

DAT 230: Data Visualization

Case Study 2: Story Storytelling with Basic Visualization

Exercise 1: R Crash Course (50 Points)

Name: _____ Date: _____

Instructions:

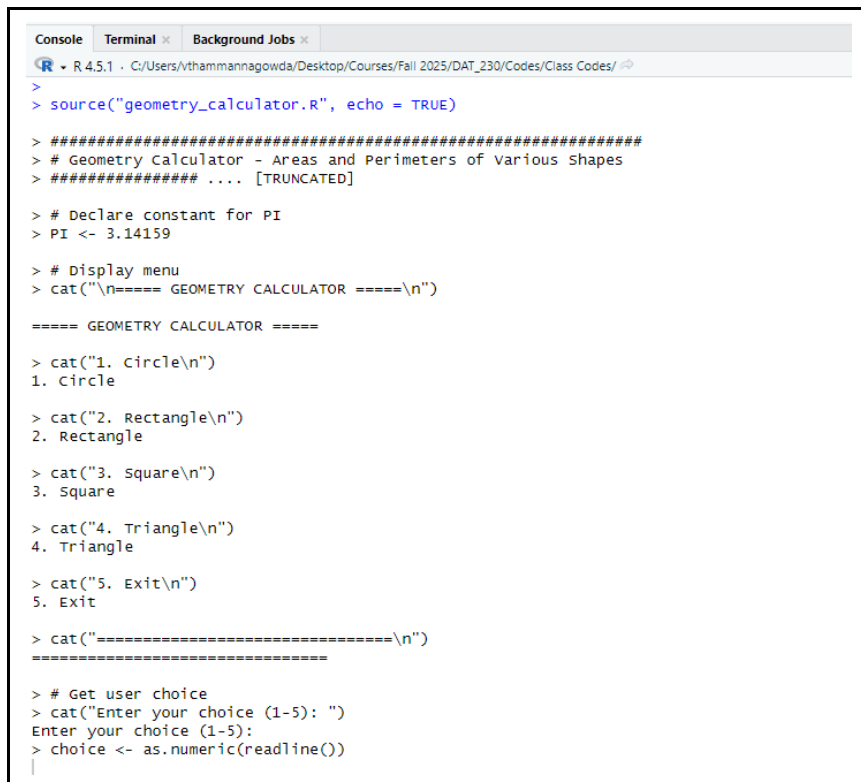
In this exercise, you will open the starter code **geometry_calculator.R** on R Studio and follow the steps below to build a robust system. The starter code runs only once. Use the knowledge and code snippets from the class demo to run the system efficiently. **Set the working directory.**

STEP 1: (10 Points)

- Create a new file, **exercise1_test.R**, in the same folder that contains the file **geometry_calculator.R**.
- Run the following code:**

```
source("geometry_calculator.R", echo = TRUE)
```

- You will see



```
Console Terminal Background Jobs
R 4.5.1 - C:/Users/vthammanagowda/Desktop/Courses/Fall 2025/DAT_230/Codes/Class Codes/
>
> source("geometry_calculator.R", echo = TRUE)
> #####
> # Geometry Calculator - Areas and Perimeters of Various Shapes
> ##### .... [TRUNCATED]
> # Declare constant for PI
> PI <- 3.14159
> # Display menu
> cat("\n===== GEOMETRY CALCULATOR =====\n")
===== GEOMETRY CALCULATOR =====
> cat("1. Circle\n")
1. Circle
> cat("2. Rectangle\n")
2. Rectangle
> cat("3. Square\n")
3. Square
> cat("4. Triangle\n")
4. Triangle
> cat("5. Exit\n")
5. Exit
> cat("===== \n")
=====
> # Get user choice
> cat("Enter your choice (1-5): ")
Enter your choice (1-5):
> choice <- as.numeric(readline())
|
```

- d. Enter **5** as user input and record the output below

Output:

- e. Run the code again and enter **1** as user input. Now, this triggers a prompt to enter radius of the circle, enter 22.2 as the radius and record the output

Output:

STEP 2: (10 Points)

- a. Lets put the code in repeat mode and allow the user to decide when to stop.
b. Use the knowledge and code snippets from the class demo to run the system efficiently.
c. Record the output for 3 unique inputs:

Output:

STEP 3: (10 Points)

- a. Use any LLM to get the formula to find the area and perimeter of the following geometric shapes: Rectangle, Square, and Triangle.

| Shape | Area | Perimeter |
|-----------|------|-----------|
| Rectangle | | |
| Square | | |
| Triangle | | |

STEP 4: (20 Points)

- a. Use the formula from STEP 3 to complete the starter code.

Geometry Calculator Test Record

Circle

| Test # | Radius | Area | Circumference |
|--------|--------|------|---------------|
| 1 | 12.45 | | |
| 2 | | | |
| 3 | | | |

Rectangle

| Test # | Width | Length | Area | Perimeter |
|--------|-------|--------|------|-----------|
| 1 | 23 | 7.5 | | |
| 2 | | | | |
| 3 | | | | |

Square

| Test # | Side | Area | Perimeter |
|--------|------|------|-----------|
| 1 | 5.67 | | |
| 2 | | | |
| 3 | | | |

Triangle

| Test # | Base | Height | Side 1 | Side 2 | Side 3 | Area | Perimeter |
|--------|------|--------|--------|--------|--------|------|-----------|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |

Additional Comments: