Problem 4 (Max Subarray Problem, 10 points)

In class we solved the max subarray problem, which was to find two indices $i < j$ in a given array of numbers A, such that $A[i] < A[j]$ and the difference $A[j] - A[i]$ is the maximum possible. If no such indices are found return $-\infty$ (`- math.inf` in python)

Provide a **clear** linear time implementation for this problem. For clarity, you should use a single for-loop in your implementation, so that we can understand your logic quite easily.

Your algorithm should return the **max difference** $A[j] - A[i]$ (we do not need to know i, j).

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[4]:
```python
def maxSubArray(arr):
    # Code here.
    # Just use a single for loop that iterates over
    arr_size = len(arr)
    max_diff = math.inf
    min_element = arr[0]
    flag = True
    for i in range( 1, arr_size ):
        if(min_element < arr[i] and flag) :
            flag = False
            max_diff = arr[i] - min_element
        if (arr[i] - min_element > max_diff):
            max_diff = arr[i] - min_element
        if (arr[i] < min_element):
            min_element = arr[i]
    if(max_diff == math.inf):
        return -math.inf
    return max_diff
```