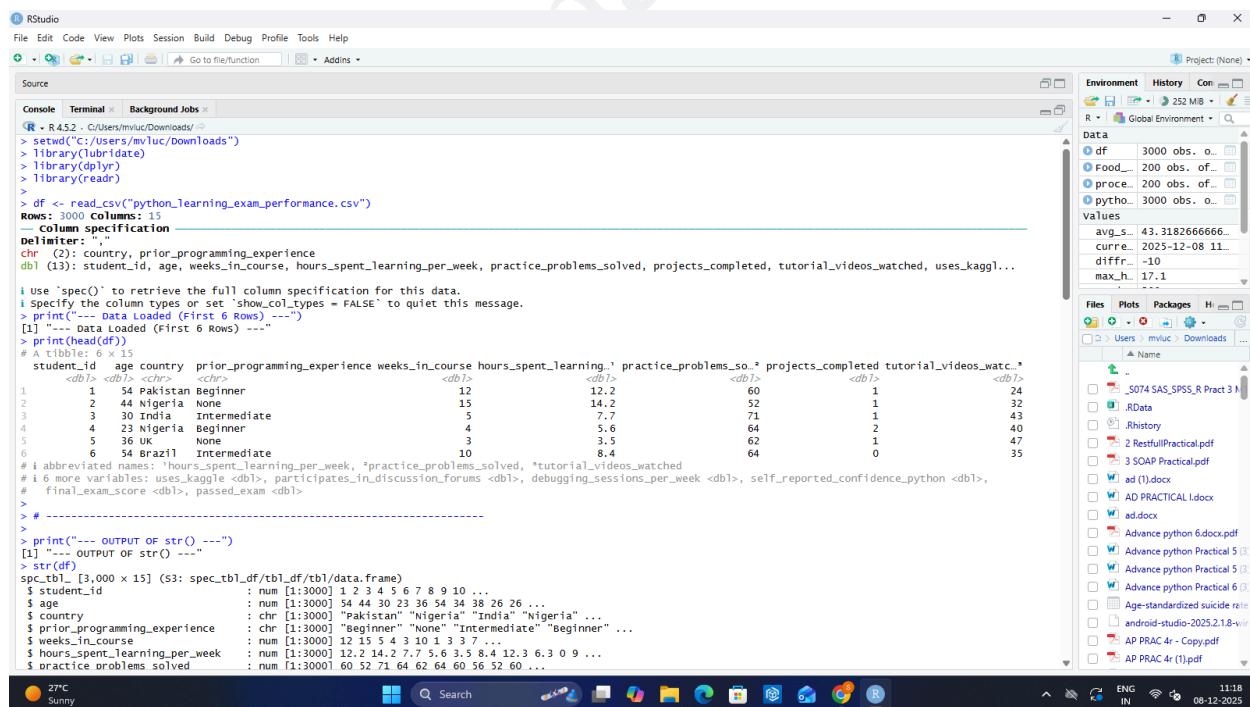


SHETH L.U.J AND SIR M.V. COLLEGE
SUBJECT NAME: DATA ANALYSIS WITH SAS/SPSS/R

Module 1 Practical 14

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

OUTPUT:



The screenshot shows the RStudio interface with the following details:

