

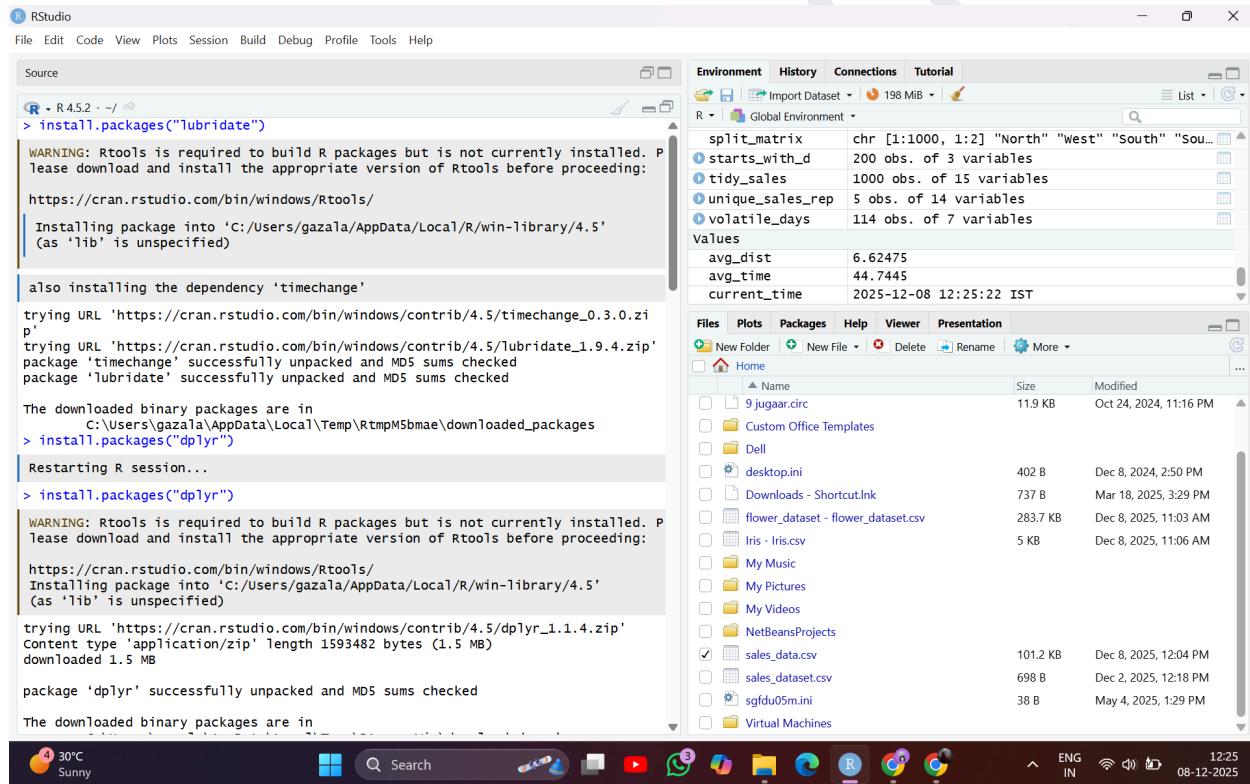
# SHETH L.U.J AND SIR M.V COLLEGE

Subject: Data Analysis with SAS / SPSS /R

## Practical no. 14

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

### Outputs→



The screenshot shows the RStudio interface with the following details:

- Source Panel:** Displays the R code used to install packages:

```
R - R 4.5.2 · ~/> 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 before proceeding:
https://cran.rstudio.com/bin/windows/Rtools/
Installing package into 'C:/Users/gazala/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/gazala/AppData/Local/Temp/RtmpMSbmae/downloaded_packages
> install.packages("dplyr")
Restarting R session...
> install.packages("dplyr")
WARNING: Rtools is required to build R packages but is not currently installed. Please download and install the appropriate version of Rtools before proceeding:
https://cran.rstudio.com/bin/windows/Rtools/
Installing package into 'C:/Users/gazala/AppData/Local/R/win-library/4.5'
(as 'lib' is unspecified)

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/dplyr_1.1.4.zip'
Content type 'application/zip' length 1593482 bytes (1.5 MB)
downloaded 1.5 MB

package 'dplyr' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
```
- Environment Panel:** Shows the global environment with objects like split\_matrix, starts\_with\_d, tidy\_sales, unique\_sales\_rep, volatile\_days, avg\_dist, avg\_time, and current\_time.
- File Explorer:** Shows the file structure in the 'Home' directory, including files like 9\_jugaar.circ, desktop.ini, Downloads - Shortcut.lnk, flower\_dataset - flower\_dataset.csv, Iris - Iris.csv, My Music, My Pictures, My Videos, NetBeansProjects, sales\_data.csv, sales\_dataset.csv, sgfdlu05m.ini, and Virtual Machines.
- System Tray:** Shows weather (4°C, Sunny), system icons (Search, Task View, File Explorer, Edge, Google Chrome, RStudio), and system status (ENG IN, 12:25, 08-12-2025).

