

# Assignment 3

Sairithik Singamalla

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## Module 6 - The Transportation Model

```
# Load the lpSolve library
library(lpSolve)

# Define the transportation cost matrix
transportation_cost <- matrix(c(22, 14, 30, 16, 20, 24), nrow = 2, byrow = TRUE)

# Define the production capacities for each plant
production_capacities <- c(100, 120)

# Define the demand for each warehouse
warehouse_demand <- c(80, 60, 70)

# Solve the transportation problem
transportation_solution <- lp(direction = "min",
                              objective.in = c(transportation_cost),
                              const.mat = rbind(diag(2), matrix(1, nrow = 3, ncol = 2)),
                              const.dir = c(rep("<=", 2), rep("=", 3)),
                              const.rhs = c(production_capacities, warehouse_demand))

# Extract the solution
optimal_transportation_plan <- transportation_solution$solution

# Print the optimal transportation plan
print(optimal_transportation_plan)

## [1] 0.00 0.00 0.00 0.75 0.00 0.00

# Print the minimum cost
min_transportation_cost <- transportation_solution$objval
print(min_transportation_cost)

## [1] 15
```