- Console:** Displays the R session history, including the loading of a CSV file and the execution of str() and summary() functions on the resulting data frame.
- Environment:** Shows the global environment with objects like df, Food, proce, and pytho.
- Data:** Shows the structure of the data frame df, which has 3000 rows and 15 columns. The columns are student_id, age, country, prior_programming_experience, weeks_in_course, hours_spent_learning_per_week, practice_problems_solved, projects_completed, tutorial_videos_watched, uses_kaggle, avg_s, curr_e, diff_r, and max_h.
- Files:** Shows the project directory containing various files such as SAS_SPSS_R Pract 3.R, RHistory, and several PDF and DOCX documents related to Python and R practicals.
- Plots:** No plots are currently displayed.
- Packages:** No packages are currently loaded.
- Help:** No help pages are currently displayed.

```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function Addins
Source
Console Terminal Background Jobs
> R 4.5.2 - C:/Users/mvicut/Downloads/
> setwd("C:/Users/mvicut/Downloads")
> library(lubridate)
> library(dplyr)
> library(readr)
>
> df <- read_csv("python_learning_exam_performance.csv")
Rows: 3000 Columns: 15
--- Column specification ---
delimiter: ","
chr (2): country, prior_programming_experience
dbl (13): student_id, age, weeks_in_course, hours_spent_learning_per_week, practice_problems_solved, projects_completed, tutorial_videos_watched, uses_kaggle, avg_s, curr_e, diff_r, max_h
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.
> print("--- Data Loaded (First 6 Rows) ---")
[1] "---- data Loaded (First 6 Rows) ----"
> print(head(df))
# A tibble: 6 x 15
  student_id age country prior_programming_experience weeks_in_course hours_spent_learning_per_week practice_problems_solved projects_completed tutorial_videos_watched
    <dbl> <dbl> <chr> <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
1       1     54  Pakistan Beginner                12      12.2        60          1           24
2       2     44  Nigeria  None                   15      14.2        52          1           32
3       3     30  India   Intermediate            5       7.7         71          1           43
4       4     23  Nigeria Beginner               4       5.6         64          2           40
5       5     36  UK     None                  3       3.5         62          1           47
6       6     54  Brazil  Intermediate            10      8.4         64          0           35
# i abbreviated names: `hours_spent_learning_per_week`, `practice_problems_solved`, `tutorial_videos_watched`
# i 6 more variables: `uses_kaggle` <dbl>, `participates_in_discussion_forums` <dbl>, `debugging_sessions_per_week` <dbl>, `self_reported_confidence_python` <dbl>,
# i `final_exam_score` <dbl>, `passed_exam` <dbl>
> #
> #
> print("---- OUTPUT OF str() ---")
[1] "---- OUTPUT OF str() ---"
> str(df)
#> #tbl_df [3,000 x 15] (S3: spec_tbl_df/tbl_df/data.frame)
#> #  $ student_id : num [1:3000] 1 2 3 4 5 6 7 8 9 10 ...
#> #  $ age        : num [1:3000] 54 44 30 23 26 54 34 38 26 26 ...
#> #  $ country   : chr [1:3000] "Pakistan" "Nigeria" "India" "Nigeria" ...
#> #  $ prior_programming_experience : chr [1:3000] "Beginner" "None" "Intermediate" "Beginner" ...
#> #  $ weeks_in_course : num [1:3000] 12 15 5 4 3 10 1 3 3 7 ...
#> #  $ hours_spent_learning_per_week : num [1:3000] 12.2 14.2 7.7 5.6 3.5 8.4 12.3 6.3 0 9 ...
#> #  $ practice_problems_solved : num [1:3000] 60 52 71 64 62 64 60 56 52 60 ...

