# MANJUNATH_CODING_CHALLENGE_3 – 10/06/2020

1. There's a staircase with N steps, and you can climb 1 or 2 steps at a time. Given N, write a function that returns the number of unique ways you can climb the staircase. The order of the steps matters.

For example, if N is 4, then there are 5 unique ways:

1, 1, 1, 1

2, 1, 1

1, 2, 1

1, 1, 2

2, 2

What if, instead of being able to climb 1 or 2 steps at a time, you could climb any number from a set of positive integers X? For example, if X = {1, 3, 5}, you could climb 1, 3, or 5 steps at a time. Generalize your function to take in X.

**Solution:**

```
def fib(n):
   if n <= 1:
      return n
   return fib(n-1) + fib(n-2)
def countWays(s):
   return fib(s + 1)
s = 4
print ("Number of ways = ")
print (countWays(s))
```

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2. How do you check if two rectangles overlap with each other.

**Solution:**

```
# Python program to check if rectangles overlap
class Point:
    def __init__(self, x, y):
        self.x = x
        self.y = y

def doOverlap(l1, r1, l2, r2):
    # If one rectangle is on left side of other
    if(l1.x >= r2.x or l2.x >= r1.x):
        return False

    # If one rectangle is above other
    if(l1.y <= r2.y or l2.y <= r1.y):
        return False
    return True

# Driver Code
if __name__ == "__main__":
    l1 = Point(0, 10)
    r1 = Point(10, 0)
    l2 = Point(5, 5)
    r2 = Point(15, 0)

    if(doOverlap(l1, r1, l2, r2)):
        print("Rectangles Overlap")
    else:
        print("Rectangles Don't Overlap")
```

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3. How to Find Missing Number on Integer Array of 1 to 100

**Solution:**

```
# a represents the array
# n : Number of elements in array a
def getMissingNo(a, n):
        i, total = 0, 1
```

```
        for i in range(2, n + 2):
                total += i
                total -= a[i - 2]
        return total

# Driver Code
arr = [1, 2, 3, 5]
print(getMissingNo(arr, len(arr)))
```

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