Comprehension Check: Working with Matrices

Q1

1/1 point (graded)

Which line of code correctly creates a 100 by 10 matrix of randomly generated normal numbers and assigns it to `x`?

- `x <- matrix(rnorm(1000), 100, 100)`
- ✔ `x <- matrix(rnorm(100*10), 100, 10)`
- `x <- matrix(rnorm(100*10), 10, 10)`
- `x <- matrix(rnorm(100*10), 10, 100)`

✔

Submit

You have used 1 of 2 attempts

Answers are displayed within the problem

Q2

2/2 points (graded)

Write the line of code that would give you the specified information about the matrix `x` that you generated in q1. Do not include any spaces in your line of code.

Dimension of `x`.

dim(x) ✔ **Answer:** dim(x)

Number of rows of `x`.

nrow(x)

✔ **Answer:** nrow(x) **or** dim(x)[1]

Number of columns of `x`.

ncol(x)

✔ **Answer:** ncol(x) **or** dim(x)[2]

Submit

You have used 1 of 3 attempts

ℹ Answers are displayed within the problem

Q3

1/1 point (graded)

Which of the following lines of code would add the scalar 1 to row 1, the scalar 2 to row 2, and so on, for the matrix `x`?

Select ALL that apply.

- [x] `x <- x + seq(nrow(x))`
- [ ] `x <- 1:nrow(x)`
- [ ] `x <- sweep(x, 2, 1:nrow(x),"+")`
- [x] `x <- sweep(x, 1, 1:nrow(x),"+")`

✔

Submit

You have used 1 of 2 attempts

ℹ Answers are displayed within the problem

Q4

1/1 point (graded)

Which of the following lines of code would add the scalar 1 to column 1, the scalar 2 to column 2, and so on, for the matrix `x`?

Select ALL that apply.

- [ ] `x <- 1:ncol(x)`
- [ ] `x <- 1:col(x)`
- [x] `x <- sweep(x, 2, 1:ncol(x), FUN = "+")`
- [ ] `x <- -x`

✔

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Answers are displayed within the problem

Q5

2/2 points (graded)

Which code correctly computes the average of each row of `x`?

- ( ) `mean(x)`
- ( ) `rowMedians(x)`
- ( ) `sapply(x,mean)`
- ( ) `rowSums(x)`
- (•) `rowMeans(x)`

✔

Which code correctly computes the average of each column of `x`?

- ( ) `mean(x)`
- ( ) `sapply(x,mean)`
- (•) `colMeans(x)`

- `colMedians(x)`
- `colSums(x)`

✔

Submit You have used 1 of 2 attempts

Answers are displayed within the problem

Q6

1/1 point (graded)

For each observation in the mnist training data, compute the proportion of pixels that are in the **grey area**, defined as values between 50 and 205. (To visualize this, you can make a boxplot by digit class.)

What proportion of the 60000*784 pixels in the mnist training data are in the grey area overall, defined as values between 50 and 205?

0.06183703 ✔ **Answer:** 0.0618

0.06183703

Explanation

The matrix and plot can be calculated using the following code:

```
mnist <- read_mnist()
y <- rowMeans(mnist$train$images>50 & mnist$train$images<205)
qplot(as.factor(mnist$train$labels), y, geom = "boxplot")
```

The proportion of pixels can be calculated using `mean(y)`.

Submit You have used 1 of 10 attempts

Answers are displayed within the problem

Ask your questions or make your comments about Working with Matrices here! **Remember, one of the best ways to reinforce your own learning is by explaining something to someone else, so we encourage you to answer each other's questions (without giving away the answers, of course).**

Some reminders:

- Search the discussion board before posting to see if someone else has asked the same thing before asking a new question
- Please be specific in the title and body of your post regarding which question you're asking about to facilitate answering your question.
- Posting snippets of code is okay, but posting full code solutions is not.
- If you do post snippets of code, please format it as code for readability. If you're not sure how to do this, there are instructions in a pinned post in the "general" discussion forum.

Discussion: Working with Matrices

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