```

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

SUBJECT NAME: DATA ANALYSIS WITH SAS/SPSS/R

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Console Terminal Background Jobs

```
R - R 4.5.2 : C:/Users/mvlic/Downloads/
$ uses_kaggle : num [1:3000] 24 82 43 40 47 35 35 41 26 42 ...
$ participates_in_discussion_forums : num [1:3000] 0 0 0 1 0 0 1 1 ...
$ debugging_sessions_per_week : num [1:3000] 1 0 0 0 1 0 1 0 1 ...
$ self_reported_confidence_python : num [1:3000] 4.5 6 3.3 3.5 7.5 6 ...
$ final_exam_score : num [1:3000] 10.7 31.9 59.4 58.8 24.8 43.8 40.8 24.7 20.7 45.3 ...
$ passed_exam : num [1:3000] 0 0 0 0 0 0 0 0 0 0 ...
- attr(*, "spec")=
.. cols=
.. student_id = col_double(),
.. age = col_double(),
.. country = col_character(),
.. prior_programming_experience = col_character(),
.. weeks_in_course = col_double(),
.. hours_spent_learning_per_week = col_double(),
.. practice_problems_solved = col_double(),
.. projects_completed = col_double(),
.. tutorial_videos_watched = col_double(),
.. uses_kaggle = col_double(),
.. participates_in_discussion_forums = col_double(),
.. debugging_sessions_per_week = col_double(),
.. self_reported_confidence_python = col_double(),
.. final_exam_score = col_double(),
.. passed_exam = col_double()
.. )
- attr(*, "problems")=externalptr
> #
> -----
> print("--- OUTPUT OF summary() [Before Factor Conversion] ---")
[1] "--- OUTPUT OF summary() [Before Factor Conversion] ---"
> summary(df)
summary(df)
student_id    age      country prior_programming_experience weeks_in_course hours_spent_learning_per_week practice_problems_solved
Min.   : 1.0   Min.   :16.00 Length:3000   Length:3000   Min.   : 1.000   Min.   : 0.000   Min.   :35.00
1st Qu.: 750.8 1st Qu.:26.00 Class :character  Class :character  1st Qu.: 5.000   1st Qu.: 5.000   1st Qu.:55.00
Median :1500.5  Median :36.00 Mode  :character  Mode  :character  Median : 8.000   Median : 7.000   Median :60.00
Mean   :1520.0  Mean   :36.00                                     Mean   : 8.123   Mean   : 7.035   Mean   :59.98
3rd Qu.:2250.2 3rd Qu.:45.00                                     3rd Qu.:12.000   3rd Qu.: 9.000   3rd Qu.:65.00
Max.   :3000.0  Max.   :54.00                                     Max.   :15.000   Max.   :17.100   Max.   :87.00
projects_completed tutorial_videos_watched uses_kaggle participates_in_discussion_forums debugging_sessions_per_week self_reported_confidence_python
Min.   :0.000   Min.   :19.0   Min.   :0.0000   Min.   :0.0000   Min.   : 1.000   Min.   : 1.000
1st Qu.:1.000   1st Qu.:35.0   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.: 3.000   1st Qu.: 3.000
Median :3.000   Median :40.0   Median :0.0000   Median :0.0000   Median : 5.000   Median : 5.000
Mean   :3.000   Mean   :39.9   Mean   :0.4000   Mean   :0.4000   Mean   : 5.186   Mean   : 5.186
3rd Qu.:5.000   3rd Qu.:44.0   3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:12.000   3rd Qu.: 9.000
Max.   :9.000   Max.   :63.0   Max.   :1.0000   Max.   :1.0000   Max.   :17.000   Max.   :10.000
passed_exam
Min.   : 0.00   Min.   :0.0000
1st Qu.: 90.00  1st Qu.:0.0000
Median :43.32   Median :0.1773
Mean   :43.32   Mean   :0.1773
3rd Qu.:55.60   3rd Qu.:0.0000
Max.   :100.00   Max.   :1.0000
-> # -----
-> df$prior_programming_experience <- as.factor(df$prior_programming_experience)
-> df$country <- as.factor(df$country)
-> print("--- OUTPUT OF summary() [After Factor Conversion] ---")
[1] "--- OUTPUT OF summary() [After Factor Conversion] ---"
> summary(df)
summary(df)
student_id    age      country prior_programming_experience weeks_in_course hours_spent_learning_per_week practice_problems_solved
Min.   : 1.0   Min.   :16.00 Brazil   :339 Advanced  :270   Min.   : 1.000   Min.   : 0.000   Min.   :35.00
1st Qu.: 750.8 1st Qu.:26.00 Germany :319 Beginner :1034  1st Qu.: 5.000   1st Qu.: 5.000   1st Qu.:55.00
Median :1500.5  Median :36.00 India   :304 Intermediate:634   Median : 8.000   Median : 7.035   Median :60.00
Mean   :1520.0  Mean   :36.00 United States:292 None     :1062   Mean   : 8.123   Mean   : 7.035   Mean   :59.98
3rd Qu.:2250.2 3rd Qu.:45.00 USA     :398   3rd Qu.:12.000   3rd Qu.: 9.000   3rd Qu.:65.00
Max.   :3000.0  Max.   :54.00 UK     :297   Max.   :15.000   Max.   :17.100   Max.   :87.00
-> (other):1141
projects_completed tutorial_videos_watched uses_kaggle participates_in_discussion_forums debugging_sessions_per_week self_reported_confidence_python
Min.   :0.000   Min.   :19.0   Min.   :0.0000   Min.   :0.0000   Min.   : 1.000   Min.   : 1.000
1st Qu.:1.000   1st Qu.:35.0   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.: 3.000   1st Qu.: 3.000
Median :2.000   Median :40.0   Median :0.0000   Median :0.0000   Median : 5.000   Median : 6.000
Mean   :2.000   Mean   :39.9   Mean   :0.4000   Mean   :0.4000   Mean   : 5.186   Mean   : 5.186
3rd Qu.:3.000   3rd Qu.:44.0   3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:12.000   3rd Qu.: 9.000
Max.   :9.000   Max.   :63.0   Max.   :1.0000   Max.   :1.0000   Max.   :17.000   Max.   :10.000
final_exam_score passed_exam
Min.   : 0.00   Min.   :0.0000
1st Qu.: 30.90  1st Qu.:0.0000
Median :43.10   Median :0.0000
Mean   :43.32   Mean   :0.1773
3rd Qu.:55.60   3rd Qu.:0.0000
Max.   :100.00   Max.   :1.0000
-> # -----
-> 
```

