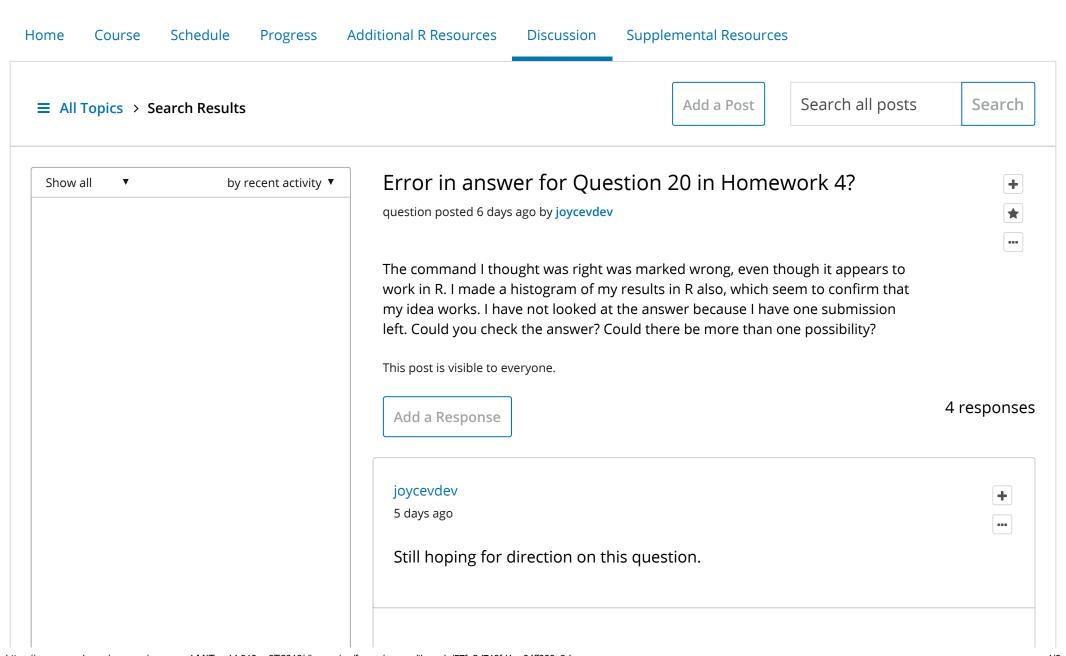
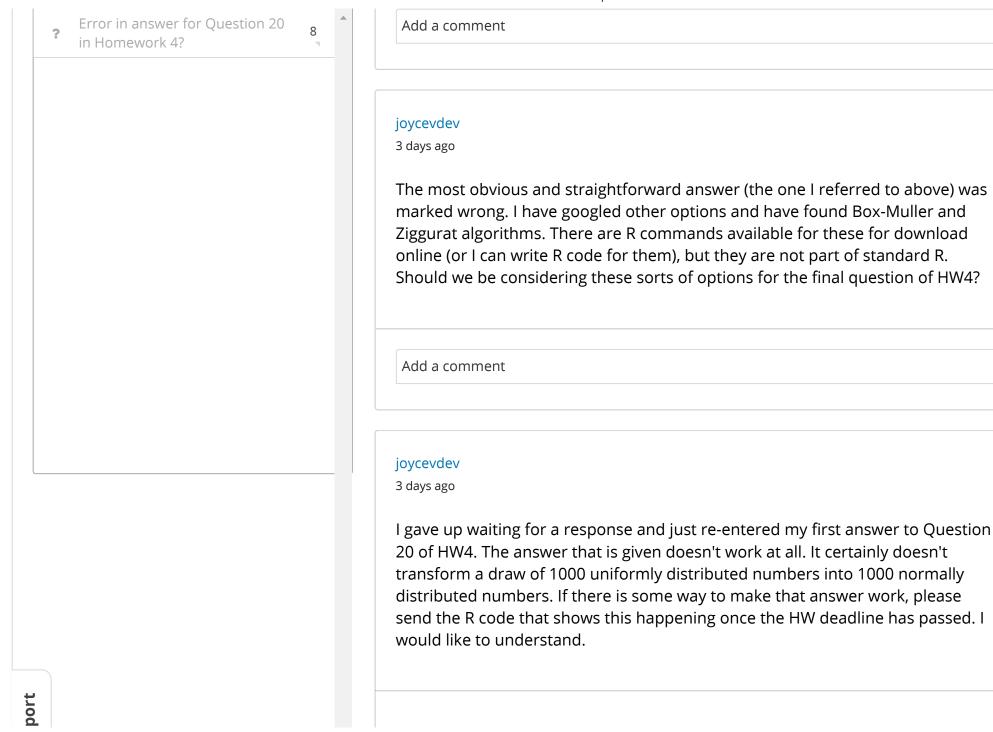


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elp sandipan\_dey 🕶



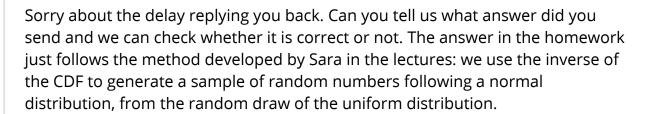


Sup

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## Roman-Andres-Zarate Staff

3 days ago



My first answer was log because of the code below:

size=1000; u = runif(size) v = runif(size) x=rep(0,size) y=rep(0,size) for (i in 1:size){ + x[i] = sqrt(-2\*log(u[i]))\*cos(2\*pi\*v[i]) + y[i] = sqrt(-2\*log(u[i]))\*sin(2\*pi\*v[i]) + y[i] hist(x) hist(y)

Then I found a reference to a Ziggurat implementation, rziggurat, but I decided that was probably too complicated. After that I guessed maybe your question meant, how do you transform *the code* to change the draw of random numbers into a draw of uniform random numbers rather than the numbers themselves. So then I went with rnorm, which is the simplest change to the code. I'm not at all clear how qnorm can work to do this job. The help in R just says:

For qnorm, the code is a C translation of Wichura, M. J. (1988) Algorithm AS 241: The percentage points of the normal distribution. Applied Statistics, 37, 477–484. which provides precise results up to about 16 digits.

and I could not find this article online. Can you tell me more about qnorm so I can better understand the answer? Or perhaps point me to a reference that might describe its use more clearly?

posted 2 days ago by joycevdev

Hello, qnorm is the function in R that gives you the inverse of the CDF. Remember what Sara did in the lecture: for any random variable X, regardless of its distribution, we have that  $F_X(x) \sim U[0,1]$ . Thus, if we have a random sample that comes from the standard uniform distribution, we can get a random sample of the variable X by applying the inverse of the CDF. In R, qnorm() is the quantile function of the normal distribution. This means that it is the inverse of the CDF. Then, we can create a random sample that follows the normal distribution by applying this function to the random sample of the uniform distribution we have generated before. Let me know if this does make sense.

posted 2 days ago by Roman-Andres-Zarate Staff

•••

Sup

Hi Roman, yes the method you describe makes sense. I didn't see the relationship between that method and the function qnorm - the help for that function is so useless! But now I do see how it can be used to solve the problem, in addition to the other possible ways of creating a set of numbers drawn from a standardized normal distribution. posted 2 days ago by joycevdev Add a comment Showing all responses

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