.248743102812911
[1,11,4]        15.417036801711069
[1,11,5]        12.7207214658880247
[1,11,6]        13.477203683199233
[1,12,0]        14.481984042562795
[1,12,1]        14.7982139024335325
[1,12,2]        15.19580559733942
[1,12,3]        15.5049045720604124
[1,12,4]        15.467102026936905
[1,12,5]        13.179647933098668
```

```
Command Prompt    ×    Windows PowerShell    ×    +    ∨                          —    □    ×

[1,12,5]        13.179647933098668
[1,12,6]        13.9532266894455591
[1,13,0]        14.647866145163956
[1,13,1]        15.129944553175028
[1,13,2]        15.783343513633147
[1,13,3]        16.22223372993386
[1,13,4]        15.731715024471654
[1,13,5]        13.76675076335171
[1,13,6]        14.64248722087208
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[1,14,1]        15.390354582919297
[1,14,2]        15.8797647775837332
[1,14,3]        16.288452460094191
[1,14,4]        15.759659749888717
[1,14,5]        14.290606848792967
[1,14,6]        15.353656693543854
[1,15,0]        14.8975529976146344
[1,15,1]        15.191981550355933
[1,15,2]        15.8086234473204434
[1,15,3]        16.234477620663167
[1,15,4]        15.60063767838376
[1,15,5]        14.286627006640749
[1,15,6]        15.279192695092805
[1,16,0]        16.118353610150415
[1,16,1]        16.7947724694409857
[1,16,2]        17.3420444454087628
[1,16,3]        17.544082880554697
[1,16,4]        17.140632228585104
[1,16,5]        14.674548825911777
[1,16,6]        15.7532840194435748
[1,17,0]        15.603011225898129
[1,17,1]        16.228117463370307
[1,17,2]        16.521664397999153
[1,17,3]        16.4938625120304
[1,17,4]        16.023100150993518
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[1,17,6]        15.8421243901335558
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[1,18,2]        15.838856512259834
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[1,18,3]        15.83556195932988
[1,18,4]        15.321434181036205
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[1,19,0]        15.064448713868138
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[1,20,6]        16.05652368409613
[1,21,0]        15.978846513350177
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[1,21,4]        15.53635399306004
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[1,22,3]        16.46820566457765
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[1,3,4] 16.38426781057979
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[1,3,6] 16.042656562922467
[1,4,0] 21.085795574286447
[1,4,1] 19.3337584905655845
[1,4,2] 19.310694200352607
[1,4,3] 19.399858952592496
[1,4,4] 19.5494566685949942
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[1,4,6] 16.844066113138812
[1,5,0] 21.027810094409415
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[1,5,5] 20.046013370565518
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[1,7,6] 17.24533657851641
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[1,4,4] 19.549456668594942
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[1,5,5] 20.04601337056518
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[1,9,0] 14.765277183660666
[1,9,1] 14.67409465163287
[1,9,2] 14.693086851834565
[1,9,3] 23.70905887428192
[1,9,4] 15.042800036682284
[1,9,5] 12.323644225572059
[1,9,6] 13.630402302884058
Removing temp directory C:\Users\A_R_U_N\AppData\Local\Temp\mrjob_e.A_R_U_N.20250209.193335.718583...

C:\Users\A_R_U_N\mrjob_project>
```