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question   **2** views

Daily Challenge 24.5

(**Due: Sunday 3/17 at 12:00 noon Eastern**)

Last time we met the central limit theorem, which roughly says: if you add together enough random variables, the distribution for their sum will look like a Gaussian.

Let's do a quick-and-dirty check of this in Python. Do the following in a Jupyter notebook and push the result.

(**Part a**) Write a function that rolls n $d6$'s and returns the sum. That is, implement the following:

```
def roll_n_d6s(n):
    ## Generates n random integers x_i with 1 \leq x_i \leq 6 and returns the sum

    return sum_of_rolls
```

(**Part b**) Write a function that does a large number of trials, say `N_trials=1000`, such that it rolls n $d6$s during each trial and then stores a list of the sums. Something like:

```
def run_d6_experiment(n, N_trials=1000):
    list_of_sums = []

    ## Call the function roll_n_d6s(n) 1000 times (or N_trials times) and append each output to the list

    return list_of_sums
```

(**Part c**) Generate a few histograms of the lists output by `run_d6_experiment` for different values of n. You should at least make sure to have:

- Make sure the histogram for $n = 1$ (i.e. rolling a single $d6$) looks like the flat uniform distribution between 1 and 6.
- Make sure $n = 2$ (add two dice rolls) looks like the triangle, as we showed last time.
- Try a large value of n, say $n = 20$, and check that the result looks Gaussian.

daily_challenge

Updated 29 days ago by Christian Ferko

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the students' answer, *where students collectively construct a single answer*

green boi

Updated 26 days ago by Logan Pachulski

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the instructors' answer, *where instructors collectively construct a single answer*

yellow boi

Updated 27 days ago by Christian Ferko

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followup discussions *for lingering questions and comments*