Environment History Console

Data

- df 3000 obs. o...
- Food_ 200 obs. of...
- proce_ 200 obs. of...
- pytho_ 3000 obs. o...
- values

avg_s... 43.318266666...

curr_e... 2025-12-08 11...

diffr... -10

max_h... 17.1

Files Plots Packages Help

2 RestfullPractical.pdf

3 SOAP Practical.pdf

ad (1).docx

AD PRACTICAL I.docx

ad.docx

Advance python 6.docx.pdf

Advance python Practical 5

Advance python Practical 5

Advance python Practical 5

Age-standardized suicide rate

android-studio-2025.2.1.8-win

AP PRAC 4r - Copy.pdf

AP PRAC 4r (1).pdf

27°C Sunny

Search

ENG IN 11:18 08-12-2025

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Console Terminal Background Jobs

```
R - R 4.5.2 : C:/Users/mvlic/Downloads/
$ uses_kaggle : num [1:3000] 24 82 43 40 47 35 35 41 26 42 ...
$ participates_in_discussion_forums : num [1:3000] 0 0 0 1 0 0 1 1 ...
$ debugging_sessions_per_week : num [1:3000] 1 0 0 0 1 0 1 0 1 ...
$ self_reported_confidence_python : num [1:3000] 4.5 6 3.3 3.5 7.5 6 ...
$ final_exam_score : num [1:3000] 10.7 31.9 59.4 58.8 24.8 43.8 40.8 24.7 20.7 45.3 ...
$ passed_exam : num [1:3000] 0 0 0 0 0 0 0 0 0 0 ...
- attr(*, "spec")=
.. cols=
.. student_id = col_double(),
.. age = col_double(),
.. country = col_character(),
.. prior_programming_experience = col_character(),
.. weeks_in_course = col_double(),
.. hours_spent_learning_per_week = col_double(),
.. practice_problems_solved = col_double(),
.. projects_completed = col_double(),
.. tutorial_videos_watched = col_double(),
.. uses_kaggle = col_double(),
.. participates_in_discussion_forums = col_double(),
.. debugging_sessions_per_week = col_double(),
.. self_reported_confidence_python = col_double(),
.. final_exam_score = col_double(),
.. passed_exam = col_double()
.. )
- attr(*, "problems")=externalptr
-> # -----
-> print("--- OUTPUT OF summary() [Before Factor Conversion] ---")
[1] "--- OUTPUT OF summary() [Before Factor Conversion] ---"
-> summary(df)
summary(df)
student_id    age      country prior_programming_experience weeks_in_course hours_spent_learning_per_week practice_problems_solved
Min.   : 1.0   Min.   :16.00 Length:3000   Length:3000   Min.   : 1.000   Min.   : 0.000   Min.   :35.00
1st Qu.: 750.8 1st Qu.:26.00 Class :character  Class :character  1st Qu.: 5.000   1st Qu.: 5.000   1st Qu.:55.00
Median :1500.5  Median :36.00 Mode  :character  Mode  :character  Median : 8.000   Median : 7.000   Median :60.00
Mean   :1520.0  Mean   :36.00                                     Mean   : 8.123   Mean   : 7.035   Mean   :59.98
3rd Qu.:2250.2 3rd Qu.:45.00                                     3rd Qu.:12.000   3rd Qu.: 9.000   3rd Qu.:65.00
Max.   :3000.0  Max.   :54.00                                     Max.   :15.000   Max.   :17.100   Max.   :87.00
projects_completed tutorial_videos_watched uses_kaggle participates_in_discussion_forums debugging_sessions_per_week self_reported_confidence_python
Min.   :0.000   Min.   :19.0   Min.   :0.0000   Min.   :0.0000   Min.   : 1.000   Min.   : 1.000
