Le Vin Coupé

You've scored an IT Systems internship in Napa at a small family owned specialty winery start-up, Le Vin Coupé (French for "The blended wine"). Wait – Napa? Yes – Napa! They even gave you a small place on the property free – even better than your digs at school. The property has a seven room B&B. There's even a pool and hot tub you can use. Best yet – you just turned 21. There's Silo's and Mercantile Social…. What could be better? You only told a few friends and now it's all over Facebook. Suddenly you have lots of friends who want to visit.

Your job description is to be a jack of all trades: general IT/IS support, working with a customer Relationship Management (CRM) application (Salesforce) and helping them with an automated, IoT (Internet of Things) irrigation implementation. Life is good and your resume will look even better. And, the Salesforce experience may help land you a TA job during the school year.

Ah, life really is good…. You're sitting on the small patio in front of your place watching the sun set over the vineyard having a glass of specialty wine when Tom, the owner and big boss, drives up. You're thinking; "Must be something big. Server down, Network issues…." Sitting down, Tom carefully looks at the wine bottle on the table – no label. Pours himself a glass. (Yes, you were smart enough to offer him a clean glass). "Yup," he says. "What I thought. One of the blending experiments we did for Jake Rutherford. You know, the recluse VC in Atherton." You agree – the blend is pretty good. He then goes on to tell you about the project he wants done.

Most wines are actually a blend of several different "base wines." A big part of the winemaker's talent and skill is to be able to choose the right wines and to create a balanced wine in the final blend, cuvée. Le Vin Coupé is a wine blending consultancy start up that analyzes wine attribute data to determine wine quality and identify blending strategies that maximize wine pricing potential. They have their own vineyards and exclusive customers so they have lots of experience. Tom believes that through the use of technology, there is an opportunity to do a much better job of blending wines that, as a company, they can use and build into an app that they could market to other vintners as well.

The app must leverage data from the company's propriety dataset to determine which wine attributes most greatly influence overall quality. The application must also test frequency with which specific attribute values (provided by the end user) are found in wines of different

qualities. Tom provided you with a draft RFP (see below) with greater detail on his thoughts for the project.

After Tom left, you went on the net to learn more about blending wines so in the morning you could be more intelligent about the project. You found three articles:

Fixed Acidity in Wine
Volatile Acidity in Wine
Correcting Overly Sweet Wines

You've even discovered a list of the most famous wine blends of the world. This is going to get interesting….

Le Vin Coupé RFP

Required Technology

Anaconda Python. Pick your operating system then download / install Python 3.6 version.

The basic application must…

1. Require users to login (via prompts in the Spyder Python console) to protect Le Vin's proprietary data. (10 points)
2. After logging in, allow registered employee users to register other employees (Insert Query). (10 points)
3. Provide users with the ability to test the following associations for red wines and for white wines (separately) using the provided "Wine Quality Dataset." Results will tell the user which of these wine characteristics most influence wine quality. (40 points)
    a. volatile acidity and wine quality
    b. fixed acidity and wine quality
    c. alcohol percent and wine quality
    d. residual sugar and wine quality
4. Allow users to enter values for these four wine characteristics and provide frequency distributions of wine quality for those values. For example, provide a frequency bar chart showing the number of wines at each quality level or range with a user-provide level of residual sugar. Such frequencies are another way of interpreting the associations in requirement 2, above, using specific values. (40 points)
5. Allow users to ask 3 additional questions or add 3 more features you feel would benefit Le Vin's insights on how different characteristics influence wine quality. These could be additional correlations, graphs, analyses, etc. Be creative but keep the purpose of the app in mind. (30 points)
6. Provide good flow and clear / helpful prompts, labels, instructions, and feedback for users. (20 points)

Advanced application options

These are optional and worth no extra points but offer a more challenging version for experienced programmers. The basic application requirements above should be completed first.

1. Add a graphical user interface (GUI) front end to your system
2. Add blending recommendations to your analysis results.
3. Alert users to extreme values.
    a. For example, there are federally recommended limits to the quantity of volatile acidity in red and white wines – values above these suggest spoilage and bacterial contamination. If the user enters a value that exceeds one of these limits for volatile acidity, provide a spoilage alert to the user.
    b. Another option would be to calculate standard deviations for wine attributes. 68% of all values fall within 1 standard deviation of the mean (assuming a normal distribution) and 95% of values fall within two standard deviations. If a user-provided wine attribute value falls outside two standard deviations of the mean, alert the user.