Q1) Write a code to find Mean, Median, Mode, Q1, Q2, Q3, interquartile range, mean deviation, Standard Deviation and Variance of the data set – 10,20,30,40,50,60,70,80,90,100.

```
#central tendencies and dispersion
#Gaurang Ahinave 1930280023
x <- c(10, 20, 30, 40, 50, 60, 60, 70, 80, 90, 100)

cat('Data Set is', x)
cat('\n\nMean:', mean(x))
cat('\nMedian:', median(x))
cat('\n\n')
data <- table(x)
print(data)
print(names(data))
mode <- names(data)[which.max(data)]
cat("\nMode:", mode)
cat('\n\n')
q1 <- quantile(x, 0.25)
q2 <- quantile(x, 0.5)
q3 <- quantile(x, 0.75)
cat('\nQ1:', q1)
cat('\nQ2:', q2)
cat('\nQ3:', q3)
cat('\n\nInterquartile Range:', IQR(x))
md <- sum(abs(x - mean(x))) / length(x)
cat('\n\nMean Deviation:', md)
cat('\n\nStandard Deviation:', sd(x))
cat('\n\nVariance:', var(x))
```

Q2) Write a code to find Coefficient of Correlation between Age and Blood Pressure of the patients:
Age (20,25,30,35,40,44,55,67,87,70)
Blood Pressure (125,130,123,150,145,170,168,178,168,170)
& Plot the Graph.

```
Age <- c(20, 25, 30, 35, 48, 44, 55, 67, 87, 78)
BP <- c(125, 130, 123, 150, 145, 178, 168, 178, 168, 178)

print(Age)
print(BP)
r <- cor(Age, BP)
print(r)
plot(Age, BP)
```

```
model <- lm(BP - Age)
print(model)
r <- cor(Age, BP)
print(r)
abline(model)
print(attributes(r))
r_coefficient <- attributes(r)$correlation
print(r_coefficient)
```

Q3) Write a code to find a determinant, Inverse, and transpose of any matrix of order 3*3

```
B <- matrix(c(4, 5, 7, 3, 1, 2, 1, 1, 1), nrow = 3, ncol = 3)
print(B)
det_B <- det(B)
print(det_B)
inverse_B <- solve(B)
print(inverse_B)
transpose_B <- t(B)
print(transpose_B)
```

Q4) Write a code to Compute the Linear Least Square Regression.
Year (2000,2001,2002,2003,2004)
Rate (9.34,8.50,7.62,6.93,6.60) & plot the Graph.

```
year <- c(2000,2001,2002,2003,2004)
rate <-c(9.34,8.50,7.62,6.93,6.60)
print(year)
print(rate)
cor(year, rate)
plot(year, rate)
fit <- ln(rate-year) print(fit)
attributes(fit)
summary(fit)
 fitScoefficient [1]
residuals(fit)
abline(fit)
```

```
year <- c(2000, 2001, 2002, 2003, 2004)
rate <- c(9.34, 8.50, 7.62, 6.93, 6.60)
print(year)
print(rate)
correlation <- cor(year, rate)
print(correlation)
plot(year, rate, main="Rate vs. Year", xlab="Year", ylab="
Rate", pch=19)
fit <- lm(rate ~ year)
summary(fit)
abline(fit, col="red")
coefficients <- coef(fit)
print(coefficients)
```

Q5) Write a code to Create a list containing a vector, a matrix, logical value, and a list.

```
a<-list(c("Jan" ,"Feb", "Mar")
,matrix(c(1,2,3,4,5,6) nrow=2),list("red",1))
```

```
print(a)
a<-list("Red", "Green",c(1,2,3), TRUE, 10,20) print(a)
```