

```
1:  /*****
2:  * sigma1.c
3:  *
4:  * Computer Science 50
5:  * David J. Malan
6:  *
7:  * Adds the numbers 1 through n.
8:  *
9:  * Demonstrates iteration.
10:  *****/
11:
12: #include <cs50.h>
13: #include <stdio.h>
14:
15:
16: /* prototype */
17: int sigma(int);
18:
19:
20: int
21: main(int argc, char * argv[])
22: {
23:     int answer, n;
24:
25:     /* ask user for a positive int */
26:     do
27:     {
28:         printf("Positive integer please: ");
29:         n = GetInt();
30:     }
31:     while (n < 1);
32:
33:     /* compute sum of 1 through n */
34:     answer = sigma(n);
35:
36:     /* report answer */
37:     printf("%d\n", answer);
38: }
39:
40:
41: /*
42:  * int
43:  * sigma(int m)
44:  *
45:  * Returns sum of 1 through m; returns 0 if m is not positive.
46:  */
47:
48: int
49: sigma(int m)
50: {
51:     int i, sum = 0;
52:
53:     /* avoid risk of infinite loop */
54:     if (m < 1)
55:         return 0;
56:
57:     /* return sum of 1 through m */
58:     for (i = 1; i <= m; i++)
59:         sum += i;
60:     return sum;
61: }
62:
```

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1:  /*****
2:  * sigma2.c
3:  *
4:  * Computer Science 50
5:  * David J. Malan
6:  *
7:  * Adds the numbers 1 through n.
8:  *
9:  * Demonstrates recursion.
10:  *****/
11:
12: #include <cs50.h>
13: #include <stdio.h>
14:
15:
16: /* prototype */
17: int sigma(int);
18:
19:
20: int
21: main(int argc, char * argv[])
22: {
23:     int answer, n;
24:
25:     /* ask user for a positive int */
26:     do
27:     {
28:         printf("Positive integer please: ");
29:         n = GetInt();
30:     }
31:     while (n < 1);
32:
33:     /* compute sum of 1 through n */
34:     answer = sigma(n);
35:
36:     /* report answer */
37:     printf("%d\n", answer);
38: }
39:
40:
41: /*
42:  * int
43:  * sigma(int m)
44:  *
45:  * Returns sum of 1 through m; returns 0 if m is not positive.
46:  */
47:
48: int
49: sigma(int m)
50: {
51:     /* base case */
52:     if (m <= 0)
53:         return 0;
54:
55:     /* recursive case */
56:     else
57:         return (m + sigma(m-1));
58: }
59:
```