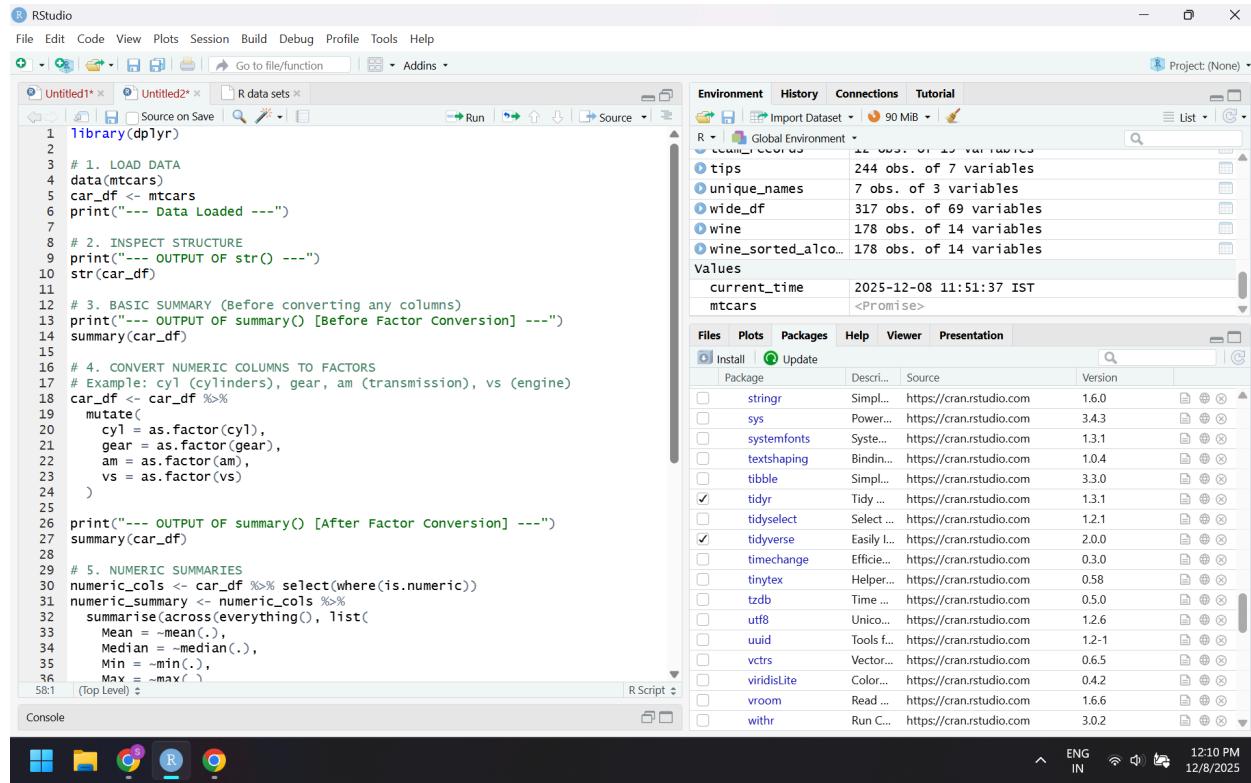


SHETH L.U.J. & SIR M.V. COLLEGE OF SCIENCE
SUBJECT - Data Analysis with SAS / SPSS / R

Aim :- Generating basic summaries using str() or summary() (R).

