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Exploratory Data Analysis Assignment – II

Solving real-world examples using the different data structures of R

1) Using the list, manage an inventory that keeps track of the product names, quantities, prices etc

Find the sum price of the inventory and update the inventory

Code:

```
# Varun Sudhir 21BDS0040
# Create a list to store inventory information
inventory <- list(
  Products = c("Apples", "Bananas", "Oranges"),
  Quantities = c(50, 100, 75),
  Prices = c(0.5, 0.3, 0.4)
)
# Calculate the total value of the inventory
print("Varun Sudhir 21BDS0040")
total_value <- sum(inventory$Quantities * inventory$Prices)
print(paste("Total inventory value:$", total_value))
# Add a new product to the inventory
inventory$Products <- c(inventory$Products, "Grapes")
inventory$Quantities <- c(inventory$Quantities, 60)
inventory$Prices <- c(inventory$Prices, 0.6)
# Print the updated inventory list
print("Varun Sudhir 21BDS0040")
print(inventory)
```

Output:

```
> # Calculate the total value of the inventory
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> total_value <- sum(inventory$Quantities * inventory$Prices)
> print(paste("Total inventory value:$", total_value))
[1] "Total inventory value:$ 85"
```

```

> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print(inventory)
$Products
[1] "Apples" "Bananas" "Oranges" "Grapes"

$Quantities
[1] 50 100 75 60

$Prices
[1] 0.5 0.3 0.4 0.6

```

2) Using a data frame , store the details of employees of company . Calculate the average salary of the employees and give a raise to the employees of the IT department

Code:

```

# Varun Sudhir 21BDS0040
# Create a data frame with employee information
employees <- data.frame(
  Name = c("John Doe", "Jane Smith", "Emily Johnson"),
  Department = c("HR", "Finance", "IT"),
  Salary = c(50000, 60000, 55000),
  stringsAsFactors = FALSE
)

# Calculate the average salary
average_salary <- mean(employees$Salary)
print("Varun Sudhir 21BDS0040")
print(paste("Average salary: $", average_salary))

# Give a raise to employees in the IT department
employees$Salary[employees$Department == "IT"] <-
employees$Salary[employees$Department == "IT"] * 1.1

# Print the updated employees data frame
print(employees)
print("Varun Sudhir 21BDS0040")

```

Output:

```
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print(paste("Average salary: $", average_salary))
[1] "Average salary: $ 55000"

> # Print the updated employees data frame
> print(employees)
      Name Department Salary
1   John Doe         HR  50000
2 Jane Smith    Finance  60000
3 Emily Johnson      IT  60500
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
```

3) Recording daily temperatures using a vector and finding the minimum and maximum temperature of the week

Code:

```
# Varun Sudhir 21BDS0040
# Create a data frame with employee information
employees <- data.frame(
  Name = c("John Doe", "Jane Smith", "Emily Johnson"),
  Department = c("HR", "Finance", "IT"),
  Salary = c(50000, 60000, 55000),
  stringsAsFactors = FALSE
)

# Calculate the average salary
average_salary <- mean(employees$Salary)
print("Varun Sudhir 21BDS0040")
print(paste("Average salary: $", average_salary))

# Give a raise to employees in the IT department
employees$Salary[employees$Department == "IT"] <-
employees$Salary[employees$Department == "IT"] * 1.1

# Print the updated employees data frame
print(employees)
print("Varun Sudhir 21BDS0040")
```

Output:

```
> # Calculate the average temperature
> average_temperature <- mean(temperatures)
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print(paste("Average temperature:", average_temperature))
[1] "Average temperature: 24"

> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print(paste("Highest temperature:", max_temperature, "on", day_max_temp))
[1] "Highest temperature: 27 on Sunday"
> print(paste("Lowest temperature:", min_temperature, "on", day_min_temp))
[1] "Lowest temperature: 21 on Saturday"
> |
```

4) We will analyse customer data stored in the form of a matrix, where rows represent orders and columns represents different products

Code:

```
# Varun Sudhir 21BDS0040
orders <- matrix(
  c(2, 1, 0, 0, 3, 1, 4, 0, 2),
  nrow = 3,
  byrow = TRUE,
  dimnames = list(c("Order1", "Order2", "Order3"), c("ProductA", "ProductB",
"ProductC"))
)

print("Varun Sudhir 21BDS0040")
print(orders)

# Calculate the total quantity ordered for each product
print("Varun Sudhir 21BDS0040")
total_quantities <- colSums(orders)
print(total_quantities)

# Find the order with the highest quantity of ProductA
max_order_productA <- rownames(orders)[which.max(orders[, "ProductA"])]
print("Varun Sudhir 21BDS0040")
print(paste("Order with the highest quantity of ProductA:",
max_order_productA))
```

Output:

Printing the matrix

```
> # Print the orders matrix
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print(orders)
      ProductA ProductB ProductC
Order1        2        1        0
Order2        0        3        1
Order3        4        0        2
```

Finding total orders placed for each Product

```
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> total_quantities <- colSums(orders)
> print(total_quantities)
ProductA ProductB ProductC
        6         4         3
```

Finding orders with the highest quantity of ProductA

```
> # Find the order with the highest quantity of ProductA
> max_order_productA <- rownames(orders)[which.max(orders[, "ProductA"])]
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print(paste("Order with the highest quantity of ProductA:", max_order_productA))
[1] "Order with the highest quantity of ProductA: Order3"
> |
```

5) Using a factor, we will analyse the patient conditions in a hospital. We will categorize the patients based on their medical conditions

Code:

```
# Varun Sudhir 21BDS0040
patient_conditions <- c("Flu", "Covid-19", "Flu", "Diabetes", "Covid-19",
"Flu", "Asthma", "Asthma")

# Convert the vector to a factor
condition_factor <- factor(patient_conditions)
```

```

# Print the factor
print("Varun Sudhir 21BDS0040")
print("Patient conditions as factors:")
print(condition_factor)

# Summarize the number of patients in each condition category
condition_summary <- summary(condition_factor)
print("Varun Sudhir 21BDS0040")
print("Summary of patient conditions:")
print(condition_summary)

```

Output:

```

> # Print the factor
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print("Patient conditions as factors:")
[1] "Patient conditions as factors:"
> print(condition_factor)
[1] Flu      Covid-19 Flu      Diabetes Covid-19 Flu      Asthma  Asthma
Levels: Asthma Covid-19 Diabetes Flu

> # Summarize the number of patients in each condition category
> condition_summary <- summary(condition_factor)
> print("Varun Sudhir 21BDS0040")
[1] "Varun Sudhir 21BDS0040"
> print("Summary of patient conditions:")
[1] "Summary of patient conditions:"
> print(condition_summary)
  Asthma Covid-19 Diabetes      Flu
      2         2         1         3

```