1. (35%) Linear Regression Analysis for Wine Quality
2. (10%) Show the results of regression analysis as follows
3. (5%) The fitting of the linear regression is a good idea? If yes, why? If no, why? What’s the possible reason of poor fitting?
4. Based on the results, rank the independent variables by p values and which one are statistically significant variables with p values<0.01?
5. (15%) Testify the underlying assumptions of regression (1) Normality, (2) Independence, and (3) Homogeneity of Variance with respect to residual
6. (35%) Association Rule Market Basket Analysis
7. (10%) How to handle the raw dataset via data preprocessing?
8. (10%) What’s the top 5 association rules? Show the support, confidence, and lift to each specific rule, respectively?
9. (5%) Please provide/guess the “story” to interpret one of top 5 rules you are interested in.
10. (10%) Give a visualization graph of your association rules.
11. (30%) Manufacturing System Analysis
12. (10%)根據 Little’s Law 試 計算各工作站的產出率 TH於下表 試 問瓶頸站的產出率 𝑟𝑏、最小生產週期時間 (總加工時間， 𝑇0)、關鍵在製品水準 (𝑊0)各為多少？
13. (10%)試給出最佳績效 (best case)下，最大的產出率 (THbest)與最小生產週期時間(CTbest)的計算公式 (提示講義22~29頁 )
14. (10%)根據該問題的產線，試程式撰寫建立一模擬模型(或用套裝軟體、數值分析)來驗證，當在製品 WIP數量超過工廠產能時，其生產週期將嚴重惡化。也就是當產線的投料速度(投產量)大於產線的產出率，此時生產系統將處於非穩態的狀態(non steady state)。試用圖表呈現WIP、 CT與 TH之間惡化的關係。(提示講義22~29頁)