Midterm_Exam

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Q1. Create a dataframe in R named `student_data` with columns "Name," "Age," and "Grade."

Add at least five rows of data to the dataframe. .

```r
students_data <- data.frame(Name= c("jo", "christy", "kambham","Ahavah","Jay"),
                            Age = c(32,6,30,4,31),
                            Grade = c("A","A+","B","B+","A"))

print(students_data)
```

```
##       Name Age Grade
## 1       jo  32     A
## 2  christy   6    A+
## 3  kambham  30     B
## 4   Ahavah   4    B+
## 5      Jay  31     A
```

```r
#create a list named `subject_grades`the grades of a student in three different subjects
subject_grades <- list(Maths = c("A", "A+", "B", "B+"),
                       Science = c("A", "A+", "B","B+"),
                       History = c("A", "A+", "B","B+"))
print(subject_grades)
```

```
## $Maths
## [1] "A"  "A+" "B"  "B+"
##
## $Science
## [1] "A"  "A+" "B"  "B+"
##
## $History
## [1] "A"  "A+" "B"  "B+"
```

Q2. Define a vector `num_vector` with values from 1 to 5. Convert this vector into a 2x3 matrix

named `num_matrix`. Print both the vector and the matrix.

```r
num_vector <- c(1:5)
print(num_vector)
```

```
## [1] 1 2 3 4 5
```

```r
num_matrix <- matrix(num_vector, nrow = 2 , ncol = 3)
```

```
## Warning in matrix(num_vector, nrow = 2, ncol = 3): data length [5] is not a
## sub-multiple or multiple of the number of rows [2]
```

```r
print(num_matrix)
```

```
##      [,1] [,2] [,3]
## [1,]    1    3    5
## [2,]    2    4    1
```

```r
# Since num_vector has only 5 elements, the matrix function will recycle the elements to fill the matri
```

Q3. Create a factor variable `weather` with levels "Sunny," "Cloudy," and "Rainy."

```r
# By changing the value assigned to the factor then the print statement changes
weather <- factor("Rainy", levels = c("Sunny", "Cloudy", "Rainy"))

# Write aconditional statement that prints "Take an umbrella" if the weather is "Rainy" and
# "Enjoy the day" otherwise.
if (weather == "Rainy") {
  print("Take an umbrella")
} else {
  print("Enjoy the day")
}
```

```
## [1] "Take an umbrella"
```

Q4. Load any CSV file named "sales_data.csv" into an R dataframe.

```r
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag


## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
# Display the first 6 rows of the dataframe.
sales_data <-  read.csv("sales_data.csv")

head(sales_data,6)
```

```
##      Product Sales Region       Date
## 1     Heater   150  North 2024-01-01
## 2  Microwave   200   East 2024-02-01
## 3     Kettle   300   West 2024-01-03
## 4     Heater   400  South 2024-03-04
## 5  Microwave   250  North 2024-01-05
## 6     Kettle   350   East 2024-04-06
```

```r
# Calculate and print the average sales value
avg_sales <- mean(sales_data$Sales)
cat("Average sales across products", avg_sales , "\n")
```

```
## Average sales across products 300
```

Q5. Consider any dataframe having `employee_data` with columns "Name," "Salary," and "Department."

```r
# Creating the employee_data dataframe
employee_data <- data.frame(
  Name = c("John", "Jane", "Doe", "Alice", "Bob"),
  Salary = c(40000, 60000, 55000, 35000, 58000),
  Department = c("HR", "IT", "Finance", "IT", "Marketing")
)

# Write an R script that identifies and prints the names of employees whose salary
# is greater than $50,000 and belong to the "Marketing" department.

filter_data_df <- employee_data[employee_data$Salary > 50000 & employee_data$Department=="Marketing",]

print(filter_data_df)
```

```
##   Name Salary Department
## 5  Bob  58000  Marketing
```

Q6. Create a list named `fruit_list` with elements "Apple," "Cherry," and "Strawberry."

```r
fruit_list <- list("Apple" ,"Cherry" , "Strawberry")

# Write a function `add_fruit` that takes a fruit name as an argument and adds it to the list.
add_fruit <-  function(fruit_name) {

  new_list <- append(fruit_list,fruit_name)
  print(new_list)

}

#Call the function to add "Grapes" to the list and print the updated list

add_grapes <- add_fruit("Grapes")
```

```
## [[1]]
## [1] "Apple"
##
## [[2]]
## [1] "Cherry"
##
## [[3]]
## [1] "Strawberry"
##
## [[4]]
## [1] "Grapes"
```