# SHETH L.U.J AND SIR M.V COLLEGE

Subject: Data Analysis with SAS / SPSS /R

```
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Restarting R session...
> install.packages("dplyr")
WARNING: Rtools is required to build R packages but is not currently installed. Please download and install the appropriate version of Rtools before proceeding:
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trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/dplyr_1.1.4.zip'
Content type 'application/zip' length 1593482 bytes (1.5 MB)
downloaded 1.5 MB

package 'dplyr' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
  C:/Users/gazala/AppData/Local/Temp/RtmpqqyViv/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
```

Environment pane:

- split\_matrix
- starts\_with\_d
- tidy\_sales
- unique\_sales\_rep
- volatile\_days
- Values
- avg\_dist
- avg\_time
- current\_time

Files pane:

- 9 jugaar.circ
- Custom Office Templates
- Dell
- desktop.ini
- Downloads - Shortcut.lnk
- flower\_dataset - flower\_dataset.csv
- Iris - Iris.csv
- My Music
- My Pictures
- My Videos
- NetBeansProjects
- sales\_data.csv
- sales\_dataset.csv
- sgfdu05m.ini
- Virtual Machines

```
R - R 4.5.2 · ~/ ~
> sales_df <- read.csv("sales_data.csv")
> print("--- Original Dataset (First 6 Rows) ---")
[1] "--- Original Dataset (First 6 Rows) ---"
> print(head(sales_df))
  Product_ID Sale_Date Sales_Rep Region Sales_Amount Quantity_Sold
1      1052 2023-02-03     Bob   North    5053.97           18
2      1093 2023-04-21     Bob   West    4384.02           17
3      1015 2023-09-21   David   South    4631.23           30
4      1072 2023-08-24     Bob   South    2167.94           39
5      1061 2023-03-24  Charlie   East    3750.20           13
6      1021 2023-02-11  Charlie   west    3761.15           32
  Product_Category Unit_Cost Unit_Price Customer_Type Discount Payment_Method
1       Furniture    152.75     267.22   Returning     0.09        Cash
2       Furniture    3816.39    4209.44   Returning     0.11        Cash
3          Food     261.56     371.40   Returning     0.20  Bank Transfer
4      Clothing    4330.03    4467.75        New     0.02 Credit Card
5   Electronics     637.37     692.71        New     0.08 Credit Card
6          Food     900.79    1106.51        New     0.21        Cash
Sales_Channel Region_and_Sales_Rep
1          Online        North-Bob
2          Retail         West-Bob
3          Retail        South-David
4          Retail        South-Bob
5          Online      East-Charlie
6          Online      West-Charlie
> processed_sales <- sales_df %>
+   mutate(
+     # A. Convert Sale_Date (string) into actual Date format
+     Actual_Date = ymd(Sale_Date),
+
+     # B. Extract date components
+     Year = year(Actual_Date),                      # e.g., 2023
+     Month_Num = month(Actual_Date),                 # 1-12
+     Month_Name = month(Actual_Date, label = TRUE),  # Jan, Feb,...
+     Day = day(Actual_Date),                         # 1-31
+     Weekday_Num = wday(Actual_Date),                # 1=Sun, 7=Sat
+     Weekday_Name = wday(Actual_Date, label = TRUE, abbr = FALSE), # Monday
+     Quarter = quarter(Actual_Date),                  # 1-4
+     Day_of_Year = yday(Actual_Date)                 # 1-366
```

Environment pane:

- split\_matrix
- starts\_with\_d
- tidy\_sales
- unique\_sales\_rep
- volatile\_days
- Values
- avg\_dist
- avg\_time
- current\_time

