QMM_811248007_3

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```
# Load the required R package for linear programming
library("lpSolve")
```

```
# Define the transportation cost matrix
cost_matrix <- matrix(c(
  622, 614, 630, 0,
  641, 645, 649, 0
), nrow = 2, byrow = TRUE)

# Define supply and demand constraints
supply <- c(100, 120)  # Supply limits for Plant A and Plant B
demand <- c(80, 60, 70, 10)  # Demand requirements for Warehouse 1, Warehouse 2, Warehouse 3, and the D
```

```
# Check if the supply and demand constraints match the cost matrix dimensions
if (length(supply) != nrow(cost_matrix) || length(demand) != ncol(cost_matrix)) {
  stop("Mismatch between supply and demand constraints and the cost matrix dimensions.")
}

# Solve the transportation problem
transport_solution <- lp.transport(cost = cost_matrix, direction = "min",
                                   row.signs = rep(">=", length(supply)),
                                   row.rhs = supply,
                                   col.signs = rep("<=", length(demand)),
                                   col.rhs = demand)

# Extract the solution
solution <- transport_solution$solution
```

```
# Print the results
cat("Solution:\n")
```

```
## Solution:
```

```
cat("Production at Plant A:", solution[1], "units\n")
```

```
## Production at Plant A: 0 units
```

```
cat("Production at Plant B:", solution[2], "units\n")
```

```
## Production at Plant B: 80 units
```

```
cat("AEDs shipped from Plant A to Warehouse 1:", solution[3], "units\n")
```

```
## AEDs shipped from Plant A to Warehouse 1: 60 units
```

```
cat("AEDs shipped from Plant A to Warehouse 2:", solution[4], "units\n")
```

```
## AEDs shipped from Plant A to Warehouse 2: 0 units
```

```
cat("AEDs shipped from Plant A to Warehouse 3:", solution[5], "units\n")
```

```
## AEDs shipped from Plant A to Warehouse 3: 40 units
```

```
cat("AEDs shipped from Plant B to Warehouse 1:", solution[6], "units\n")
```

```
## AEDs shipped from Plant B to Warehouse 1: 30 units
```

```
cat("AEDs shipped from Plant B to Warehouse 2:", solution[7], "units\n")
```

```
## AEDs shipped from Plant B to Warehouse 2: 0 units
```

```
cat("AEDs shipped from Plant B to Warehouse 3:", solution[8], "units\n")
```

```
## AEDs shipped from Plant B to Warehouse 3: 10 units
```

```
# Print the total minimum cost
cat("Optimal Cost:", transport_solution$objval, "\n")
```

```
## Optimal Cost: 132790
```