Project Requirements:

You can use either Python, or Matlab to complete the project.

Your data source would be Kenneth French's website.
http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

You'll use monthly data from 1987 to the latest. You'll need Fama French's 5 factors Market-Rf, SMB, HML, RMW and CMA. Additionally you may include Momentum (12-1 month) which you'll find on this website as well. Analysis in question – dependent variables are 12 Fama French industry portfolios. Use value weighted data.

Things to do:
1. a. What are the FF factor betas for each of the industry portfolios? In regression, does it help to use 5 or 6 (includes MOM) factors or was original 3 or 4 (includes MOM) factors model adequate? Are these betas time varying?
b. What regression technique can one employ to find more stable beta? How do your results change?

2. Which industry portfolios are closely related to each other (how many groups exist – a fundamental analyst may say there are two groups - defensive and cyclical)? Does this relationship/group composition change through time?
What technique/s can you use to show this – why did you choose your technique over others?

3. Construct minimum variance portfolio with constraints of not more than 50% allocation to each group that you found in no. 2. Compare it with equal weighted 12 industry portfolio. Do monthly rebalancing for both.

Note – Results should be in tables and/or charts. They don't need to be pretty/tidy, don't waste time on that.

Thank you.