```
start.time<- Sys.time()

library(earth)

library(plotrix)

mars_data <- read.csv('D:/mtr csv/andro.csv')

head(mars_data)

positions <- sample(nrow(mars_data),size=floor((nrow(mars_data)/4)*3))

training <- mars_data[positions,]

training

testing <- mars_data[-positions,]

testing



mars <- earth(Y0~X0 + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 +
X16 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 ,mars_data)

mars1 <- earth(Y1~X0 + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 +
X16 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 ,mars_data)

mars2 <- earth(Y2~X0 + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 +
X16 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 ,mars_data)

mars3 <- earth(Y3~X0 + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 +
X16 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 ,mars_data)

mars4 <- earth(Y4~X0 + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 +
X16 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 ,mars_data)

mars5 <- earth(Y5~X0 + X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8 + X9 + X10 + X11 + X12 + X13 + X14 + X15 +
X16 + X17 + X18 + X19 + X20 + X21 + X22 + X23 + X24 + X25 + X26 + X27 + X28 + X29 ,mars_data)



m_predictions0<-predict(mars,newdata=testing)
```

```
m_predictions1<-predict(mars1,newdata=testing)

m_predictions2<-predict(mars2,newdata=testing)

m_predictions3<-predict(mars3,newdata=testing)

m_predictions4<-predict(mars4,newdata=testing)

m_predictions5<-predict(mars5,newdata=testing)



error1<-sqrt((sum((testing$Y0-m_predictions0)^2))/nrow(testing))

error2<-sqrt((sum((testing$Y1-m_predictions1)^2))/nrow(testing))

error3<-sqrt((sum((testing$Y2-m_predictions2)^2))/nrow(testing))

error4<-sqrt((sum((testing$Y3-m_predictions3)^2))/nrow(testing))

error5<-sqrt((sum((testing$Y4-m_predictions4)^2))/nrow(testing))

error6<-sqrt((sum((testing$Y5-m_predictions5)^2))/nrow(testing))



merror1<-mean((testing$Y0-m_predictions0)^2)

merror2<-mean((testing$Y1-m_predictions1)^2)

merror3<-mean((testing$Y2-m_predictions2)^2)

merror4<-mean((testing$Y3-m_predictions3)^2)

merror5<-mean((testing$Y4-m_predictions4)^2)

merror6<-mean((testing$Y5-m_predictions5)^2)



sd1 <- sd(m_predictions0)
```

```
sd2 <- sd(m_predictions1)

sd3 <- sd(m_predictions2)

sd4 <- sd(m_predictions3)

sd5 <- sd(m_predictions4)

sd6 <- sd(m_predictions5)



std1 <- std.error(m_predictions0)

std2 <- std.error(m_predictions1)

std3 <- std.error(m_predictions2)

std4 <- std.error(m_predictions3)

std5 <- std.error(m_predictions4)

std6 <- std.error(m_predictions5)



end.time<-Sys.time()

time.taken<-end.time - start.time

time.taken
```