

## 5 HW #5: Analytic Functions and Normal Forms

Answer the following questions using only the syntax discussed in class. If a year is unspecified, please use the 2010 data and refer to the data dictionary for questions regarding the contents of the data. Note that some of these queries may take a very long time. In order to quickly iterate on different questions I recommend, when writing your queries, initially restricting them to a subset of the data (such as 5 or 6 particular permno/gvkey).

1. For each of the following, write two queries: one answering it using an analytic function and one without using analytic functions.
  - (a) Return the following: Permco, Permno, retdate and the running volume for that stock.
  - (b) Write a query which returns a list of gvkey's (from fnd) for which the fyr variable (which is the month that the fiscal year begins) changes. In other words, which companies, if any, changed the starting month of their fiscal year?
  - (c) For each permno, permco and retdate, return the date of the previous return date for that permno, permco.
  - (d) For each permno, permco and retdate, return the absolute deviation between that stock's average volume traded, up to that day, and the amount traded that day. Make sure to not include the current date's volume when computing the average.
  - (e) Return permno, permco and retdate for days where the price moved more than 5%, in either direction, from the previous price.
2. Write only a single query to answer the following
  - (a) Write a query which returns permno and permco, for stocks with more than 100 non-null volumes in 2010 ordered by the difference between their 90th percentile of volume and their 30th percentile of volume. Make sure to compute the percentile only on non-null values.
3. Using the table on the second page answer the following questions. Keep in mind the following that each employee will have a unique Emp\_ID and can only work at a single group at a time. Each employee can have multiple tasks.<sup>10</sup>
  - (a) Convert the table from its current state to 1NF
  - (b) Convert the table from 1NF to 2NF

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<sup>10</sup>Feel free to do this in Excel or other software and place the answers into your PDF assignment as images. There is no need to do this in SQL.

- (c) Convert the table from 2NF to 3NF

Emp_ID	Emp Name	Group Code	Phone_1	Phone_2	Phone_3	Dept Name	Skill Code	Skill Name	Skill Level
0001	Abe	ACT	x1111	x2222	x3333	Accounting	782	Clerk	2.5
0001	Abe	ACT	x1111	x2222	x3333	Accounting	691	Planner	3
0001	Abe	ACT	x1111	x2222	x3333	Accounting	783	Analyst	8
0002	Bob	BIL	x4444	x5555	x6666	Billing	783	Analyst	5
0002	Bob	BIL	x4444	x5555	x6666	Billing	316	Typist	7
0002	Bob	BIL	x4444	x5555	x6666	Billing	780	Designer	10
0003	Cindy	MAR	x7777	x8888	x9999	Marketing	235	Sales	3
0003	Cindy	MAR	x7777	x8888	x9999	Marketing	782	Clerk	15
0003	Cindy	MAR	x7777	x8888	x9999	Marketing	780	Designer	9