## Feedback — Week 4 Quiz \*\*Please Note: No Grace Period\*\*[Help Center](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201523125-Quizzes)

Thank you. Your submission for this quiz was received.

You submitted this quiz on **Sat 3 Oct 2015 2:30 PM PDT**. You got a score of **10.00** out of **10.00**.

Top of Form

### Question 1

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

set.seed(1)

rpois(5, 2)

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 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 |  |  |  |
| A vector with the numbers 1, 4, 1, 1, 5 |  |  |  |
| A vector with the numbers 1, 1, 2, 4, 1 | Correct | 1.00 | Because the `set.seed()' function is used, `rpois()' will always output the same vector in this code. |
| Total |  | 1.00 / 1.00 |  |

### Question 2

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| pnorm |  |  |  |
| qnorm |  |  |  |
| rnorm | Correct | 1.00 | Functions beginning with the `r' prefix are used to simulate random variates. |
| dnorm |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question Explanation**Standard probability distributions in R have a set of four functions that can be used to simulate variates, evaluate the density, evaluate the cumulative density, and evaluate the quantile function.

### Question 3

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| It ensures that the random numbers generated are within specified boundaries. |  |  |  |
| It ensures that the sequence of random numbers is truly random. |  |  |  |
| It ensures that the sequence of random numbers starts in a specific place and is therefore reproducible. | Correct | 1.00 |  |
| It can be used to generate non-uniform random numbers. |  |  |  |
| Total |  | 1.00 / 1.00 |  |

### Question 4

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| qpois | Correct | 1.00 | Probability distribution functions beginning with the `q' prefix are used to evaluate the quantile (inverse cumulative distribution) function. |
| dpois |  |  |  |
| ppois |  |  |  |
| rpois |  |  |  |
| Total |  | 1.00 / 1.00 |  |

### 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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| Generate data from a Normal linear model | Correct | 1.00 |  |
| Generate random exponentially distributed data |  |  |  |
| Generate uniformly distributed random data |  |  |  |
| Generate data from a Poisson generalized linear model |  |  |  |
| Total |  | 1.00 / 1.00 |  |

### Question 6

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| qbinom |  |  |  |
| dbinom |  |  |  |
| pbinom |  |  |  |
| rbinom | Correct | 1.00 |  |
| Total |  | 1.00 / 1.00 |  |

### Question 7

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| the function call stack | Correct | 1.00 |  |
| the global environment |  |  |  |
| the package search list |  |  |  |
| the working directory |  |  |  |
| Total |  | 1.00 / 1.00 |  |

### 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()'?

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 50% |  |  |  |
| 23% |  |  |  |
| It is not possible to tell |  |  |  |
| 100% | Correct | 1.00 | When using `by.total' normalization, the top-level function (in this case, `lm()') always takes 100% of the time. |
| Total |  | 1.00 / 1.00 |  |

### Question 9

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| It is the time spent by the CPU evaluating an expression | Correct | 1.00 |  |
| It is the "wall-clock" time it takes to evaluate an expression |  |  |  |
| It is the time spent by the CPU waiting for other tasks to finish |  |  |  |
| It is a measure of network latency |  |  |  |
| Total |  | 1.00 / 1.00 |  |

### 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()'?

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| elapsed time may be smaller than user time | Correct | 1.00 |  |
| elapsed time is 0 |  |  |  |
| user time is 0 |  |  |  |
| user time is always smaller than elapsed time |  |  |  |
| Total |  |  |  |

Bottom of Form

**What exactly is the user time in terms of R?**

[Subscribe for email updates.](javascript:void(0);)

* Sort replies by:
* [Oldest first](https://class.coursera.org/rprog-032/forum/thread?thread_id=135&sort=oldest)
* [Newest first](https://class.coursera.org/rprog-032/forum/thread?thread_id=135&sort=newest)
* [Most popular](https://class.coursera.org/rprog-032/forum/thread?thread_id=135&sort=popular)

**Tags**

* [**quizz**](https://class.coursera.org/rprog-032/forum/tag?id=95)[**Delete Tag×**](javascript:void(0))
* [**cpu**](https://class.coursera.org/rprog-032/forum/tag?id=96)[**Delete Tag×**](javascript:void(0))
* [**systemtime**](https://class.coursera.org/rprog-032/forum/tag?id=97)[**Delete Tag×**](javascript:void(0))

[+ Add Tag](javascript:void(0))

[[https://coursera-profile-photos.s3.amazonaws.com/58/f610a050d711e58bac25333da34b80/Avatar.jpg](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)Elmar Alexander Hinz](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)[Signature Track](https://www.coursera.org/signature/course/rprog/975106?utm_source=spark&utm_medium=forum)· [22 days ago](https://class.coursera.org/rprog-032/forum/thread?thread_id=135" \l "post-585)

According to [this answer on stackoverflow.com](http://stackoverflow.com/questions/556405/what-do-real-user-and-sys-mean-in-the-output-of-time1) the actual CPU time is the **sum** of **user time** plus **system time**.

User+Sys will tell you how much actual CPU time your process used.

With:

* *user time*: CPU time in user mode
* *sys time*: CPU time in kernel mode

Meaning *user time* does not include *sys time* and is only **a part** of CPU time.

