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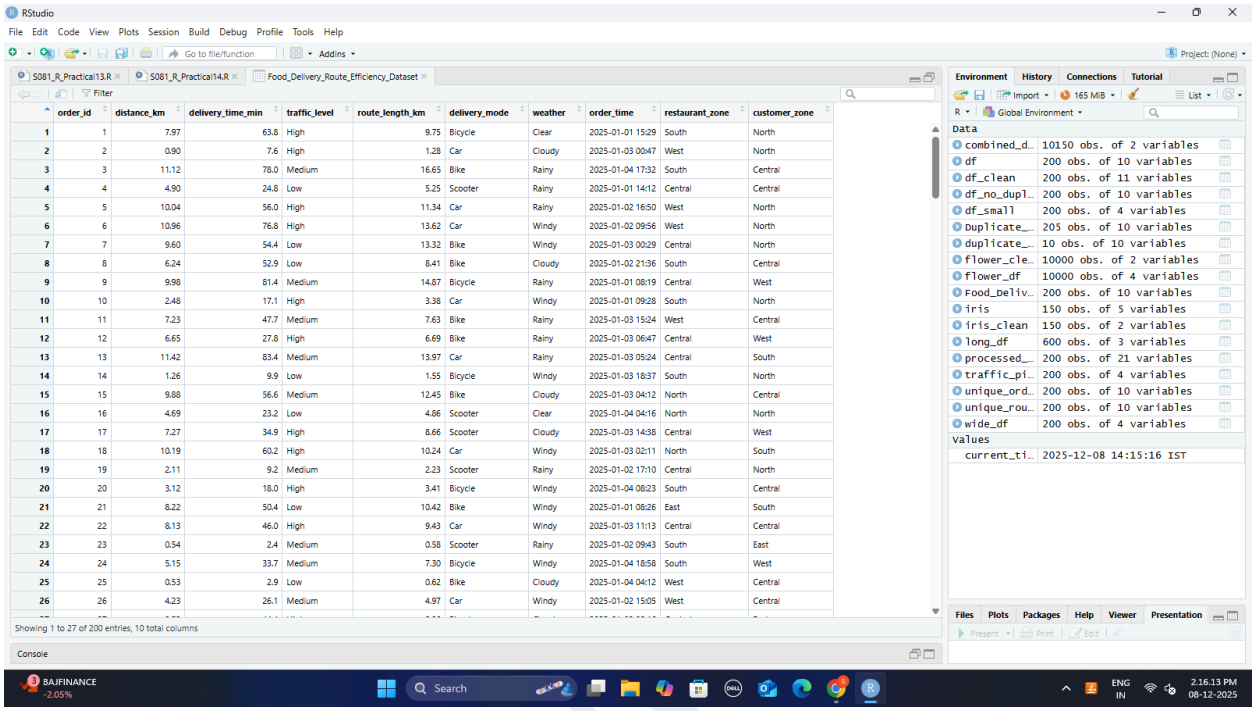
14. Extracting date components using lubridate:: functions (R).



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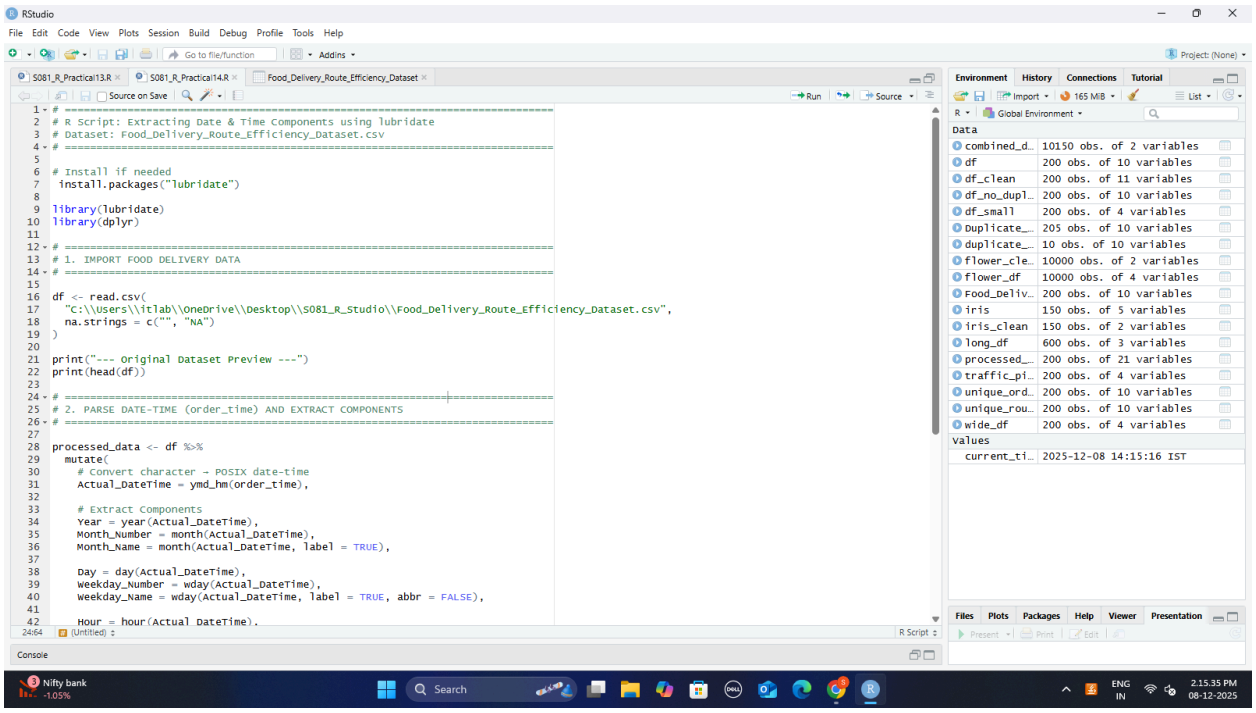

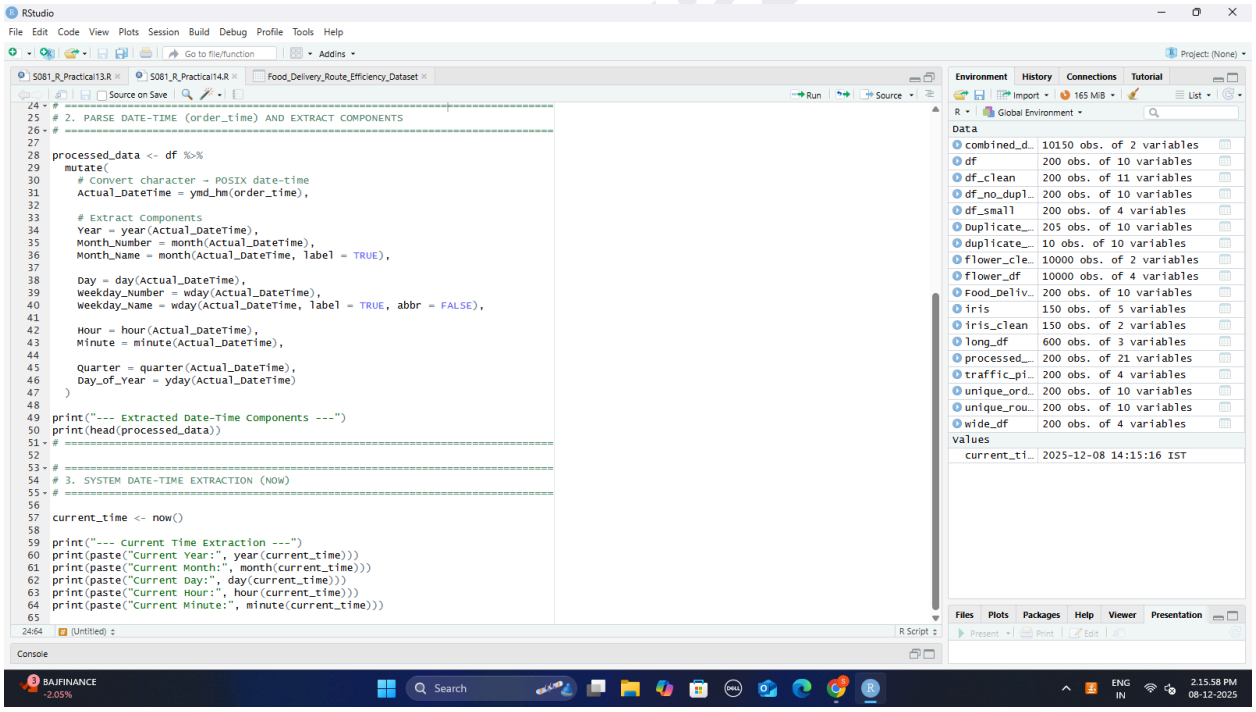

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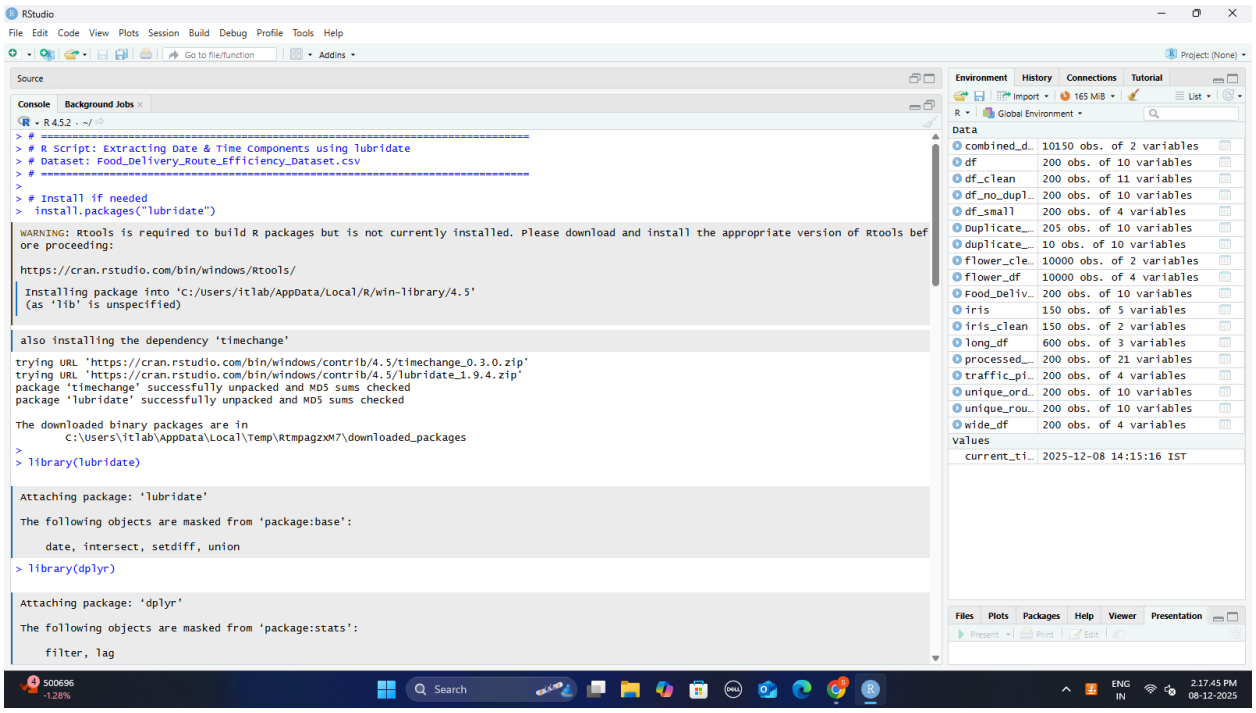
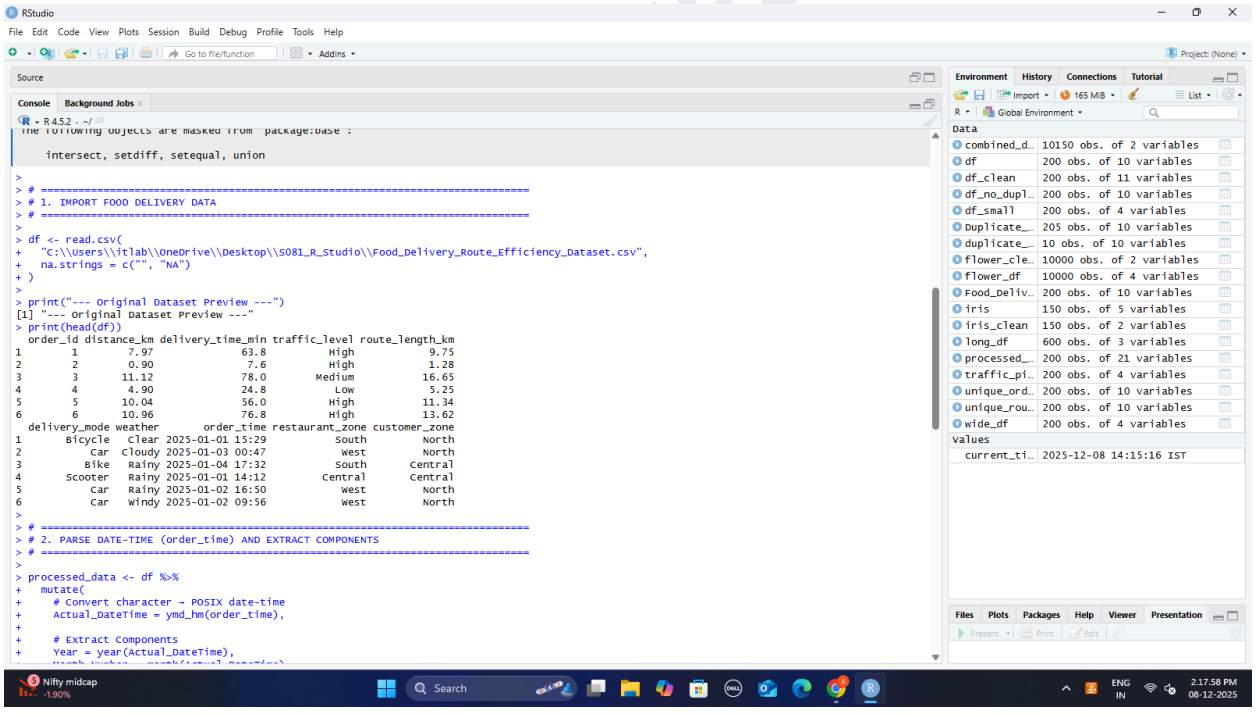


```
> # ================================================================================
> # R Script: Extracting Date & Time Components using lubridate
> # Dataset: Food_Delivery_Route_Efficiency_Dataset.csv
> # ================================================================================
>
> # Install if needed
>  install.packages("lubridate")

WARNING: Rtools is required to build R packages but is not currently installed. Please download and install the appropriate version of Rtools bef
ore proceeding:

https://cran.rstudio.com/bin/windows/Rtools/

Installing package into 'C:/Users/itlab/AppData/Local/R/win-library/4.5'
(as 'lib' is unspecified)

also installing the dependency 'timechange'

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/timechange_0.3.0.zip'
trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/lubridate_1.9.4.zip'
