1)

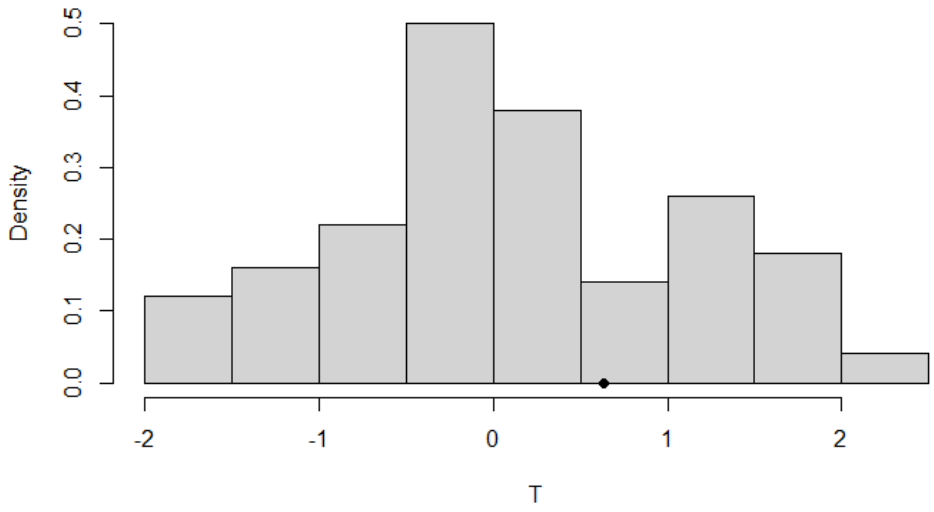
```
f=file.choose()
DriveTest=read.table(f,header = TRUE)
Sober=DriveTest[c(1:24,41:80),1]
Drug=DriveTest[c(25:40,81:119),1]

> t.test(Sober,Drug,var.equal = T)

        Two Sample t-test

data:  Sober and Drug
t = 0.6324, df = 117, p-value = 0.5284
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -10.97359  21.26939
sample estimates:
mean of x mean of y
  43.3903   38.2424


> nm=DriveTest%>%filter(Drug=="1" | Drug=="0")%>%
+   arrange(Drug)%>%group_by(Drug)%>%summarise(n())%>%pull(2)
> z=DriveTest%>%filter(Drug=="1" | Drug=="0")%>%
+   arrange(Drug)%>%group_by(Drug)%>%pull(Distance)
> n=nm[1];m=nm[2];N=sum(nm)
> x=z[1:n];y=z[(n+1):N]
>
> t0 <- t.test(x, y)$statistic
> ts <- map(1:100,~sample.int(N,n))%>%map_dbl(~t.test(z[.x],z[-.x])$statistic)
> p <- mean(abs(ts) >= abs(t0))
> p
[1] 0.49
>
> hist(ts, main = "", freq = FALSE, xlab = "T",breaks = "scott")
> points(t0, 0, cex = 1, pch = 16)
```




```
> wilcox.test(Sober,Drug)

        Wilcoxon rank sum test with continuity correction

data:  Sober and Drug
W = 2184, p-value = 0.02399
alternative hypothesis: true location shift is not equal to 0
```

P-value is similar in the first two but not the third

2)

```
N = 100000
U =runif(N)
rand.samples = rep(NA,N)
for(i in 1:N){
  if(U[i]<.99){
    rand.samples[i] = rnorm(1,0,5)
  }else if(U[i]<.01){
    rand.samples[i] = rnorm(1,0,25)
  }
}
```

4)

```
library(car)
data("Ornstein")
```

```
Ornstein
p_glm=glm(interlocks~assets,family = poisson,data = Ornstein)
summary(p_glm)
Call:
glm(formula = interlocks ~ assets, family = poisson, data = Ornstein)

Deviance Residuals:
   Min      1Q  Median      3Q     Max
-5.801  -3.397  -1.017   1.355  10.537

Coefficients:
             Estimate Std. Error z value Pr(>|z|)
(Intercept) 2.412e+00  1.916e-02  125.90   <2e-16 ***
assets      1.772e-05  4.113e-07   43.09   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 3737.0  on 247  degrees of freedom
Residual deviance: 2626.2  on 246  degrees of freedom
AIC: 3528.2

Number of Fisher Scoring iterations: 5

>
```