

Lab expt 6:

Load necessary library

```
library(dplyr)
```

One-sample t-test

```
scores <- c(78, 82, 85, 90, 75, 88, 84, 79, 91, 86)
```

```
population_mean <- 80
```

```
one_sample_test <- t.test(scores, mu = population_mean)
```

```
print(one_sample_test)
```

Two-sample t-test

```
group_A <- c(78, 82, 85, 90, 75)
```

```
group_B <- c(88, 84, 79, 91, 86)
```

```
two_sample_test <- t.test(group_A, group_B)
```

```
print(two_sample_test)
```

Paired sample t-test

```
pre_test <- c(78, 82, 85, 90, 75)
```

```
post_test <- c(82, 85, 88, 93, 80)
```

```
paired_test <- t.test(pre_test, post_test, paired = TRUE)
```

```
print(paired_test)
```

Lab expt 8:

Load necessary library

```
library(dplyr)
```

One-Way ANOVA

```
set.seed(123) # For reproducibility
```

```
treatment_A <- c(23, 25, 20, 22, 26)
```

```
treatment_B <- c(30, 29, 31, 32, 28)
```

```
treatment_C <- c(35, 36, 34, 33, 37)
```

```
data_one_way <- data.frame(  
  value = c(treatment_A, treatment_B, treatment_C),  
  treatment = factor(rep(c("A", "B", "C"), each = 5))  
)
```

```
one_way_anova <- aov(value ~ treatment, data = data_one_way)  
print(summary(one_way_anova))
```

```
# Two-Way ANOVA
```

```
treatment_A_male <- c(23, 25, 20, 22, 26)  
treatment_A_female <- c(30, 28, 31, 29, 32)  
treatment_B_male <- c(27, 29, 30, 26, 25)  
treatment_B_female <- c(35, 36, 34, 33, 37)
```

```
data_two_way <- data.frame(  
  value = c(treatment_A_male, treatment_A_female, treatment_B_male, treatment_B_female),  
  treatment = factor(rep(c("A", "B"), each = 10)),  
  gender = factor(rep(c("Male", "Female"), times = 10))  
)
```

```
two_way_anova <- aov(value ~ treatment * gender, data = data_two_way)  
print(summary(two_way_anova))
```