

$$\begin{array}{ccccc} \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ [1, 2, 3, -2, 5] \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 5 & 4 & 3 & 2 & 1 \end{array}$$

$$\text{No. of subarrays} = \frac{n(n+1)}{2}$$

$$BF = \underline{\underline{O(n^3)}}$$

$$\begin{array}{ccccc} \downarrow & \downarrow & & & \\ [1, 2, 3, -2, 5] \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 3 & 6 & 4 & 9 \end{array}$$

$$TC: O(n^2)$$

$$AS = O(1)$$

$$\left. \begin{array}{l} i: 0 \rightarrow n-1 \\ \text{sum} = 0 \\ j: i \rightarrow n-1 \\ (\text{sum} += \text{arr}[j]) \end{array} \right\} \text{maxSum}$$

$$\begin{array}{ccccc} s = 1+2+3+4 & & & & \\ ms = 1+2+3+4 & \downarrow & \downarrow & \downarrow & \downarrow \\ [1, 2, 3, -2, 5] \end{array}$$

$$s = -10$$

$$ms = -10$$

$$[-10, 2, 3, -2, 5]$$

$$\begin{array}{ccccc} \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ [1, 2, 3, -2, 5] \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 3 & 6 & 4 & 9 \end{array}$$

$$\underline{\underline{\text{overall Max}}}$$

$$\Rightarrow [-10, 2, 3, -2, 5] \Rightarrow \boxed{3} \boxed{8}$$

$$\Rightarrow \left[ \begin{array}{l} TC: O(n) \\ AS: O(n) \end{array} \right]$$

$$\Rightarrow \underline{\underline{\text{maxTillIndex}}} : -10 \Rightarrow 8$$

$$\Rightarrow \underline{\underline{\text{overall Max}}} : -10 \Rightarrow 8$$

$$\left[ \begin{array}{l} \text{if } mTI < 0 : \\ \quad mTI = \text{arr}[i] \\ \text{else :} \\ \quad mTI += \text{arr}[i] \end{array} \right] \quad AS = \underline{\underline{O(1)}}$$

$$\Rightarrow mTI = \max(\text{arr}[i], mTI + \text{arr}[i])$$

$$(1, 2, 3, 4, 5)$$

$$\frac{5 \times 2}{2} = 10$$

$$(1, 2, 3, 4, 5, 1, 2, 3, 4, 5) = \underline{\underline{20}}$$

$$(1, 2, -3, -4, 5)$$

$$\checkmark \text{ case-1 : Non-circular subarray } \left. \begin{array}{l} \text{max.} \\ \text{case-2 : Circular subarray} \end{array} \right\}$$

$$[1, 2, 3, 5, -6, -7, 8]$$

$$\text{case-1 : } \left[ \text{Array Sum} - \underline{\underline{\text{minSubarray Sum}}} \right]$$

$$\downarrow$$

$$\text{negate all the elements}$$