Simple Literate Program

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Introduction

This program is made to illustrate the concepts of literate programming. This program receives as input a number, and then adds up all of the numbers between one and that number, and then prints the output. The outline for the program is as follows:

```
Main Listing =

#!/usr/bin/python

{Import needed modules}
{Initialize variables}
{Read in a line of input}
{Add up numbers from one to the number given}
{Print results}
```

Adding up the numbers

Since adding up the numbers is the purpose of the program, we will dive into that section first. One of the benefits of literate programming is that you can go in any order you please. Therefore, you can explain the most important concepts first, even if they appear later in the source file.

The code in this section will generate a range from 1 to number + 1, and then iterate through and add them all to the variable total.

```
Add up numbers from one to the number given =

for num in range(1, number + 1):
        total = total + num
```

We now have a variable total that has not been initialized. Although we could do it here because Python allows that, we will put all variable initializations in the "Initialize variables" section to show some additional features of Literate Programming. The total variable needs to be initialized to 0.

```
Initialize variables =

total = 0
```

Input and Output

The input routine for this program is very basic - it simply attempts to read a number from standard input and store it in the number variable. To start with, we will initialize number to an invalid value.

```
Initialize variables +=

number = 0
```

Notice that this has been appended to the "Initialize variables" code segment that was started in the previous section. Now, we need to read in the number.

```
Read in a line of input =

print """Please enter a positive integer, and I will add all numbers be-
tween one and
that number"""
textline = sys.stdin.readline()
try:
        number = string.atoi(textline)
        if number == 0:
                raise InvalidNumberError
except:
        print "You typed an invalid number.  Exitting..."
        sys.exit(1)
```

That code needs to have the string module and the sys module imported. Therefore, we will add the imports to the beginning of the source file.

```
Import needed modules =

import sys, string
```

Finally, when the code is finished, we need to print the results.

```
Print results

print "When you add all the numbers from one to ", number, ", the re-
sult is ", total, "."
```