1st Qu.:1.000   1st Qu.:35.0   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.: 3.000   1st Qu.: 3.000
Median :3.000   Median :40.0   Median :0.0000   Median :0.0000   Median : 5.000   Median : 6.000
Mean   :3.000   Mean   :39.9   Mean   :0.4000   Mean   :0.4000   Mean   : 5.186   Mean   : 5.186
3rd Qu.:5.000   3rd Qu.:44.0   3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:12.000   3rd Qu.: 9.000
Max.   :9.000   Max.   :63.0   Max.   :1.0000   Max.   :1.0000   Max.   :17.000   Max.   :10.000
passed_exam
Min.   : 0.00   Min.   :0.0000
1st Qu.: 90.00  1st Qu.:0.0000
Median :43.32   Median :0.1773
Mean   :43.32   Mean   :0.1773
3rd Qu.:55.60   3rd Qu.:0.0000
Max.   :100.00   Max.   :1.0000
-> # -----
-> df$prior_programming_experience <- as.factor(df$prior_programming_experience)
-> df$country <- as.factor(df$country)
-> print("--- OUTPUT OF summary() [After Factor Conversion] ---")
[1] "--- OUTPUT OF summary() [After Factor Conversion] ---"
-> summary(df)
summary(df)
student_id    age      country prior_programming_experience weeks_in_course hours_spent_learning_per_week practice_problems_solved
Min.   : 1.0   Min.   :16.00 Brazil   :339 Advanced  :270   Min.   : 1.000   Min.   : 0.000   Min.   :35.00
1st Qu.: 750.8 1st Qu.:26.00 Germany :319 Beginner :1034  1st Qu.: 5.000   1st Qu.: 5.000   1st Qu.:55.00
Median :1500.5  Median :36.00 India   :304 Intermediate:634   Median : 8.000   Median : 7.035   Median :60.00
Mean   :1520.0  Mean   :36.00 United States:292 None     :1062   Mean   : 8.123   Mean   : 7.035   Mean   :59.98
3rd Qu.:2250.2 3rd Qu.:45.00 USA     :398   3rd Qu.:12.000   3rd Qu.: 9.000   3rd Qu.:65.00
Max.   :3000.0  Max.   :54.00 UK     :297   Max.   :15.000   Max.   :17.100   Max.   :87.00
-> (other):1141
projects_completed tutorial_videos_watched uses_kaggle participates_in_discussion_forums debugging_sessions_per_week self_reported_confidence_python
Min.   :0.000   Min.   :19.0   Min.   :0.0000   Min.   :0.0000   Min.   : 1.000   Min.   : 1.000
1st Qu.:1.000   1st Qu.:35.0   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.: 3.000   1st Qu.: 3.000
Median :2.000   Median :40.0   Median :0.0000   Median :0.0000   Median : 5.000   Median : 6.000
Mean   :2.000   Mean   :39.9   Mean   :0.4000   Mean   :0.4000   Mean   : 5.186   Mean   : 5.186
3rd Qu.:3.000   3rd Qu.:44.0   3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:12.000   3rd Qu.: 9.000
Max.   :9.000   Max.   :63.0   Max.   :1.0000   Max.   :1.0000   Max.   :17.000   Max.   :10.000
final_exam_score passed_exam
Min.   : 0.00   Min.   :0.0000
1st Qu.: 30.90  1st Qu.:0.0000
Median :43.10   Median :0.0000
Mean   :43.32   Mean   :0.1773
3rd Qu.:55.60   3rd Qu.:0.0000
Max.   :100.00   Max.   :1.0000
-> # -----
-> 
```

Environment History Console

Data

- df 3000 obs. o...
- Food_ 200 obs. of...
- proce_ 200 obs. of...
- pytho_ 3000 obs. o...
- values

avg_s... 43.318266666...

curr_e... 2025-12-08 11...

