Add Binary

Question: Given two binary strings, return their sum (also a binary string).

For example,

a = "11"

b = "1"

Return "100".

<u>Solutions:</u>

```
class Solution:

   def addBinary( a, b):

      length = max(len(a),len(b)) + 1

      sum = ['0' for i in range(length)]

      if len(a) <= len(b):

         a = '0' * ( len(b) - len(a) ) + a

      if len(a) > len(b):

         b = '0' * ( len(a) - len(b) ) + b

      Carry = 0

      i = len(a) - 1

      while i >= 0:

         if int(a[i]) + int(b[i]) + Carry == 3:

            sum[i+1] = '1'

            Carry = 1

         elif int(a[i]) + int(b[i]) + Carry == 2:

            sum[i+1] = '0'
```

```
            Carry = 1
        elif int(a[i]) + int(b[i]) + Carry == 1:
            sum[i+1] = '1'
            Carry = 0
        else:
            sum[i+1] = '0'
            Carry = 0
        i = i - 1
    if Carry == 1:
        sum[0] = '1'
    if Carry == 0:
        sum = sum[1:length]
    sum = ''.join(sum)
    return sum
```

Solution.addBinary("11","1")

```
*class Solution:
    def addBinary(a, b):
        bia = int(a, 2)
        bib = int(b, 2)
        sum = bia + bib
        return str("{0:b}".format(sum))
```

Solution.addBinary("1","11")

*Should only use if asked for shorter solution. It converts binary to integers; sum the integers. And finally formats the answer as binary.