

1. For the data of Job satisfaction vs income level, Find the number of concordant and discordant pairs using loop.

- You can find the concordant pairs like this:

```
# Create the table matrix as in the question
```

```
table_data <- matrix(c(1, 3, 10, 6,  
                      2, 3, 10, 7,  
                      1, 6, 14, 12,  
                      0, 1, 9, 11), nrow = 4, byrow = TRUE)
```

```
# Function to compute concordant pairs
```

```
calculate_concordant_pairs_pattern <- function(data_matrix) {  
  rows <- nrow(data_matrix)  
  cols <- ncol(data_matrix)
```

```
  concordant_pairs <- 0
```

```
  # Loop through all elements in the upper triangle
```

```
  for (i in 1:rows) {
```

```

for (k in 1:cols) {

  # Multiply the current cell with cells in the lower right area of the matrix
  if (i < rows && k < cols) {
    for (j in (i + 1):rows) {
      for (l in (k + 1):cols) {

        # Concordant pairs: multiply element at [i, k] with element at [j, l]
        concordant_pairs <- concordant_pairs + data_matrix[i, k] * data_matrix[j, l]
      }
    }
  }
}

return(concordant_pairs)
}

```

```

total_concordant_pairs <- calculate_concordant_pairs_pattern(table_data)

```

```
# Print the result
```

```
cat("Total number of concordant pairs:", total_concordant_pairs, "\n")
```

- Try to understand the code and find number of discordant pairs.

2. Suppose in “Fisher's tea taster experiment”, cell values are 3000, 1000, 1000, 3000. Find the p-value for testing hypothesis for testing that Person's guess was independent of the actual order of pouring.