R Program to Print the Fibonacci Sequence

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In this example, you'll learn to print the Fibonacci sequence using a while loop.

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

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

A Fibonacci sequence is the integer sequence of

```
0, 1, 1, 2, 3, 5, 8....
```

The first two terms are 0 and 1. All other terms are obtained by adding the preceding two terms.

This means to say the nth term is the sum of $(n-1)^{th}$ and $(n-2)^{th}$ term.

Example: Print Fibonacci Sequence

```
# take input from the user
nterms = as.integer(readline(prompt="How many terms? "))
# first two terms
n1 = 0
n2 = 1
count = 2
# check if the number of terms is valid
if(nterms <= 0) {
print("Plese enter a positive integer")
} else {
if(nterms == 1) {
print("Fibonacci sequence:")
print(n1)
} else {
print("Fibonacci sequence:")
print(n1)
print(n2)
while(count < nterms) {
nth = n1 + n2
print(nth)
# update values
n1 = n2
n2 = nth
count = count + 1
}
}
}
```

Output

```
How many terms? 7
[1] "Fibonacci sequence:"
[1] 0
[1] 1
[1] 1
[1] 2
[1] 3
[1] 5
[1] 8
```

Here, we ask the user for the number of terms in the sequence. We initialize the first term to 0 and the seconde term to 1.

If the number of terms is more than 2, we use a `while` loop to find the next term in the sequence.

Inside the while loop, we first print the first two terms *n1* and *n2* respectively. Then, we calculate the next term *nth* by adding the last two terms and print it.

Now, we update the values of *n1* and *n2* to the last two terms, i.e. the term in *n2* to *n1* and the term we just calculated *nth* to *n2*.

This goes on until the number of terms reaches the *nterms* entered by the user.