# CS 421 — Introducing Haskell via Project Euler

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## Objectives

This guide will give you a quick introduction to Haskell by walking though the solutions to a few Project Euler problems. The goal is not just to explain the language, but the thinking behind it.

Pick a problem or two and outline how you would solve it in your favorite language. After a few minutes, discuss your approach with someone next to you. After a few minutes, the instructor will solve them in Haskell.

## Euler Problem 1 — Multiples of 3 and 5

> *If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23. Find the sum of all the multiples of 3 or 5 below 1000.*

## Euler Problem 3 — Prime Factors

> *The prime factors of 13195 are 5, 7, 13 and 29. What is the largest prime factor of the number 600851475143?*

## Euler Problem 20 — Factorial Digit Sum

$n!$ *means* $n \times (n-1) \times ... \times 3 \times 2 \times 1$

*For example,* $10! = 10 \times 9 \times ... \times 3 \times 2 \times 1 = 3628800$, *and the sum of the digits in the number* $10!$ *is* $3 + 6 + 2 + 8 + 8 + 0 + 0 = 27$.

*Find the sum of the digits in the number* $100!$