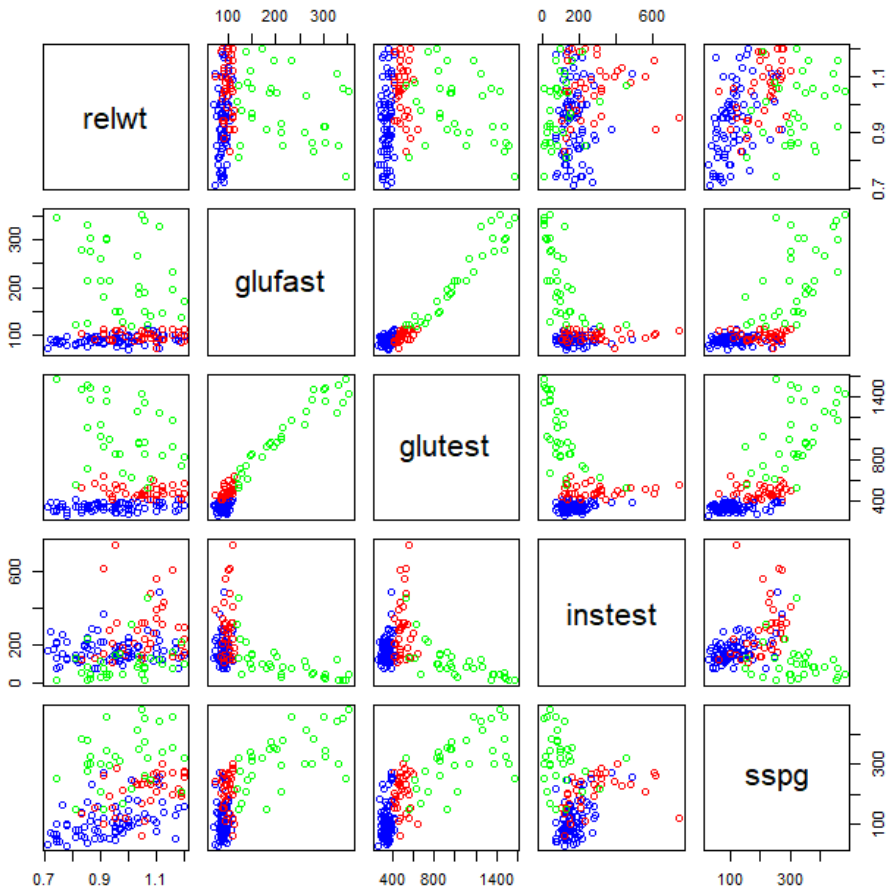
LDA and QDA on Diabetes Dataset

The pairwise scatterplot for all five variables is shown below:



Classes may seem to have different covariance matrices

Classes seems to be multivariate normal a bit

The performance of QDA in comparison to LDA:

For LDA

```
> lda_train_error
[1] 0.1263158
> lda_test_error
[1] 0.1
```

Train error= 0.126
Test error =0.1

For QDA

```
> qda_train_error
[1] 0.03157895
> qda_test_error
[1] 0.14
```

Train error= 0.031
Test error=0.14
Here QDA seems to be performing better a bit, although they are pretty close.

With the below given variable values:

glucose test/intolerence = 68,
insulin test =122
SSPG = 544
Relative weight = 1.86
fasting plasma glucose = 184

```
> predict(qda_fit,df)
$class
[1] Overt_Diabetic
Levels: Normal Chemical_Diabetic Overt_Diabetic

$posterior
        Normal Chemical_Diabetic Overt_Diabetic
1 1.946902e-32      1.067315e-69              1

> predict(lda_fit,df)
$class
[1] Normal
Levels: Normal Chemical_Diabetic Overt_Diabetic

$posterior
  Normal Chemical_Diabetic Overt_Diabetic
1      1      3.156592e-08   1.347529e-13

$x
        LD1      LD2
1 -5.197327 3.334012
```

QDA assigns this to Overt_Diabetic class.
LDA assigns this to Normal class.