

Sliding window Pattern (4th March 2023)

{ 1, 3, 2, 6, -1, 4, 1, 8, 2 }

0 1 2 3 4 5 6 7 8

1, 3, 2, 6, -1, 4, 1, 8, 2

1, 3, 2, 6, -1, 4, 1, 8, 2

1, 3, 2, 6, -1, 4, 1, 8, 2

1, 3, 2, 6, -1, 4, 1, 8, 2

Sliding Example

NP₂ 9P₃

① Maximam Sub Array of

size k 1 2 3 4 5 6 7 8 9

A	B	C	D	E	F	G	H	I
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ABC
ABD
ACD

A, B, C →	X
B, C, D →	X
C, D, E →	X
D, E, F →	X
E, F, G →	X
F, G, H →	X
G, H, I →	X

sliding

$\emptyset A B C$	$A C D$	$A D E$	$A E F$
$A B D$	$A C E$	$A D F$	$A E G$
$A B E$	$A C F$	$A D G$	$A E H$
<u>$A B F$</u>	$A C G$	$A D H$	$A E I$
<u>$A B G$</u>	$A C H$	$A D I$	
$A B H$	$A C I$		
$A B I$			

		$A H I$	$B C D$
$A F G$	$A G H$		$B C E$
$A F H$	$A G I$		$B C F$
$A F I$			$B C G$
			$B C H$
			$B C I$

Bde	cdE	def	efg
bdf	cdf	deg	efh
bdg	cdg	deh	efi
bdf	cdh	dei	
bdf	cdi		

ghi	ghi
ghi	

54 Combinations

any 3 values/element
that's sum is highest

(with size $d \geq 3$ (not sub array))

$$\frac{54}{9} = 6$$

$$9 + 6 = 15$$

$$\frac{9 + 6}{2} = 7.5$$

→ sliding window pattern
implementation.

{1, 2, 3, 4, 5, 6, 7, 8, 9}

$$[1, 2, 3] \rightarrow 6$$

$$[2, 3, 4] \rightarrow 9$$

$$\{3, 4, 5\} \rightarrow 12$$

$$\{4, 5, 6\} \rightarrow 15$$

$$\{5, 6, 7\} \rightarrow 18$$

$$\{6, 7, 8\} \rightarrow 21$$

$$\{7, 8, 9\} \rightarrow \textcircled{24}$$

✓

$${}_nP_r$$

$$= \frac{n!}{(n-r)!}$$

$$= \frac{9!}{6!} = 9 \times 8 \times 7$$

$$= \frac{9 \times 8 \times 7 \times \cancel{6!}}{\cancel{6!}}$$

$$= 504$$

