

Study Notes: Scripts aur Functions in R

Data Analysis with R (Roman Urdu)

Scripts in R

Definition

R script aik text file hoti hai jiska extension `.R` hota hai. Is file me multiple R commands likhi hoti hain jo line by line execute hoti hain. Scripts ka use data analysis aur calculations ke liye hota hai.

Importance of R Scripts

- Long programs ko organize karna asaan hota hai
- Code dobara use kiya ja sakta hai
- Errors aur debugging asaan hoti hai
- Research reproducible hoti hai

Example of an R Script

```
x <- 10
y <- 5
sum <- x + y
print(sum)
```

Explanation: Is script me do variables banaye gaye hain aur unka sum calculate karke screen par print kiya gaya hai.

Running an R Script

```
source("filename.R")
```

Functions in R

Definition

Function R me aik reusable block of code hota hai jo kisi specific task ko perform karta hai. Function input leta hai aur output return karta hai.

General Syntax

```
function_name <- function(parameters) {  
  statements  
  return(result)  
}
```

Types of Functions

- Built-in functions jaise mean(), sum(), sqrt()
- User-defined functions jo hum khud banate hain

Examples of Functions in R

Example 1: Adding Two Numbers

```
add_numbers <- function(a, b) {  
  a + b  
}  
add_numbers(5, 3)
```

Explanation: Yeh function do numbers ko add karta hai aur result return karta hai.

Example 2: Square of a Number

```
square_number <- function(x) {  
  x * x  
}  
square_number(4)
```

Explanation: Is function me aik number ka square calculate hota hai.

Example 3: Even or Odd Check

```
check_even_odd <- function(num) {  
  if (num %% 2 == 0) {  
    "Even Number"  
  } else {  
    "Odd Number"  
  }  
}  
check_even_odd(7)
```

Explanation: Modulus operator remainder check karta hai. Zero remainder ka matlab even number hota hai.

Example 4: Mean of Numbers

```
calculate_mean <- function(numbers) {  
  mean(numbers)  
}  
calculate_mean(c(10, 20, 30, 40))
```

Explanation: Is function me built-in mean() function use hota hai jo numbers ka average nikalta hai.

Example 5: Function with Default Argument

```
greet_user <- function(name = "Student") {  
  paste("Hello", name)  
}  
greet_user()  
greet_user("Fahad")
```

Explanation: Agar user name provide na kare to default value use hoti hai. paste() function text ko combine karta hai.

Key Points Summary

- R scripts multiple commands ko aik file me store karti hain
- Functions code ko reusable banate hain
- function() keyword function define karne ke liye use hota hai
- return optional hota hai
- Functions program ko structured banate hain