R Script of Stat-2202 Lab

```
############6#########

xbar=38100;xbar

n=48;n

sd=5200;sd

mu=37000;mu

alpha=0.05;alpha

zstat=(xbar-mu)/(sd/sqrt(n));zstat

ztab=qnorm(alpha,mean=0,sd=1,lower.tail=FALSE);ztab

if(zstat>ztab){

print("Null hypothesis is rejected")

} else {

print("Null hypothesis is accepted")

}

pval=pnorm(zstat,lower.tail=FALSE);pval

if(pval<alpha){

print("Null hypothesis is rejected")

} else {

print("Null hypothesis is accepted")

}

CI=xbar-ztab*sd/sqrt(n);CI


#########7############

temp1=c(32,34,31,33,35,36,34,34,34,35,32,33,33,33,32,32,34,33,32,34,32,31,33,34,35,34,33,33,33,34,34);temp1

temp2=c(34,34,35,35,35,35,35,35,36,37,34,33,34,35,34,34,36,34,33,34,32,33,34,36,35,35,35,34,35,34,35);temp2

data=cbind(temp1,temp2);data

getwd()
```

```
write.csv(data,'C:/Users/HP/Desktop/data1.csv')
alpha=0.05;alpha
n1=length(temp1);n1
n2=length(temp2);n2
xbar1=mean(temp1);xbar1
xbar2=mean(temp2);xbar2
sd1=sd(temp1);sd1
sd2=sd(temp2);sd2
zstat=(xbar1-xbar2)/sqrt(sd1^2/n1+sd2^2/n2);zstat
ztab=qnorm(alpha/2,mean=0,sd=1);ztab
if(abs(zstat)>abs(ztab)){
print("Null hypothesis is rejected")
}else{
print=("Null hypothesis is accepted")
}
pval=2*pnorm(zstat);pval
if(pval<alpha){
print("Null hypothesis is rejected")
}else{
print=("Null hypothesis is accepted")
}
boxplot(temp1,temp2,main="Box plot",xlab="Month",ylab="Temperature")
LCL=(xbar1-xbar2)-abs(ztab)*sqrt(sd1^2/n1+sd2^2/n2);LCL
UCL=(xbar1-xbar2)+abs(ztab)*sqrt(sd1^2/n1+sd2^2/n2);UCL

##########8#############
alpha=0.01;alpha
a1=44;a1
n1=80;n1
```

```
a2=41;a2
n2=90;n2
p1=a1/n1;p1
p2=a2/n2;p2
P=(a1+a2)/(n1+n2);P
Q=1-P;Q
zstat=(p1-p2)/sqrt(P*Q*(1/n1+1/n2));zstat
ztab=qnorm(alpha/2,mean=0,sd=1,lower.tail=FALSE);ztab
if(zstat>ztab){
print("Null hypothesis is rejected")
} else {
print("Null hypothesis is accepted")
}

pval=2*pnorm(zstat,lower.tail=FALSE);pval
if(pval<alpha){
print("Null hypothesis is rejected")
} else {
print("Null hypothesis is accepted")
}
LCL=(p1-p2)-abs(ztab)*sqrt(P*Q*(1/n1+1/n2));LCL
UCL=(p1-p2)+abs(ztab)*sqrt(P*Q*(1/n1+1/n2));UCL

############9#########
data=read.csv(file.choose());data
math=data[,3];math
stat=data[,2];stat
sd_math=sd(math);sd_math
sd_stat=sd(stat);sd_stat
```

```
alpha=0.05;alpha
Fcal=sd_math^2/sd_stat^2;Fcal
Ftab=qf(alpha,df1=19,df2=19,lower.tail="FALSE");Ftab
if(Fcal>Ftab){
print("Null hypothesis is rejected")
} else {
print("Null hypothesis is accepted")
}
pval=
pval=1-pf(Fcal,df1=19,df2=19,lower.tail="FALSE");pval
if(pval<alpha){
print("Null hypothesis is rejected")
} else {
print("Null hypothesis is accepted")
}

###########10#########
X=c(160,165,159,164,168,155,158,155,152,159,158,154,153,152,154);X
Y=c(70,72,64,63,72,65,62,56,56,60,58,58,55,56,60);Y
n=length(X);n
data=cbind(X,Y);data
m=data.frame(X,Y);m
write.csv(data,'C:/Users/HP/Desktop/Test of hypothesis lab/data 6.csv')
alpha=0.05;alpha
reg=lm(m$Y~m$X,m);reg
summary(reg)
r=cor(X,Y);r
tcal=r*sqrt(n-2)/(1-r^2);tcal
ttab=qt(alpha/2,n-2);ttab
```

```
if(abs(tcal)>abs(ttab)){
print("Null hypothesis is rejected")
} else {
print("Null hypothesis is accepted")
}
pval=2*pt(tcal,n-2,lower.tail=FALSE);pval
if(pval<alpha){
print("Null hypothesis is rejected")
} else {
print("Null hypothesis is accepted")
}
```