

PS – LAB 09

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The screenshot displays the RStudio environment with a script editor, console, and environment pane.

Script Editor:

```
1 setwd("~/Users/dini/Downloads/Y2S1/PS/Lab")
2 # Set seed for reproducibility
3 set.seed(123)
4 # Part (i) Generate random sample
5 sample_size <- 25
6 mu <- 45
7 sigma <- 2
8 baking_times <- rnorm(sample_size, mean = mu, sd = sigma)
9 print(baking_times)
10 # Part (ii) Hypothesis test
11 # H0: mean = 46
12 # H1: mean < 46
13
14 t_test_result <- t.test(baking_times, mu = 46, alternative = "less")
15 print(t_test_result)
16
```

Console:

```
> setwd("~/Users/dini/Downloads/Y2S1/PS/Lab")
> # Set seed for reproducibility
> set.seed(123)
> # Part (i) Generate random sample
> sample_size <- 25
> mu <- 45
> sigma <- 2
> baking_times <- rnorm(sample_size, mean = mu, sd = sigma)
> print(baking_times)
[1] 43.87905 44.53965 48.11742 45.14102 45.25858 48.43013 45.92183 42.46988 43.62629 44.10868 47.44816 45.71963
[13] 45.80154 45.22137 43.88832 48.57383 45.99570 41.06677 46.40271 44.05442 42.86435 44.56405 42.94799 43.54222
[25] 43.74992
> t_test_result <- t.test(baking_times, mu = 46, alternative = "less")
> print(t_test_result)
```

Environment Pane:

Variable	Value
baking_times	num [1:25] 43.9 44.5 48.1 45.1 45.3 ...
iq_95th	124.672804404272
lambda	0.333333333333333
lower	10
max_time	40
mean_iq	100
min_time	0
mu	45
prob	0.486582880967408
prob_above_130	0.0227501319481792

Console Output:

```
One Sample t-test

data:  baking_times
t = -2.8167, df = 24, p-value = 0.004776
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.58124
sample estimates:
mean of x
44.93334

> |
```

Environment Pane (Data):

Variable	Value
baking_times	num [1:25] 43.9 44.5 48.1 45.1 45.3 ...
iq_95th	124.672804404272
lambda	0.333333333333333
lower	10
max_time	40
mean_iq	100
min_time	0
mu	45
prob	0.486582880967408
prob_above_130	0.0227501319481792

Environment Pane (Files):

- R Resources
 - Learning R Online
 - CRAN Task Views
 - R on StackOverflow
 - Getting Help with R
- Manuals
 - An Introduction to R
 - Writing R Extensions
 - R Data Import/Export
- Reference
 - Packages
- Miscellaneous Material
 - About R
 - License
 - NEWS
- Authors
 - FAQ
 - User Manuals
- Resources
 - Posit Support
 - Posit Community Forum for the RStudio IDE
 - Posit Cheat Sheets
 - RStudio Packages
 - Posit Products
- The R Language Definition
 - R Installation and Administration
 - R Internals
- Search Engine & Keywords