```
library(readr)
ebay_train_y <- read_csv("206/dmba/ebay_train_y.csv")
ebay_train_X <- read_csv("206/dmba/ebay_train_X.csv")
ebay_valid_y <- read_csv("206/dmba/ebay_valid_y.csv")
ebay_valid_X <- read_csv("206/dmba/ebay_valid_X.csv")

y <- ebay_train_y$`Competitive?`
X <- data.matrix(ebay_train_X)
library(glmnet)
# lasso L1
# Find the best lambda using cross-validation
set.seed(123)
cv.lasso <- cv.glmnet(X, y, alpha = 1, family = "binomial")

# Fit the final model on the training data
modelL1 <- glmnet(X, y, alpha = 1, family = "binomial",
            lambda = cv.lasso$lambda.min)
# Display regression coefficients
coef(modelL1)



# ELASTIC NET WITH 0 < ALPHA < 1
a <- seq(0.1, 0.9, 0.05)
library(foreach)
search <- foreach(i = a, .combine = rbind) %dopar% {
  cv <- cv.glmnet(X, y, family = "binomial", nfold = 10, type.measure = "deviance", paralle = FALSE,
              alpha = i)
  data.frame(cvm = cv$cvm[cv$lambda == cv$lambda.1se], lambda.1se = cv$lambda.1se, alpha = i)
}
```

```
cv3 <- search[search$cvm == min(search$cvm), ]

cv3

md3 <- glmnet(X, y, family = "binomial", lambda = cv3$lambda.1se, alpha = cv3$alpha)


coef(md3)


coef(modelL1)

coef(md3)
```

RESULTS:

Lasso:

```
> coef(modelL1)
27 x 1 sparse Matrix of class "dgCMatrix"
                                                            s0
(Intercept)                                       -6.733216e-02
const                                              .
sellerRating                                      -4.255166e-05
ClosePrice                                         7.447682e-02
OpenPrice                                         -8.964575e-02
Category_Automotive_Pottery_Glass                 -6.216089e-01
Category_Books_Clothing_Accessories               -6.864102e-01
Category_Business_Industrial_Computer_Home_Garden  6.059144e-02
Category_Coins_Stamps                             -2.009449e+00
Category_Electronics                               3.898548e-01
Category_EverythingElse                           -1.591588e+00
Category_Health_Beauty                            -1.956050e+00
Category_Jewelry                                  -4.280865e-01
Category_Music_Movie_Game                          3.756807e-02
Category_Photography                               3.803875e+00
Category_SportingGoods                            -6.195093e-02
Category_Toys_Hobbies                              1.661282e-01
currency_GBP                                       1.866578e+00
currency_US                                        5.660973e-01
Duration_3                                        -9.218483e-02
Duration_5                                         3.357086e-01
Duration_7                                         .
Duration_10                                        1.542831e-01
endDay_Sat                                        -8.473500e-01
endDay_Sun_Wed_Fri                                -5.602074e-01
endDay_Thu                                        -9.394640e-01
endDay_Tue                                        -4.579171e-01
>
```

Elastic Net:

```
> coef(md3)
27 x 1 sparse Matrix of class "dgCMatrix"
                                                          s0
(Intercept)                                     1.267535e-01
const                                           .
sellerRating                                   -4.246614e-05
ClosePrice                                      5.368222e-02
OpenPrice                                      -6.465205e-02
Category_Automotive_Pottery_Glass              -7.488963e-01
Category_Books_Clothing_Accessories            -6.231204e-01
Category_Business_Industrial_Computer_Home_Garden  8.881125e-02
Category_Coins_Stamps                          -1.987974e+00
Category_Electronics                            2.835476e-01
Category_EverythingElse                        -1.603185e+00
Category_Health_Beauty                         -1.963563e+00
Category_Jewelry                               -4.354684e-01
Category_Music_Movie_Game                       2.873525e-03
Category_Photography                            3.586806e+00
Category_SportingGoods                          .
Category_Toys_Hobbies                           1.344228e-01
currency_GBP                                    1.726436e+00
currency_US                                     4.157858e-01
Duration_3                                     -6.861571e-02
Duration_5                                      3.713187e-01
Duration_7                                      .
Duration_10                                     1.091668e-01
endDay_Sat                                     -8.512526e-01
endDay_Sun_Wed_Fri                             -5.856461e-01
endDay_Thu                                     -9.329008e-01
endDay_Tue                                     -4.541268e-01
>
```