

## Loop Invariants

A loop invariant is what is true before the beginning of each loop. For example:

```
int sum = 0;
int ctr;
int number;

cout << "Enter a positive number to sum up to: ";
cin >> num;

for (ctr = 1; ctr <= number; ctr++)
// Loop invariant: sum is the of the series 0 .. ctr-1
{
    sum += ctr;
}
```

Each time at the start of the loop sum will always be the sum of the series 0 to ctr-1.