

# Sheth L.U.J & Sir M.V. College Of Science

## Practical N0 5

**Aim :-Sorting data using arrange() in R.**

The screenshot shows the RStudio interface. The console on the left contains the following R code and output:

```
R - R452 - /-
> table(industry_filter$industry)
< table of extent 0 >
> library(dplyr)
> library(readr)
> delivery <- read_csv("topics.csv")
New names:
  *   -> ...1
Rows: 18 Columns: 3
— Column specification —
Delimiter: ","
chr (2): name, keywords
dbl (1): ...1

I use 'spec()' to retrieve the full column specification for this data.
I specify the column types or set 'show_col_types = FALSE' to quiet this message.
> delivery_sorted_name <- delivery |>
+   arrange(name)
> head(delivery_sorted_name, 5)
# A tibble: 5 x 3
  ...1 name keywords
<dbl> <chr>
1 2 Additive Manufacturing ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'c', 'exoskeleton']
2 17 Augmentation of Human Capabilities in Manufacturing ['adoption', 'Kotte', 'ADKAR']
3 15 Change Management ['composite', 'aramid', 'thermoset', 'hydro', 'geothermal', 'biomass']
4 10 Composites and New Materials ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM']
5 9 Decarbonization of Energy ['recycling', 'reuse', 'remanufacturing']

> delivery_sorted_keywords <- delivery |>
+   mutate(keyword_count = lengths(strsplit(keywords, ","))) |>
+   arrange(desc(keyword_count))
> head(delivery_sorted_keywords, 5)
# A tibble: 5 x 4
  ...1 name keywords keyword_count
<dbl> <chr>
1 1 Processes and Assembly ['assembly', 'welding', 'bonding', 'machini... 18
2 0 Robotics ['robot', 'robotic', 'automation', 'cobot', '... 14
3 10 Composites and New Materials ['composite', 'aramid', 'thermoset', 'bio-c... 13
4 2 Additive Manufacturing ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM', '... 12
5 6 Recycling / Reuse ['recycling', 'reuse', 'remanufacturing', '... 12

> delivery_multi_sort <- delivery |>
+   mutate(keyword_count = lengths(strsplit(keywords, ","))) |>
+   arrange(name, desc(keyword_count))
> head(delivery_multi_sort, 5)
# A tibble: 5 x 4
  ...1 name keywords keyword_count
<dbl> <chr>
1 2 Additive Manufacturing ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM', '... 12
2 17 Augmentation of Human Capabilities in Manufacturing ['adoption', 'Kotte', 'ADKAR'] 2
3 15 Change Management ['composite', 'aramid', 'thermoset', 'hydro', 'geothermal', 'biomass'] 13
4 10 Composites and New Materials ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM'] 6
5 9 Decarbonization of Energy ['electrification', 'CAD', 'CAE', 'sim', 'eco-design', 'LCA', 'eco-process', 'so... 7
6 8 Decarbonization of Mobility ['eco-design', 'LCA', 'eco-process', 'so... 7
7 12 Digital Engineering of Products and Processes ['IoT', 'IIoT', 'AI... 7
8 4 Eco-design
9 7 Eco-responsible Processes
10 11 Industrial Digitalization

> robot_related <- delivery |>
+   filter(grepl("robot", keywords, ignore.case = TRUE))
> robot_related |>
+   select(name, keywords) |>
+   head(5)
```

The Environment pane on the right shows the following objects:

Object	Obs.	Vars.
high_cost_not_se	495	6
high_salary	1093	12
high_salary_senior	336	12
industry_filter	0	12
jobs	2000	12
low_occupants_filter	1386	6
my_data	3000	18
region_filter	3278	6
robot_related	1	3

The screenshot shows the RStudio interface with an error message in the console:

```
R - R452 - /-
> delivery_sorted_keywords <- delivery |>
+   mutate(keyword_count = lengths(strsplit(keywords, ","))) |>
+   arrange(desc(keyword_count))
> head(delivery_sorted_keywords, 5)
# A tibble: 5 x 4
  ...1 name keywords keyword_count
<dbl> <chr>
1 1 Processes and Assembly ['assembly', 'welding', 'bonding', 'machini... 18
2 0 Robotics ['robot', 'robotic', 'automation', 'cobot', '... 14
3 10 Composites and New Materials ['composite', 'aramid', 'thermoset', 'bio-c... 13
4 2 Additive Manufacturing ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM', '... 12
5 6 Recycling / Reuse ['recycling', 'reuse', 'remanufacturing', '... 12

> delivery_multi_sort <- delivery |>
+   mutate(keyword_count = lengths(strsplit(keywords, ","))) |>
+   arrange(name, desc(keyword_count))
> head(delivery_multi_sort, 10)
# A tibble: 10 x 4
  ...1 name keywords keyword_count
<dbl> <chr>
1 2 Additive Manufacturing ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM', '... 12
2 17 Augmentation of Human Capabilities in Manufacturing ['adoption', 'Kotte', 'ADKAR'] 2
3 15 Change Management ['composite', 'aramid', 'thermoset', 'hydro', 'geothermal', 'biomass'] 13
4 10 Composites and New Materials ['FDM', 'SLA', 'SLS', 'SLM', 'DMLS', 'EBM'] 6
5 9 Decarbonization of Energy ['electrification', 'CAD', 'CAE', 'sim', 'eco-design', 'LCA', 'eco-process', 'so... 7
6 8 Decarbonization of Mobility ['eco-design', 'LCA', 'eco-process', 'so... 7
7 12 Digital Engineering of Products and Processes ['IoT', 'IIoT', 'AI... 7
8 4 Eco-design
9 7 Eco-responsible Processes
10 11 Industrial Digitalization

> robot_related <- delivery |>
+   filter(grepl("robot", keywords, ignore.case = TRUE))
> robot_related |>
+   select(name, keywords) |>
+   head(5)

Error in select(robot_related, name, keywords) :
  unused arguments (name, keywords)
```

The Environment pane on the right shows the following objects:

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high_cost_not_se	495	6
high_salary	1093	12
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jobs	2000	12
low_occupants_filter	1386	6
my_data	3000	18
region_filter	3278	6
robot_related	1	3

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**Subject :- Data Analysis with SAS / SPSS / R**