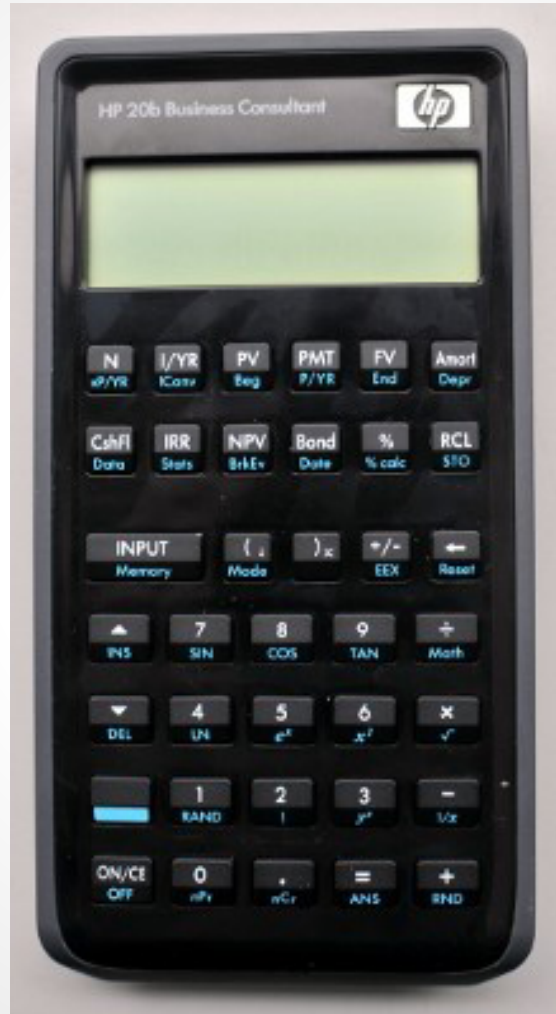# Building an RPN Calculator

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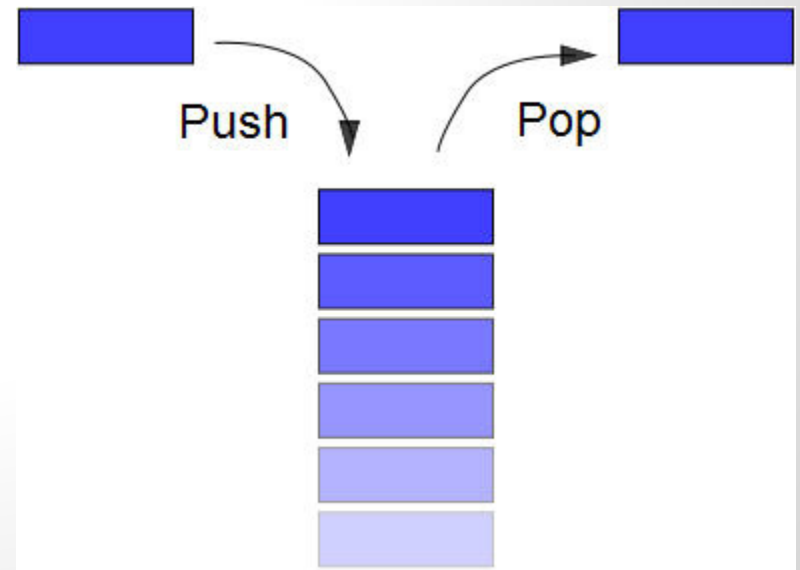
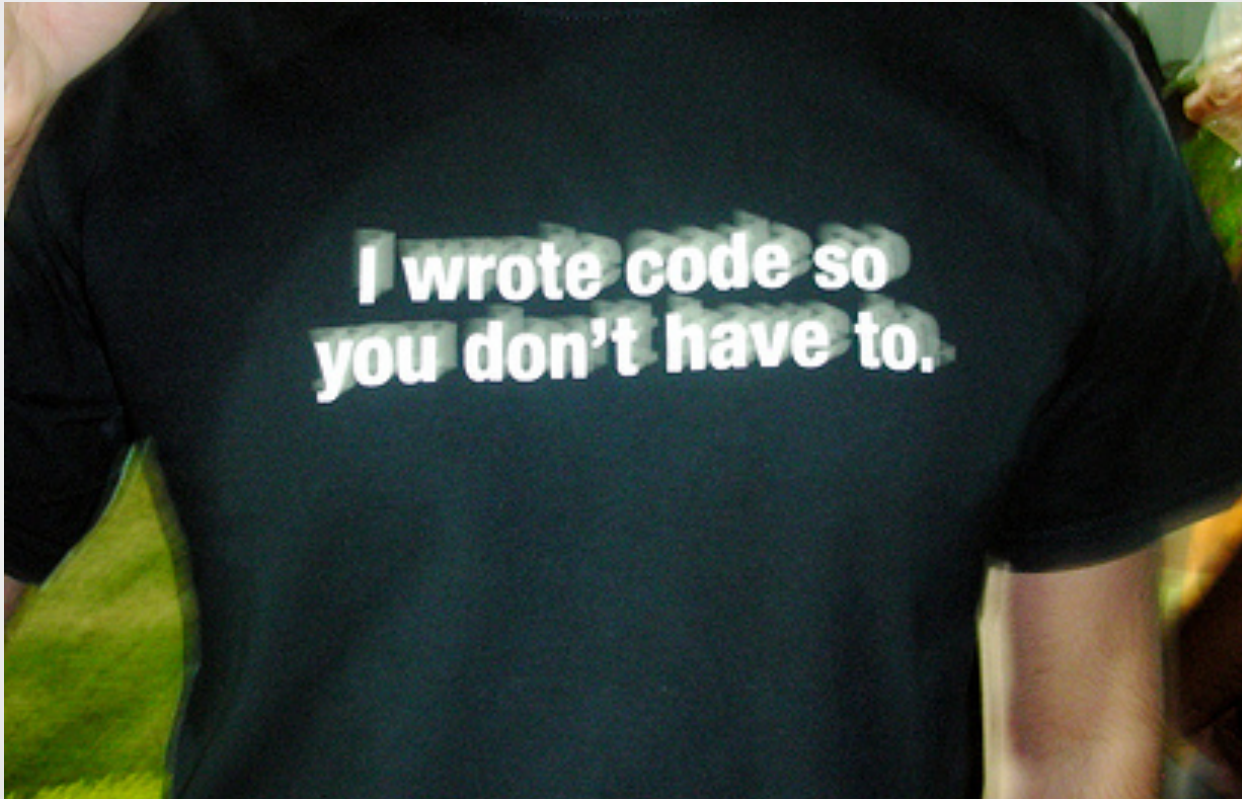# Overview

