Clarity for STAT 224 Final Project—Calculating GPAs

The following are a few clarification points and things to consider when working on your final project. Most of these things are finer details. I encourage you to think big picture on this project first, then consider how to make your calculations more accurate with attention to detail outlined below.

Report 1 requires GPA and a variety of other columns by Semester for each student. You decide how to get this into one table. There will be one observation for each semester for each student.

Report 2 requires the overall information for each student, as well as the same details pertaining only to their MATH/STAT courses. Report 2 could have 1 observation (MATH/STAT and overall on the same line with a lot of columns), or 2 observations (one for MATH/STAT and one for overall) for each student.

Report 3 requires student ID and overall GPA. Subset the data by total earned credits, then calculate the top 10 percent from the subset.

- GPA
    - With the exception of concessions on a few points below, the assignment is to calculate GPA for students **as done at BYU**.
    - Refer to https://registrar.byu.edu/grades for details.
- Cumulative GPA
    - Your cumulative GPA (by semester) is the one that updates each semester, reflecting the students cumulative GPA up to that point (accumulator variables will be helpful here).
    - Remember that semester GPAs are weighted, it will not be sufficient to just take the average of semester GPAs (we need a weighted average).
- Credit Hours Earned
    - Refers to the total credit hours earned for each student (i.e. credit totals for any class where A through D- and P grades were earned)
    - Note: you are asked for this by semester (report 1) and overall (report 2).
- Graded Credit Hours Earned
    - Refers to all the credit hours for which a student has earned credit, outside of P grades (i.e credit totals for any class where A through D- grades were earned)
    - Note: you are asked for this by semester (report 1) and overall (report 2).
- Repeated courses
    - Repeat courses refer to the number of times a student takes a course for which they have already taken, e.g. if a student has taken *MATH 113 three times, two of these times would be considered repeats*. One part of the final project is totaling up the number of times each student has repeated a course.

    - BYU takes the average grade for repeat courses, and you earn credit each time you repeat a course. We consider this "averaging" to be reflected in the cumulative GPA, so you don't need to retroactively go back and change grades for previous times a student has taken a course.
    - Classes that end with an "R" are repeatable. So they don't count as repeated classes. e.g. if a student has taken STAT 495R two or more times, the result should have no effect on the total number of repeat courses you report.
- Totals on A's, B's. etc.
    - Just total the number of times they received the above letter grades. You may consider this without care to repeats, meaning if a student has taken MATH 113 three times and received the grades B-, B and B+ that would affect your Total B's column by plus 3.
- Macro Program(s)
    - I just need to see one macro program used to simplify code. You may of course use as many macro programs as you like.
    - One logical place to use a macro program is when you calculate the GPA, hours, etc. for MATH/STAT courses as you did for each student overall. Any time you think "OK, cut and paste that code and replace the names" is a great time to use a macro.
    - Partial points will be given for use of a macro variable instead.
- Use PROC REPORT. It is just as easy as PROC PRINT. Easiest three points on the project.
- Use PROC SQL at least once.
- There are ten "pretty points" between code and reports. If I can see what you are doing in your code and you communicate all of the results I want that will give you 4-6/10. The extra couple points are awarded for good commenting, and really pretty reports.

GOOD LUCK. Feel free to ask on any clarification points.

Jared Ward