hom\_3

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#Q1  
  
set.seed(12)  
A = matrix(data = runif(n = 1:500), nrow = 50, ncol = 10)  
colnames(A) = paste("lake", 1:10, sep = "\_")  
  
#get the mean value for each lack  
#for loop method  
lake\_means <- vector(mode = "numeric", length = ncol(A))  
  
for (i in 1:ncol(A)) {  
 lake\_means[i] <- mean(A[,i])  
}  
  
names(lake\_means) <- colnames(A)  
lake\_means

## 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

#vectorized function colMeans() method   
  
colMeans(A)

## 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

#------------------------------------------------------------  
#Q2  
  
x = array(1:27, dim = c(3, 3, 3))  
# apply(X = x, MARGIN = c(1, 2),  
# FUN = paste, collapse = ", ")  
  
for (i in x[,,1]){  
 for (j in x[,,2]){  
 for (k in x[,,3]){  
 print(paste(i,j,k, sep = ","))  
 }  
 }  
}

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#------------------------------------------------------------  
#Q3  
  
Fibonacci <- numeric(30)  
Fibonacci[1] <- Fibonacci[2] <- 1  
for (i in 3:30) Fibonacci[i] <- Fibonacci[i - 2] + Fibonacci[i - 1]  
print("First 30 Fibonacci numbers:")

## [1] "First 30 Fibonacci numbers:"

print(Fibonacci)

## [1] 1 1 2 3 5 8 13 21 34 55  
## [11] 89 144 233 377 610 987 1597 2584 4181 6765  
## [21] 10946 17711 28657 46368 75025 121393 196418 317811 514229 832040

#--------------------------------------------------------------  
#Q4 & Q5  
  
top105 = readLines("http://www.textfiles.com/music/ktop100.txt")  
top105 = top105[-c(64, 65)] # missing No. 54 and 55  
  
top105 <- grep("^\\d\\.?\\d?", top105, value = TRUE)  
  
top105 <- sub("\\..\*", " ", top105)  
  
top\_105\_num <- as.numeric(top105)  
  
n\_occur <- data.frame(table(top\_105\_num))  
n\_occur

## top\_105\_num Freq  
## 1 1 1  
## 2 2 1  
## 3 3 1  
## 4 4 1  
## 5 5 1  
## 6 6 1  
## 7 7 1  
## 8 8 1  
## 9 9 1  
## 10 10 1  
## 11 11 1  
## 12 12 1  
## 13 13 1  
## 14 14 1  
## 15 15 1  
## 16 16 1  
## 17 17 1  
## 18 18 1  
## 19 19 1  
## 20 20 1  
## 21 21 1  
## 22 22 1  
## 23 23 1  
## 24 24 1  
## 25 25 1  
## 26 26 1  
## 27 27 1  
## 28 28 1  
## 29 29 1  
## 30 30 1  
## 31 31 1  
## 32 32 1  
## 33 33 1  
## 34 34 1  
## 35 35 1  
## 36 36 1  
## 37 37 1  
## 38 38 1  
## 39 39 1  
## 40 40 1  
## 41 41 1  
## 42 42 1  
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## 58 60 1  
## 59 61 1  
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## 62 64 1  
## 63 65 1  
## 64 66 1  
## 65 67 1  
## 66 68 1  
## 67 69 1  
## 68 70 1  
## 69 71 1  
## 70 72 1  
## 71 73 1  
## 72 74 1  
## 73 75 1  
## 74 76 1  
## 75 77 1  
## 76 78 1  
## 77 79 1  
## 78 80 1  
## 79 81 1  
## 80 82 1  
## 81 83 2  
## 82 84 1  
## 83 85 1  
## 84 86 1  
## 85 87 1  
## 86 88 1  
## 87 89 1  
## 88 90 1  
## 89 91 2  
## 90 92 1  
## 91 93 1  
## 92 94 1  
## 93 95 1  
## 94 96 1  
## 95 97 2  
## 96 98 1  
## 97 99 1  
## 98 100 1  
## 99 101 1  
## 100 102 1  
## 101 103 1  
## 102 104 1  
## 103 105 2