The HP 20b

Tutorial

- 1234 = "1" "2" "3" "4" "INPUT"

- 12 character max

- Stacks

- RPN format
  - 3 + 2 = "3" "2" "+"
  - push / pop
  - Save 10 numbers max

Implementation

Scrolling Screen

```
char myString[] = "SEAS          ";
slowdown
for(k=0; k < 60000; k++)
{
j = k; // dummy
j++;
}
```

Listening to the Keyboard

```
for (k=0; k<num_cols; k++)//tests
columns {
keyboard_column_low(k);
for(i=0; i<num_rows; i++)//tests rows {
if(!keyboard_row_read(i){)//if key is
pressed
keyboard_column_high(k);
return keys[k][i];//return pressed key
}
}
keyboard_column_high(k);//reset
}
```

Entering Numbers

```
for (j=0; j<=lastkey; j++){ //transfor each
character into int
            A[j] = (int) (A[j]-48);
}
// transforms the array of ints into a
number
while (k<lastkey)  {
        for(j=0; j<i; j++){
            A[k] = (A[k] * 10);
        }
        k++;
        i--;
    }
```

RPN Calculator

```
if (entry.operation != '\r' || entry.number
== INT_MAX){ //if an operation is
entered
        char b = entry.operation;
        if(entry.number == INT_MAX)
{
            i--;  }
        int a = A[i];
        i--; //point to previous entry
        if (b == '+')
            result = A[i] + a;
        ...
```
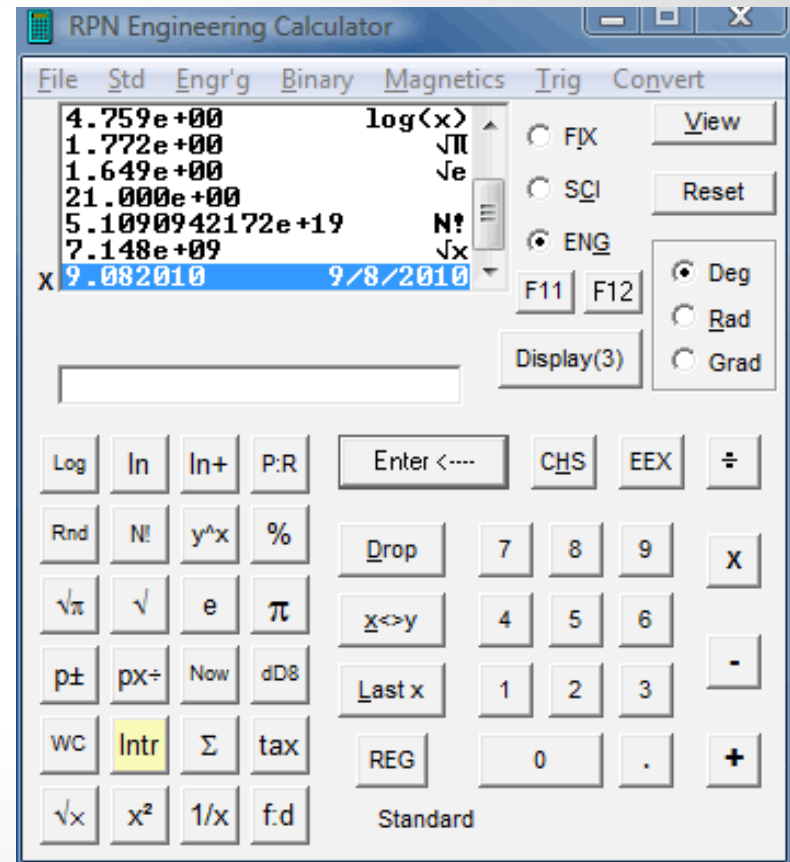
LESSONS LEARNED