This conflicts with possible answers in quizz 4.9.

Is there a difference between the definitions of *user time* in general and *user time* within *R*?

0votes received.

[· flag](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201532585-Code-of-Conduct)

[[https://coursera-profile-photos.s3.amazonaws.com/12/436d201f5811e5be83f962c2bd336a/1910456_1028587326801_2152991_n.jpg](https://class.coursera.org/rprog-032/forum/profile?user_id=13840306)Anja Rebber](https://class.coursera.org/rprog-032/forum/profile?user_id=13840306)[Signature Track](https://www.coursera.org/signature/course/rprog/975106?utm_source=spark&utm_medium=forum)· [21 days ago](https://class.coursera.org/rprog-032/forum/thread?thread_id=135" \l "post-601)

Hi Elmar,  
  
I was wondering the same thing during the lecture (haven't tried the quiz yet). This is the answer I found on stackoverflow.com  
<http://stackoverflow.com/questions/5688949/what-are-user-and-system-times-measuring>   
  
Maybe this helps?  
  
Kind regards, Anja

**1**votes received.

[· flag](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201532585-Code-of-Conduct)

[+ Comment](javascript:void(0);)

[[https://coursera-profile-photos.s3.amazonaws.com/58/f610a050d711e58bac25333da34b80/Avatar.jpg](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)Elmar Alexander Hinz](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)[Signature Track](https://www.coursera.org/signature/course/rprog/975106?utm_source=spark&utm_medium=forum)· [21 days ago](https://class.coursera.org/rprog-032/forum/thread?thread_id=135" \l "post-621)

Hello Anja,

indeed I did read the documentation of ?system.time and ?proc.time before writing this posting. All this sources underline the issue with possible answers in quizz 4.9.

0votes received.

[· flag](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201532585-Code-of-Conduct)

[+ Comment](javascript:void(0);)

[[https://coursera-profile-photos.s3.amazonaws.com/58/f610a050d711e58bac25333da34b80/Avatar.jpg](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)Elmar Alexander Hinz](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)[Signature Track](https://www.coursera.org/signature/course/rprog/975106?utm_source=spark&utm_medium=forum)· [17 days ago](https://class.coursera.org/rprog-032/forum/thread?thread_id=135" \l "post-1147)

Having passed the quizz meanwhile. Still thinking all possible answers in 4.9 are technically wrong.

To get the point guess what the instructors want to hear as answer.

0votes received.

[· flag](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201532585-Code-of-Conduct)

[+ Comment](javascript:void(0);)

[Ke-Wei Ma](https://class.coursera.org/rprog-032/forum/profile?user_id=2561304)[Signature Track](https://www.coursera.org/signature/course/rprog/975106?utm_source=spark&utm_medium=forum)· [2 days ago](https://class.coursera.org/rprog-032/forum/thread?thread_id=135" \l "post-3046)

All applications, specifically those based on Unix, use system calls ("syscalls") to the operating system to get timing information. Running programs themselves cannot time themselves.  The R explanation for times is dependent on the underlying OS implementation.  Generally Unix (OS X and Linux) might behave differently than Windows: POSIX vs non-POSIX .  According to the Linux man pages for the "times" system call, you will see that the explanation basically matches the responses from Stack Overflow.  
  
<http://man7.org/linux/man-pages/man2/times.2.html>

**times**() stores the current process times in the *struct tms* that *buf*

points to. The *struct tms* is as defined in *<sys/times.h>*:

struct tms {

clock\_t tms\_utime; /\* user time \*/

clock\_t tms\_stime; /\* system time \*/

clock\_t tms\_cutime; /\* user time of children \*/

clock\_t tms\_cstime; /\* system time of children \*/

};

The *tms\_utime* field contains the CPU time spent executing

instructions of the calling process. The *tms\_stime* field contains

the CPU time spent in the system while executing tasks on behalf of

the calling process. The *tms\_cutime* field contains the sum of the

*tms\_utime* and *tms\_cutime* values for all waited-for terminated

children. The *tms\_cstime* field contains the sum of the *tms\_stime* and

*tms\_cstime* values for all waited-for terminated children.

0votes received.

[· flag](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201532585-Code-of-Conduct)

[[https://coursera-profile-photos.s3.amazonaws.com/58/f610a050d711e58bac25333da34b80/Avatar.jpg](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)Elmar Alexander Hinz](https://class.coursera.org/rprog-032/forum/profile?user_id=10113244)[Signature Track](https://www.coursera.org/signature/course/rprog/975106?utm_source=spark&utm_medium=forum)· [a day ago](https://class.coursera.org/rprog-032/forum/thread?thread_id=135" \l "comment-1664)

Thank you Ke-Wei Ma for digging deeper than stackoverflow.com. However, the man page seems to confirm stackoverflow.com, that user time and system time are counted separately even on the level of child processes.

The man page is less clear if the user time contains system time or not, but it is clear that system time does not include user time.

So I keep thinking the "right" answer is be technically wrong. A right answer could be: **"System.time is only a part of the time spent by the CPU evaluating an expression, namely the time the CPU spent in kernel mode."**

0votes received.

[· flag](https://accounts.coursera.org/i/zendesk/courserahelp?return_to=https://learner.coursera.help/hc/articles/201532585-Code-of-Conduct)