wine<-read.csv("C:/Users/ab/Desktop/wine.csv")  
library(ggplot2)  
##remove ID and quality   
wine<-wine[,-1]  
summary(wine)

## fx\_acidity vol\_acidity citric\_acid resid\_sugar   
## Min. : 4.60 Min. :0.1200 Min. :0.000 Min. : 0.900   
## 1st Qu.: 7.10 1st Qu.:0.3900 1st Qu.:0.090 1st Qu.: 1.900   
## Median : 7.90 Median :0.5200 Median :0.260 Median : 2.200   
## Mean : 8.32 Mean :0.5278 Mean :0.271 Mean : 2.539   
## 3rd Qu.: 9.20 3rd Qu.:0.6400 3rd Qu.:0.420 3rd Qu.: 2.600   
## Max. :15.90 Max. :1.5800 Max. :1.000 Max. :15.500   
## chlorides free\_sulf\_d tot\_sulf\_d density   
## Min. :0.01200 Min. : 1.00 Min. : 6.00 Min. :0.9901   
## 1st Qu.:0.07000 1st Qu.: 7.00 1st Qu.: 22.00 1st Qu.:0.9956   
## Median :0.07900 Median :14.00 Median : 38.00 Median :0.9968   
## Mean :0.08747 Mean :15.87 Mean : 46.47 Mean :0.9967   
## 3rd Qu.:0.09000 3rd Qu.:21.00 3rd Qu.: 62.00 3rd Qu.:0.9978   
## Max. :0.61100 Max. :72.00 Max. :289.00 Max. :1.0037   
## pH sulph alcohol quality   
## Min. :2.740 Min. :0.3300 Min. : 8.40 Min. :3.000   
## 1st Qu.:3.210 1st Qu.:0.5500 1st Qu.: 9.50 1st Qu.:5.000   
## Median :3.310 Median :0.6200 Median :10.20 Median :6.000   
## Mean :3.311 Mean :0.6581 Mean :10.42 Mean :5.636   
## 3rd Qu.:3.400 3rd Qu.:0.7300 3rd Qu.:11.10 3rd Qu.:6.000   
## Max. :4.010 Max. :2.0000 Max. :14.90 Max. :8.000   
## class   
## High:855   
## Low :744   
##   
##   
##   
##

wine\_noclass<-wine[,-13]  
  
correlation<-cor(wine\_noclass, use="all.obs", method="pearson")   
correlation

## fx\_acidity vol\_acidity citric\_acid resid\_sugar chlorides  
## fx\_acidity 1.00000000 -0.256130895 0.67170343 0.114776724 0.093705186  
## vol\_acidity -0.25613089 1.000000000 -0.55249568 0.001917882 0.061297772  
## citric\_acid 0.67170343 -0.552495685 1.00000000 0.143577162 0.203822914  
## resid\_sugar 0.11477672 0.001917882 0.14357716 1.000000000 0.055609535  
## chlorides 0.09370519 0.061297772 0.20382291 0.055609535 1.000000000  
## free\_sulf\_d -0.15379419 -0.010503827 -0.06097813 0.187048995 0.005562147  
## tot\_sulf\_d -0.11318144 0.076470005 0.03553302 0.203027882 0.047400468  
## density 0.66804729 0.022026232 0.36494718 0.355283371 0.200632327  
## pH -0.68297819 0.234937294 -0.54190414 -0.085652422 -0.265026131  
## sulph 0.18300566 -0.260986685 0.31277004 0.005527121 0.371260481  
## alcohol -0.06166827 -0.202288027 0.10990325 0.042075437 -0.221140545  
## quality 0.12405165 -0.390557780 0.22637251 0.013731637 -0.128906560  
## free\_sulf\_d tot\_sulf\_d density pH sulph  
## fx\_acidity -0.153794193 -0.11318144 0.66804729 -0.68297819 0.183005664  
## vol\_acidity -0.010503827 0.07647000 0.02202623 0.23493729 -0.260986685  
## citric\_acid -0.060978129 0.03553302 0.36494718 -0.54190414 0.312770044  
## resid\_sugar 0.187048995 0.20302788 0.35528337 -0.08565242 0.005527121  
## chlorides 0.005562147 0.04740047 0.20063233 -0.26502613 0.371260481  
## free\_sulf\_d 1.000000000 0.66766645 -0.02194583 0.07037750 0.051657572  
## tot\_sulf\_d 0.667666450 1.00000000 0.07126948 -0.06649456 0.042946836  
## density -0.021945831 0.07126948 1.00000000 -0.34169933 0.148506412  
## pH 0.070377499 -0.06649456 -0.34169933 1.00000000 -0.196647602  
## sulph 0.051657572 0.04294684 0.14850641 -0.19664760 1.000000000  
## alcohol -0.069408354 -0.20565394 -0.49617977 0.20563251 0.093594750  
## quality -0.050656057 -0.18510029 -0.17491923 -0.05773139 0.251397079  
## alcohol quality  
## fx\_acidity -0.06166827 0.12405165  
## vol\_acidity -0.20228803 -0.39055778  
## citric\_acid 0.10990325 0.22637251  
## resid\_sugar 0.04207544 0.01373164  
## chlorides -0.22114054 -0.12890656  
## free\_sulf\_d -0.06940835 -0.05065606  
## tot\_sulf\_d -0.20565394 -0.18510029  
## density -0.49617977 -0.17491923  
## pH 0.20563251 -0.05773139  
## sulph 0.09359475 0.25139708  
## alcohol 1.00000000 0.47616632  
## quality 0.47616632 1.00000000

ggplot(data=wine,aes(x=fx\_acidity, y=citric\_acid))+geom\_point()