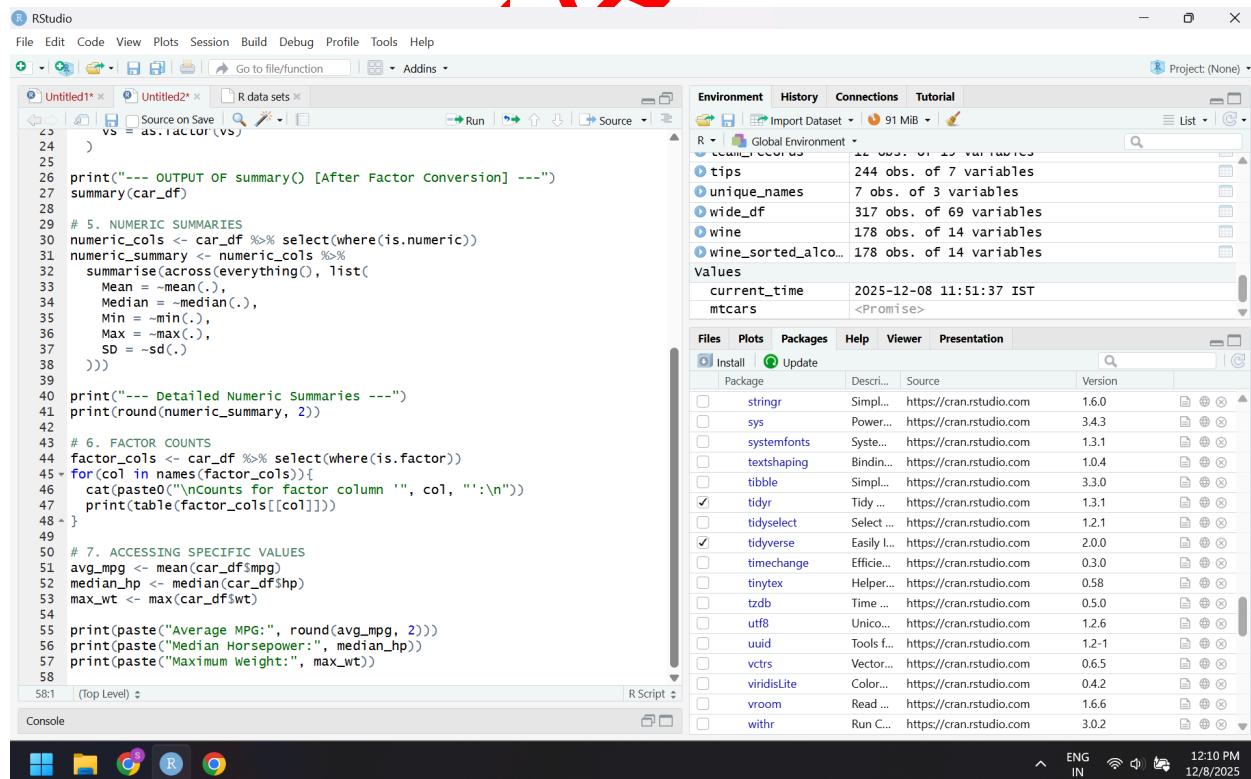
Input :



```

library(dplyr)
# 1. LOAD DATA
data(mtcars)
car_df <- mtcars
print("---- Data Loaded ---")
# 2. INSPECT STRUCTURE
print("---- OUTPUT OF str() ---")
str(car_df)
# 3. BASIC SUMMARY (Before converting any columns)
print("---- OUTPUT OF summary() [Before Factor Conversion] ---")
summary(car_df)
# 4. CONVERT NUMERIC COLUMNS TO FACTORS
# Example: cyl (cylinders), gear, am (transmission), vs (engine)
car_df <- car_df %>%
  mutate(
    cyl = as.factor(cyl),
    gear = as.factor(gear),
    am = as.factor(am),
    vs = as.factor(vs)
  )
print("---- OUTPUT OF summary() [After Factor Conversion] ---")
summary(car_df)
# 5. NUMERIC SUMMARIES
numeric_cols <- car_df %>% select(where(is.numeric))
numeric_summary <- numeric_cols %>%
  summarise(across(everything()), list(
    Mean = ~mean(.),
    Median = ~median(.),
    Min = ~min(.),
    Max = ~max(.),
    SD = ~sd(.)))
print("---- Detailed Numeric Summaries ---")
print(round(numeric_summary, 2))
# 6. FACTOR COUNTS
factor_cols <- car_df %>% select(where(is.factor))
for(col in names(factor_cols)){
  cat(paste0("\nCounts for factor column ", col, ":\n"))
  print(table(factor_cols[[col]]))
}
# 7. ACCESSING SPECIFIC VALUES
avg_mpg <- mean(car_df$mpg)
median_hp <- median(car_df$hps)
max_wt <- max(car_df$wt)
print(paste("Average MPG:", round(avg_mpg, 2)))
print(paste("Median Horsepower:", median_hp))
print(paste("Maximum Weight:", max_wt))

```



```

vs = as.factor(vs)
)
print("---- OUTPUT OF summary() [After Factor Conversion] ---")
summary(car_df)
# 5. NUMERIC SUMMARIES
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numeric_summary <- numeric_cols %>%
  summarise(across(everything()), list(
    Mean = ~mean(.),
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```

Name - Mithil Kadam
 Roll No - S083

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Output :

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The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, Help, and Addins. The main area has tabs for Console, Terminal, and Background Jobs. The Console tab displays R code and its output. The output shows data from the 'mtcars' dataset and current timestamp extraction. The right side of the interface features the Environment, History, Connections, and Tutorial panes. The Environment pane lists global variables like 'tips', 'unique_names', 'wide_df', 'wine', 'wine_sorted_alco...', and 'current_time'. The Packages pane shows installed packages such as stringr, sys, systemfonts, textshaping, tibble, tidy, tidyselect, tidyverse, timechange, tinytex, tzdb, utf8, uuid, vctrs, viridisLite, vroom, and withr. The bottom status bar shows system information: ENG IN, 12:11 PM, 12/8/2025.

```
R - R 4.5.2 - ~/>
3 12 149 12.6 74 5 3 1973-05-03 1973 5 May
4 18 313 11.5 62 5 4 1973-05-04 1973 5 May
5 NA NA 14.3 56 5 5 1973-05-05 1973 5 May
6 28 NA 14.9 66 5 6 1973-05-06 1973 5 May
7 23 299 8.6 65 5 7 1973-05-07 1973 5 May
8 19 99 13.8 59 5 8 1973-05-08 1973 5 May
9 8 19 20.1 61 5 9 1973-05-09 1973 5 May
10 NA 194 8.6 69 5 10 1973-05-10 1973 5 May
Day_Num Weekday_Num Weekday_Name Quarter Day_of_Year
1 1 3 Tuesday 2 121
2 2 4 Wednesday 2 122
3 3 5 Thursday 2 123
4 4 6 Friday 2 124
5 5 7 Saturday 2 125
6 6 1 Sunday 2 126
7 7 2 Monday 2 127
8 8 3 Tuesday 2 128
9 9 4 Wednesday 2 129
10 10 5 Thursday 2 130
> # 3. SYSTEM DATE: Extract components from current timestamp
> current_time <- now()
> print("--- Current Time Extraction ---")
[1] "--- Current Time Extraction ---"
> print(paste("Current Year:", year(current_time)))
[1] "Current Year: 2025"
> print(paste("Current Month:", month(current_time)))
[1] "Current Month: 12"
> print(paste("Current Day:", day(current_time)))
[1] "Current Day: 8"
> print(paste("Current Hour:", hour(current_time)))
[1] "Current Hour: 11"
> print(paste("Current Minute:", minute(current_time)))
[1] "Current Minute: 51"
>
> data("mtcars")
> |
```

MITHIL KADAM