Repurposing an HP Calculator
Lab 4: An RPN Calculator
Computer Science and Computer Engineering Gateway Project

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Abstract

In this lab, you will write code that will let the user perform calculations using reverse Polish notation (RPN).

What To Do

In the last lab, you wrote a routine that lets the user enter numbers and operations; in this lab, you will write code that uses it to make the calculator behave like an HP-style RPN calculator.

The spec. is simple: make your calculator work like an RPN calculator. One of my favorite documents describing this approach is the user manual for the HP-35, the first pocket-sized scientific calculator. This manual can be found online at `http://www.lkjsdf.com/archive/hp/35/manual/`.

Broadly, to calculate $12 \times 2 + 3 \times 4$, the user should enter 1 2 ↑ 2 × 3 ↑ 4 × +, where ↑ indicates the *Input* key.

Make your calculator work for the basic arithmetic operators (+, −, ×, ÷). You may use your own *keyboard_get_entry* function from Lab 3 or use the one I supplied in the *lab4.tar.gz* file on the website.

Make your stack hold at least four numbers (i.e., as many as the HP-35 did). Be sure to gracefully handle stack underflow and overflow.