hw_03.Rmd

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05 October, 2023

Q1

Suppose we have a dataset A (see code below) where each column represents multiple measures of nitrogen concentration in a particular lake. We want to get the average value for each lake. Do this in two ways: a for loop and a vectorized function colMeans().

set.seed(12) # to be reproducible A = matrix(data = runif(n = 1:500), nrow = 50, ncol = 10) colnames(A) = paste("lake", 1:10, sep = "_")

Solution

```
set.seed(12) # to be reproducible
A = matrix(data = runif(n = 1:500), nrow = 50, ncol = 10)
colnames(A) = paste("lake", 1:10, sep = "_")
```

Using for loop

```
num_lakes <- ncol(A)
average_values1 <- numeric(num_lakes)

for (i in 1:num_lakes) {
  average_values1[i] <- mean(A[, i])
}

print(average_values1)
```

```
##  [1] 0.4601492 0.4992815 0.5987037 0.4580486 0.4719578 0.4965216 0.5110536
##  [8] 0.4577936 0.5193423 0.4856413
```

Using colMeans()

```
average_values2 <- colMeans(A)

print(average_values2)
```

```
##    lake_1    lake_2    lake_3    lake_4    lake_5    lake_6    lake_7    lake_8
## 0.4601492 0.4992815 0.5987037 0.4580486 0.4719578 0.4965216 0.5110536 0.4577936
##    lake_9   lake_10
## 0.5193423 0.4856413
```