diffr... -10

max_h... 17.1

Files Plots Packages Help

2 RestfullPractical.pdf

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ad (1).docx

AD PRACTICAL I.docx

ad.docx

Advance python 6.docx.pdf

Advance python Practical 5

Advance python Practical 5

Advance python Practical 5

Age-standardized suicide rate

android-studio-2025.2.1.8-win

AP PRAC 4r - Copy.pdf

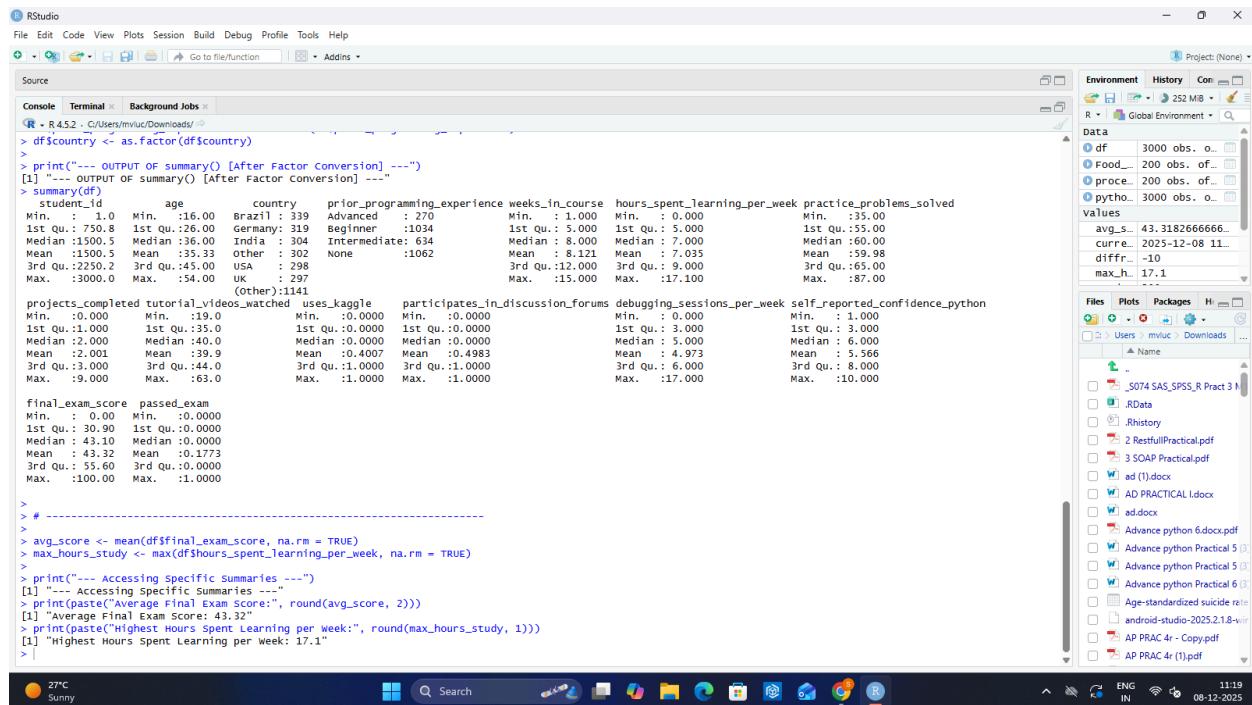
AP PRAC 4r (1).pdf

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ENG IN 11:18 08-12-2025

SHETH L.U.J AND SIR M.V. COLLEGE
SUBJECT NAME: DATA ANALYSIS WITH SAS/SPSS/R



The screenshot shows an RStudio interface with the following details:

- Console:** Displays R code and its output. The code includes factor conversion, summary statistics for various variables like student_id, age, country, and programming experience, and specific summaries for final exam scores.
- Environment:** Shows global variables: df (3000 obs.), Food_ (200 obs.), proce_ (200 obs.), and pytho_ (3000 obs.). It also lists values for avg_s_ (43.318266666...), curr_e_ (2025-12-08 11...), diff_r_ (-10), and max_h_ (17.1).
- Files:** Shows a project directory structure including RData, RHistory, and several PDF and DOCX files related to practical work.
- Plots:** No plots are visible in the screenshot.
- Packages:** No packages are visible in the screenshot.
- Help:** No help documentation is visible in the screenshot.