```
Xfinal<-cbind(rep(1,n),X[,3:6])

XTX<-t(Xfinal) %*% Xfinal
bhat.final<-solve(XTX) %*% t(Xfinal) %*% Y
bhat.final

solve(XTX,t(Xfinal) %*% Y)

Yfit<-Xfinal %*% bhat.final

TSS<-sum((Y-mean(Y))^2)
SSR.final<-sum((Yfit-mean(Y))^2)
SSE.final<-t(Y-Yfit) %*% (Y-Yfit)

TSS-(SSR.final+SSE.final)


MSE.final<-SSE.final/(n-ncol(Xfinal))
sig.final<-sqrt(MSE.final)
bhat.var<-MSE.final[1,1]*solve(XTX)
bhat.ese<-sqrt(diag(bhat.var))
cbind(bhat.final,bhat.ese)
coef(summary(mod.final))

t(Xfinal) %*% (Y - Yfit)

t(Yfit) %*% (Y-Yfit)

t(Y) %*% (Y-Yfit)
```