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RStudio interface showing R code execution and environment pane.

```

R - R 4.5.2 · ~/R
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
+ Month_Name = month(Actual_Date, label = TRUE), # Jan, Feb,...
+ Day = day(Actual_Date), # 1-31
+ Weekday_Num = wday(Actual_Date), # 1=Sun, 7=Sat
+ Weekday_Name = wday(Actual_Date, label = TRUE, abbr = FALSE), # Monday
+ Quarter = quarter(Actual_Date), # 1-4
+ Day_of_Year = yday(Actual_Date) # 1-366
+ )
> print("")
[1] "-- Processed Dataset with Extracted Date Components --"
> print(head(processed_sales))
  Product_ID Sale_Date Sales_Rep Region Sales_Amount Quantity_Sold
1 1052 2023-02-03 Bob North 5053.97 18
2 1093 2023-04-21 Bob West 4384.02 17
3 1015 2023-09-21 David South 4631.23 30
4 1072 2023-08-24 Bob South 2167.94 39
5 1061 2023-03-24 Charlie East 3750.20 13
6 1021 2023-02-11 Charlie West 3761.15 32
  Product_Category Unit_Cost Unit_Price Customer_Type Discount Payment_Method
1 Furniture 152.75 267.22 Returning 0.09 Cash
2 Furniture 3816.39 4209.44 Returning 0.11 Cash
3 Food 261.56 371.40 Returning 0.20 Bank Transfer
4 Clothing 4330.03 4467.75 New 0.02 Credit Card
5 Electronics 637.37 692.71 New 0.08 Credit Card
6 Food 900.79 1106.51 New 0.21 Cash
  Sales_Channel Region_and_Sales_Rep Actual_Date Year Month_Num Month_Name
1 Online North-Bob 2023-02-03 2023 2 Feb
2 Retail West-Bob 2023-04-21 2023 4 Apr
3 Retail South-David 2023-09-21 2023 9 Sep
4 Retail South-Bob 2023-08-24 2023 8 Aug
5 Online East-Charlie 2023-03-24 2023 3 Mar
6 Online West-Charlie 2023-02-11 2023 2 Feb
  Day Weekday_Num Weekday_Name Quarter Day_of_Year
1 3 6 Friday 1 34
2 21 6 Friday 2 111
3 21 5 Thursday 3 264
4 24 5 Thursday 3 236
5 24 6 Friday 1 83
6 11 7 Saturday 1 42
> current_time <- now()

```

Environment pane:

- split\_matrix: chr [1:1000, 1:2] "North" "West" "South" "Sou...
- starts\_with\_d: 200 obs. of 3 variables
- tidy\_sales: 1000 obs. of 15 variables
- unique\_sales\_rep: 5 obs. of 14 variables
- volatile\_days: 114 obs. of 7 variables

Values pane:

- avg\_dist: 6.62475
- avg\_time: 44.7445
- current\_time: 2025-12-08 12:25:22 IST

Files pane:

- New Folder
- New File
- Delete
- Rename
- More
- Home
- 9 jugaar.circ
- Custom Office Templates
- Dell
- desktop.ini
- Downloads - Shortcut.lnk
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System tray:

- Trending videos
- The Hunger Ga...
- Search
- File Explorer
- Task View
- Power User
- File
- Open
- Save
- Print
- Exit
- ENG IN
- 12:26
- 08-12-2025

RStudio interface showing R code execution and environment pane.

```

R - R 4.5.2 · ~/R
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
  Product_ID Sale_Date Sales_Rep Region Sales_Amount Quantity_Sold
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6 Online West-Charlie 2023-02-11 2023 2 Feb
  Day Weekday_Num Weekday_Name Quarter Day_of_Year
1 3 6 Friday 1 34
2 21 6 Friday 2 111
3 21 5 Thursday 3 264
4 24 5 Thursday 3 236
5 24 6 Friday 1 83
6 11 7 Saturday 1 42
> current_time <- now()
> print("<!-- Current Time Extraction --")
[1] "-- Current Time Extraction --"
&gt; print(paste("Current Year:", year(current_time)))
[1] "Current Year: 2025"
&gt; print(paste("Current Hour:", hour(current_time)))
[1] "Current Hour: 12"
&gt; print(paste("Current Minute:", minute(current_time)))
[1] "Current Minute: 25"
&gt;
</pre>


Environment pane:



- split_matrix: chr [1:1000, 1:2] "North" "West" "South" "Sou...
- starts_with_d: 200 obs. of 3 variables
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- volatile_days: 114 obs. of 7 variables



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- 12:26
- 08-12-2025

```