Cody Problem 12. Fibonacci sequence

Calculate the nth Fibonacci number.

Given n, return f where f = fib(n) and f(1) = 1, f(2) = 1, f(3) = 2, ...

Examples:

```
 % Input  n = 5
 % Output f is 5
 %
 % Input  n = 7
 % Output f is 13
```

Scratch Pad

```
n = 5
```

```
n = 5
```

```
fib(n)
```

```
ans = 5
```

```
n = 7
```

```
n = 7
```

```
fib(n)
```

```
ans = 13
```

Solution

```
function f = fib(n)
  if n == 1 || n == 2
      f = 1;  % Base case: Fibonacci numbers 1 and 2 are both 1.
  else
    a1 = 1;  % Initialize the first Fibonacci number.
    a2 = 1;  % Initialize the second Fibonacci number.
    i = 2;   % Initialize the loop counter to 2, as we already have the
first two Fibonacci numbers.

    while(i < n)
        buff = 0;      % Temporary variable to store the next Fibonacci
number.
        buff = a1 + a2;  % Calculate the next Fibonacci number by adding
the previous two.
```

```
        i = i + 1;      % Increment the loop counter.
        a1 = a2;        % Update a1 with the value of a2.
        a2 = buff;      % Update a2 with the newly calculated Fibonacci
number.
    end

    f = buff;  % Return the Fibonacci number at position n.
  end
end
```