package 'timechange' successfully unpacked and MD5 sums checked
package 'lubridate' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\itlab\AppData\Local\Temp\RtmpagzxM7\downloaded_packages
>
> library(lubridate)

Attaching package: 'lubridate'

The following objects are masked from 'package:base':

    date, intersect, setdiff, union

> 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

>
> # ================================================================================
> # 1. IMPORT FOOD DELIVERY DATA
> # ================================================================================
>
> df <- read.csv(
+   "C:\\Users\\itlab\\OneDrive\\Desktop\\S081_R_Studio\\Food_Delivery_Route_Efficiency_Dataset.csv",
+   na.strings = c("", "NA")
+ )
>
> print("--- Original Dataset Preview ---")
[1] "--- Original Dataset Preview ---"
> print(head(df))
  order_id distance_km delivery_time_min traffic_level route_length_km
1        1        7.97              63.8          High            9.75
2        2        0.90               7.6          High            1.28
3        3       11.12              78.0        Medium           16.65
4        4        4.90              24.8           Low            5.25
5        5       10.04              56.0          High           11.34
6        6       10.96              76.8          High           13.62
  delivery_mode weather       order_time restaurant_zone customer_zone
1       Bicycle   Clear 2025-01-01 15:29           South         North
2           Car  Cloudy 2025-01-03 00:47            West         North
3          Bike   Rainy 2025-01-04 17:32           South       Central
4       Scooter   Rainy 2025-01-01 14:12         Central       Central
5           Car   Rainy 2025-01-02 16:50            West         North
6           Car   Windy 2025-01-02 09:56            West         North
>
> # ================================================================================
> # 2. PARSE DATE-TIME (order_time) AND EXTRACT COMPONENTS
> # ================================================================================
>
> processed_data <- df %>%
+   mutate(
+     # Convert character → POSIX date-time
+     Actual_DateTime = ymd_hm(order_time),
+
+     # Extract Components
+     Year = year(Actual_DateTime),
```

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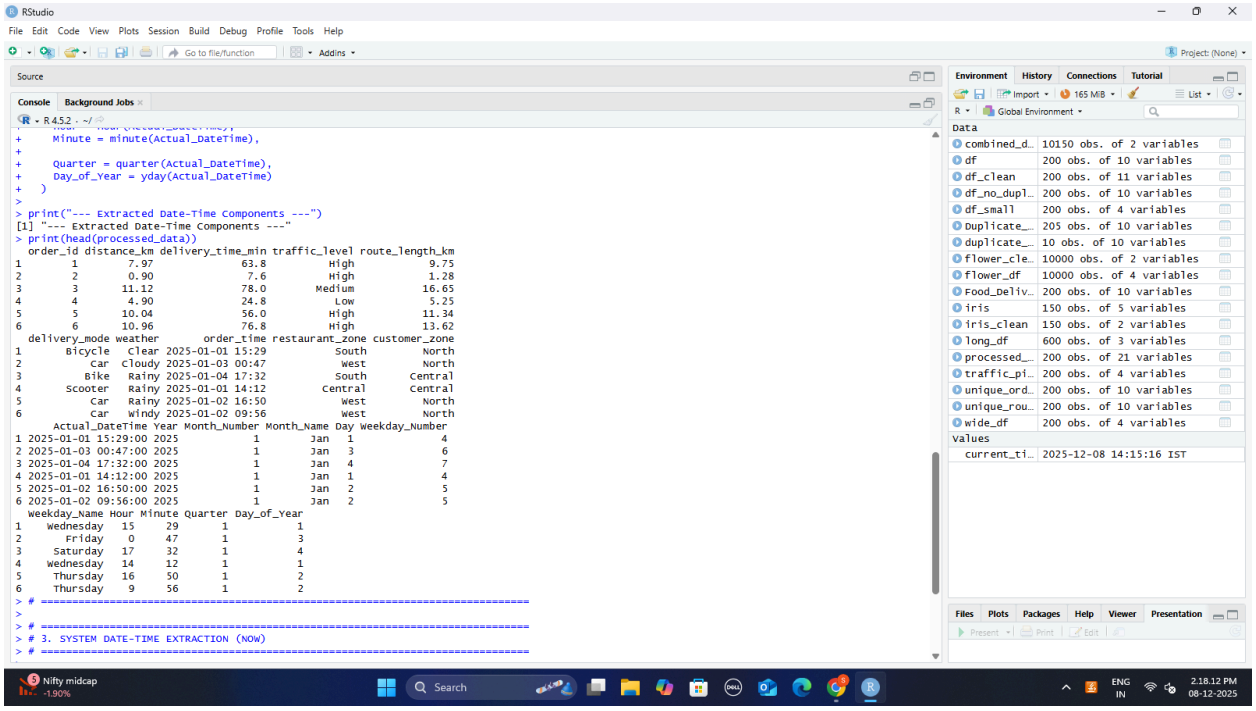
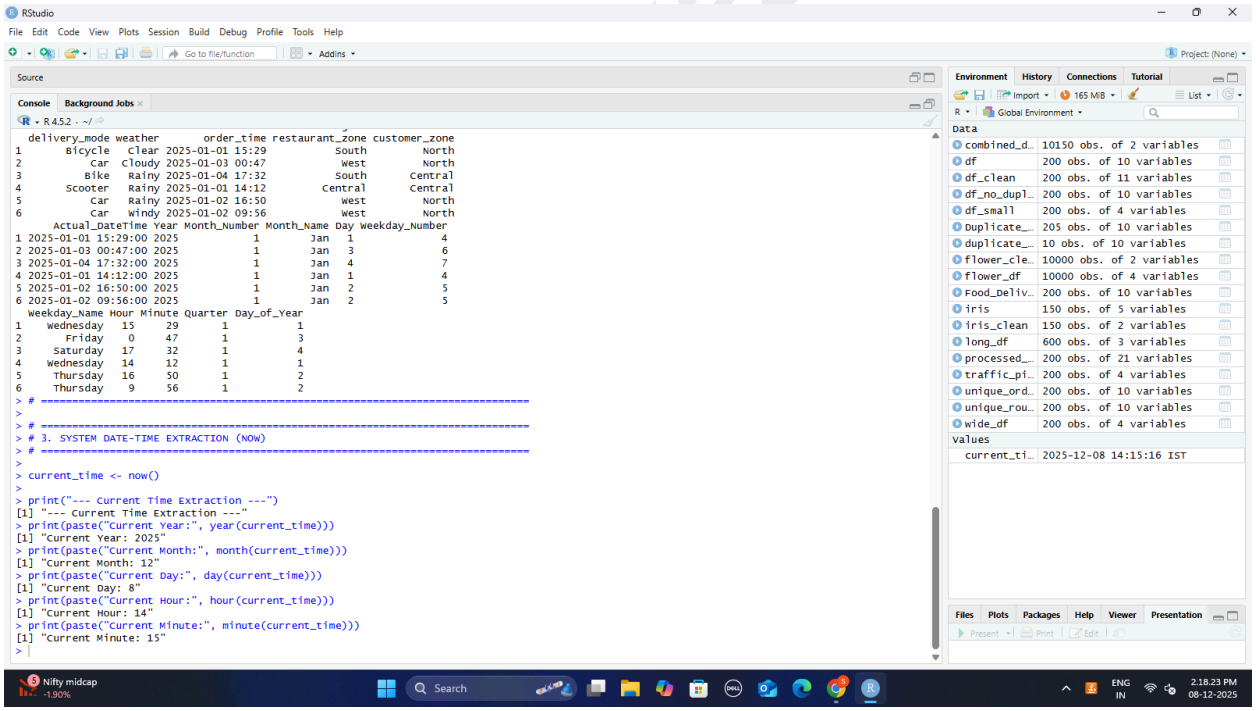


```
+     Minute = minute(Actual_DateTime),
+
+     Quarter = quarter(Actual_DateTime),
+     Day_of_Year = yday(Actual_DateTime)
+   )
>
> print("--- Extracted Date-Time Components ---")
[1] "--- Extracted Date-Time Components ---"
