Python Assignment

1. Given two numbers a, b where b > a, find the sum of all primes between them.

```
class Solution:
    def sumPrimeNumbers(self,a:int,b:int):
        if(b<a):
            return 0

        def prime(n:int):
            if(n<2):
                return False
            for i in range(2,int(math.sqrt(n)+1)):
                if(n%i==0):
                    return False
            return True

        totalSum=0
        for num in range(a,b+1):
            if prime(num):
                totalSum+=num
        return totalSum
```

2. Given an array of integers, find the sub-array (continuous slice of the array) for which the absolute value of the “sum of all integers in the subarray” is minimum.

```
class Solution2:
    def smallestSum(self,nums:list[int]):
        #Assuming the size of subarray 3
        totalSum = 0
        window = 3
        for i in range(0,window):
            totalSum += nums[i]

        maximum = totalSum
        for i in range(1,len(nums)-window+1):
            totalSum = totalSum - nums[i-1] + nums[i+window-1]
            if totalSum < maximum:
                maximum = totalSum
        return maximum
```

3. Find the 3rd smallest number in an array.

```
class Solution3:
    def thirdSmallestNumber(self,nums:list[int]):
        # If sorting was allowed we could sort the elements and return nums[2]
```

```
        if len(nums)<3:
            return None

        smallest = float('inf')
        s_small=float('inf')
        t_small=float('inf')

        for num in nums:
            if num<smallest:
                t_small = s_small
                s_small = smallest
                smallest = num
            elif smallest<num<s_small:
                t_small=s_small
                s_small=num
            elif s_small<num<t_small:
                t_small =num
        return t_small if t_small!=float('inf') else None
```