CS140 - Assignment 2
Due: Friday, Sept. 9 at 11:59pm

Please work on these questions at the start of your group's meeting time. Once you have some-thing you're comfortable submitting (note that we are evaluating based on effort+participation, not correctness!) you can use the remainder of the hour (i.e. the time during which your group mentor will be available) however you'd like: you can ask conceptual questions, start to work on the assignment, etc.

One person in your group should upload the responses as a single file to gradescope (making sure to add all the other group members on the submission!). You do not need to typeset your responses in LaTeX; if you want to take a photo of your work and upload that as a single file that's fine (as long as it's readable!)

1. Ranking Functions

List the functions below in increasing order by placing one function on each line, with the top line containing the smallest function and the bottom line containing the largest function. If two functions are in the same group (functions $f(n)$ and $g(n)$ are in the same group if $f(n)$ is $O(g(n))$ and $g(n)$ is $O(f(n))$ then write those two functions together on the same line. (You should assume, that the size of the problem, n, is an integer in all cases.) No proofs are necessary, just the correct ranking. To help you establish the ranking, you will need to compare pairs of functions and you can use any methods that you want. Useful methods include algebraic manipulation (e.g. rewriting a function in another form that allows you to compare it more easily with a second function) and numerical experiments (e.g. choose n to be some large power of 2 and then evaluate the two functions on that value).

$$
\begin{array}{llll}
n! & e^n & n\log_4 n & 47 \\
n^{1/3} + \log_5 n & n & (\frac{3}{2})^n & n2^n \\
(\log_2 n)^{\log_2 n} & \sqrt{n} & 2^n & n^{\log_2 \log_2 n} \\
\log_2(n!) & n^2 & (n+1)! & 4^{\log_2 n}
\end{array}
$$

2. Group experience

About how long did your group spend working on the first question? Does your group have any questions about the material? Do you have any suggestions on how to make this group time (or the lecture time!) as useful as possible?

3. Group participation

Was everyone in the group at the meeting and, if not, who was missing? What did your group do to ensure that everyone felt comfortable participating and that no one felt excluded or lost?