> print(head(processed_data))
  order_id distance_km delivery_time_min traffic_level route_length_km
1        1        7.97              63.8          High            9.75
2        2        0.90               7.6          High            1.28
3        3       11.12              78.0        Medium           16.65
4        4        4.90              24.8           Low            5.25
5        5       10.04              56.0          High           11.34
6        6       10.96              76.8          High           13.62
  delivery_mode weather       order_time restaurant_zone customer_zone
1       Bicycle   Clear 2025-01-01 15:29           South          North
2           Car  Cloudy 2025-01-03 00:47            West          North
3          Bike   Rainy 2025-01-04 17:32           South        Central
4       Scooter   Rainy 2025-01-01 14:12         Central        Central
5           Car   Rainy 2025-01-02 16:50            West          North
6           Car   Windy 2025-01-02 09:56            West          North
     Actual_DateTime Year Month_Number Month_Name Day Weekday_Number
1 2025-01-01 15:29:00 2025            1        Jan   1              4
2 2025-01-03 00:47:00 2025            1        Jan   3              6
3 2025-01-04 17:32:00 2025            1        Jan   4              7
4 2025-01-01 14:12:00 2025            1        Jan   1              4
5 2025-01-02 16:50:00 2025            1        Jan   2              5
6 2025-01-02 09:56:00 2025            1        Jan   2              5
  Weekday_Name Hour Minute Quarter Day_of_Year
1    Wednesday   15     29       1           1
2       Friday    0     47       1           3
3     Saturday   17     32       1           4
4    Wednesday   14     12       1           1
5     Thursday   16     50       1           2
6     Thursday    9     56       1           2
> # ============================================================================
>
> # ============================================================================
> # 3. SYSTEM DATE-TIME EXTRACTION (NOW)
> # ============================================================================
```



```
  delivery_mode weather       order_time restaurant_zone customer_zone
1       Bicycle   Clear 2025-01-01 15:29           South          North
2           Car  Cloudy 2025-01-03 00:47            West          North
3          Bike   Rainy 2025-01-04 17:32           South        Central
4       Scooter   Rainy 2025-01-01 14:12         Central        Central
5           Car   Rainy 2025-01-02 16:50            West          North
6           Car   Windy 2025-01-02 09:56            West          North
     Actual_DateTime Year Month_Number Month_Name Day Weekday_Number
1 2025-01-01 15:29:00 2025            1        Jan   1              4
2 2025-01-03 00:47:00 2025            1        Jan   3              6
3 2025-01-04 17:32:00 2025            1        Jan   4              7
4 2025-01-01 14:12:00 2025            1        Jan   1              4
5 2025-01-02 16:50:00 2025            1        Jan   2              5
6 2025-01-02 09:56:00 2025            1        Jan   2              5
  Weekday_Name Hour Minute Quarter Day_of_Year
1    Wednesday   15     29       1           1
2       Friday    0     47       1           3
3     Saturday   17     32       1           4
4    Wednesday   14     12       1           1
5     Thursday   16     50       1           2
6     Thursday    9     56       1           2
> # ============================================================================
>
> # ============================================================================
> # 3. SYSTEM DATE-TIME EXTRACTION (NOW)
> # ============================================================================
>
> 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: 14"
> print(paste("Current Minute:", minute(current_time)))
[1] "Current Minute: 15"
>
```

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