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Project 1

Part D

CS 3130

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Code:

```
def main():
    #Initialize arrays
    f1 = []     #Think of as f-1
    f2 = []     #Think of as f-2
    fn = []     #Think of as fn

    #Fill array with 0s
    for i in range(0,100):
        f1.append(0)
        f2.append(0)
        fn.append(0)

    #Arrays are going to be filled from right to left, make 'first' element in each be 1
    f1[99] = 1
    f2[99] = 1

    while True:     #Recursive loop will go until if statement is reached
```

```
        fn = add(f1,f2)
        f1 = f2     #Swaps
        f2 = fn
        if(fn[0] == 8):     #If the 100th digit/first element has been reached/filled
            print("ERROR: 100th digit has been reached")
            break       #Break out of while loop

    print("Sum of array: ", fn)



# This function will add the elements of the two arrays
def add(f1,f2):
    #Create new array fn
    fn = []
    #Fill 100 elements of it wil 0s
    for i in range(0,100):
        fn.append(0)

    remainder = 0   #Remainder variable if f2+f1 > 10 we know to carry a number to the left
element

    for x in range(len(f1)-1, -1 ,-1):      #for loop, using the length of f1 down to 0
```

```
    var = f1[x] + f2[x] + remainder     #var = sum, sum is a keyword in Python, but this is the sum of f1[x], f2[x] and the remainder

    fn[x] = var % 10        #Store the mod 10 of the sum in to fn[x]

    if((var/10) < 1):       #Tests for remainder
        remainder = 0

    else:
        remainder = 1

  return fn       #Returns the array

main()
```

Execution:

```
Sum of array:  [8, 2, 9, 1, 6, 0, 0, 2, 3, 8, 4, 5, 0, 7, 3, 2, 7, 8, 8, 3, 1, 2, 1, 6, 5, 6, 6, 4, 7, 8, 8, 0, 9, 5,
 9, 4, 1, 0, 6, 8, 3, 2, 6, 0, 6, 0, 8, 8, 3, 3, 2, 4, 5, 2, 9, 9, 0, 3, 4, 7, 0, 1, 4, 9, 0, 5, 6, 1, 1, 5, 8, 2, 3,
 5, 9, 2, 7, 1, 3, 4, 5, 8, 3, 2, 8, 1, 7, 6, 5, 7, 4, 4, 4, 7, 2, 0, 4, 5, 0, 1]
```