

# R Program to Find the Sum of Natural Numbers



# R Program to Find the Sum of Natural Numbers

In this example, you'll learn to find the sum of natural numbers entered by the user. The example uses a while loop to calculate the sum.

To understand this example, you should have the knowledge of following R programming topics:

- R if...else Statement
- R while loop

## Example 1: Find sum of natural numbers without formula

```
# take input from the user
num = as.integer(readline(prompt = "Enter a number: "))
if(num < 0) {
  print("Enter a positive number")
} else {
  sum = 0
  # use while loop to iterate until zero
  while(num > 0) {
    sum = sum + num
    num = num - 1
  }
  print(paste("The sum is", sum))
}
```

## Output

```
Enter a number: 10
[1] "The sum is 55"
```

Here, we ask the user for a number and display the sum of natural numbers upto that number.

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We use `while` loop to iterate until the number becomes zero. On each iteration, we add the number *num* to *sum*, which gives the total sum in the end.

We could have solved the above problem without using any loops using a formula.

From mathematics, we know that sum of natural numbers is given by

$$n*(n+1)/2$$

For example, if  $n = 10$ , the sum would be  $(10*11)/2 = 55$ .

## Example 2: Find sum of natural numbers using a formula

```
# take input from the user
num = as.integer(readline(prompt = "Enter a number: "))
if(num < 0) {
  print("Enter a positive number")
}
else {
  sum = (num * (num + 1)) / 2;
  print(paste("The sum is", sum))
}
```

### Output

```
Enter a number: 10
[1] "The sum is 55"
```