# Final_Project

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**Final project**

```r
# Create the dataset
data <- data.frame(
  Week = c(rep("Week 1", 7), rep("Week 2", 7), rep("Week 3", 7)),
  Day = c("Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday",
          "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday",
          "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday"),
  Sleep_Hours = c(6.66, 6.69, 6.56, 5.39, 6.35, 7.49, 8.58,
                  6.93, 7.55, 6.92, 5.43, 5.91, 7.96, 7.5,
                  7.0, 7.2, 6.8, 5.9, 6.5, 8.2, 8.8),
  Screen_Time_Hrs = c(4.5, 5.0, 3.8, 6.1, 5.5, 3.0, 2.5,
                      4.2, 4.8, 3.7, 5.9, 5.2, 2.7, 2.3,
                      3.5, 4.0, 5.0, 6.3, 4.8, 2.2, 1.8)
)

# Add a new column for Type of Day
data$Type <- ifelse(data$Day %in% c("Monday", "Tuesday", "Wednesday", "Thursday", "Friday"), "Weekday",

# Calculate mean Sleep Hours and Screen Time for Weekdays and Weekends
means <- aggregate(cbind(Sleep_Hours, Screen_Time_Hrs) ~ Type, data, mean)
print("Mean Sleep Hours and Screen Time by Type of Day:")
```

```
## [1] "Mean Sleep Hours and Screen Time by Type of Day:"
```

```r
print(means)
```

```
##       Type Sleep_Hours Screen_Time_Hrs
## 1 Weekday    6.519333        4.820000
## 2 Weekend    8.088333        2.416667
```

```r
# Perform a two-sample T-test
weekdays_sleep <- data[data$Type == "Weekday", "Sleep_Hours"]
weekends_sleep <- data[data$Type == "Weekend", "Sleep_Hours"]

t_test_result <- t.test(weekdays_sleep, weekends_sleep)
print("T-test Results:")
```

```
## [1] "T-test Results:"
```

```
print(t_test_result)
```

```
##
##  Welch Two Sample t-test
##
## data:  weekdays_sleep and weekends_sleep
## t = -5.7147, df = 10.603, p-value = 0.0001556
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -2.1760651 -0.9619349
## sample estimates:
## mean of x mean of y
##  6.519333  8.088333
```

```
# Plot the data
library(ggplot2)
ggplot(data, aes(x = Type, y = Sleep_Hours, fill = Type)) +
  geom_bar(stat = "summary", fun = "mean", position = "dodge") +
  labs(title = "Mean Sleep Hours by Type of Day",
       x = "Type of Day",
       y = "Sleep Hours") +
  theme_minimal()
```



Mean Sleep Hours by Type of Day