20BRS1176_George Mathew EDA LAB3 L55+L56 slot

1.Our company is testing a new drug that reduces hypertension. A total of 14000. individuals with high blood pressure (r= 150 mmlg, SD= 10 mmlg) are given the drug for a month, and then their blood pressure is measured again. The mean systolic blood pressure has decreased to 144 mmitz, with a standard deviation of 9 mmHg

```
before <- rnorm(14000, 150, 10)
after <- rnorm(14000, 144, 9)
t.test(before, after,paired = TRUE)
```

```
##
##  Paired t-test
##
## data:  before and after
## t = 51.837, df = 13999, p-value < 2.2e-16
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  5.641931 6.085383
## sample estimates:
## mean difference
##        5.863657
```

Interpretation: Since the p-value is below the significance level, we may state with certainty that the new drug does lower blood pressure.

2. The following table gives monthly sales (in thousand rupees) of a certain firm in the 3 states by its four salesmen: States: Salesman I II III IV A 6 5 3 8 B 8 9 6 5
C 10 7 8 2 Setup the analysis of variance table and test whether there is any significant difference (i) between the salesmen (ii) between sales in the states.

```
A <- c(6,5,3,8)
B <- c(8,9,6,5)
C <- c(10,7,8,7)
summary (aov (A~B + C))
```

```
##             Df Sum Sq Mean Sq F value Pr(>F)
## B            1  0.900   0.900   0.075  0.830
## C            1  0.029   0.029   0.002  0.969
## Residuals    1 12.071  12.071
```

```
States <- c('A', 'B', 'C')
I <- c (6,8,10)
II <- c (5,9,7)
III <- c (3,6,8)
```

```
IV <- c (8,5,7)
df <- data.frame (States, I, II, III, IV)
a <- aov (I ~ II + III + III)
summary(a)
```

```
##             Df Sum Sq Mean Sq
## II           1      2       2
## III          1      6       6
```

Interpretation: There is no reasonable difference between the states