

Learning R - Session 1

Quiz 4

Viraj

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Quiz Questions and Answers

Question 1

What is produced at the end of this snippet of R code?

```
set.seed(1)
rpois(5, 2)
```

- A vector with the numbers 1, 4, 1, 1, 5
- **A vector with the numbers 1, 1, 2, 4, 1**
- A vector with the numbers 3.3, 2.5, 0.5, 1.1, 1.7
- It is impossible to tell because the result is random

```
set.seed(1)
rpois(5, 2)

## [1] 1 1 2 4 1
```

Question 2

What R function can be used to generate standard Normal random variables?

- dnorm
- qnorm
- pnorm
- **rnorm**

```
rnorm(10)

## [1] 1.272429321 0.414641434 -1.539950042 -0.928567035 -0.294720447
## [6] -0.005767173 2.404653389 0.763593461 -0.799009249 -1.147657009
```

Question 3

When simulating data, why is using the `set.seed()` function important?

- It ensures that the random numbers generated are within specified boundaries.
- It ensures that the sequence of random numbers is truly random.
- It can be used to generate non-uniform random numbers.
- **It can be used to specify which random number generating algorithm R should use, ensuring consistency and reproducibility.**

Question 4

Which function can be used to evaluate the inverse cumulative distribution function for the Poisson distribution?

- `dpois`
- **`qpois`**
- `ppois`
- `rpois`

Probability distribution functions starting with the `q` are used to evaluate the quantile function.

Question 5

What does the following code do?

```
set.seed(10)
x <- rep(0:1, each = 5)
e <- rnorm(10, 0, 20)
y <- 0.5 + 2 * x + e
```

- Generate random exponentially distributed data
- Generate data from a Poisson generalized linear model
- **Generate data from a Normal linear model**
- Generate uniformly distributed random data

Question 6

What R function can be used to generate Binomial random variables?

- `dbinom`
- `pbinom`
- `qbinom`
- **`rbinom`**

Question 7

What aspect of the R runtime does the profiler keep track of when an R expression is evaluated?

- the package search list
- the global environment
- the function call stack
- the working directory

Need to read about this

Question 8

Consider the following R code

```
library(datasets)
Rprof()
fit <- lm(y ~ x1 + x2)
Rprof(NULL)
```

(Assume that y, x1, and x2 are present in the workspace.) Without running the code, what percentage of the run time is spent in the `lm` function, based on the `by.total` method of normalization shown in `summaryRprof()`?

- 50%
- 23%
- 100%
- It is not possible to tell

Need to read about this

Question 9

When using `'system.time()'`, what is the user time?

- It is the time spent by the CPU waiting for other tasks to finish
- It is a measure of network latency
- It is the "wall-clock" time it takes to evaluate an expression
- **It is the time spent by the CPU evaluating an expression**

Question 10

If a computer has more than one available processor and R is able to take advantage of that, then which of the following is true when using 'system.time()'?

- elapsed time is 0
- user time is always smaller than elapsed time
- elapsed time may be smaller than user time
- user time is 0

Need to read about this