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**CS29003 ALGORITHMS LABORATORY****ASSIGNMENT 1****Date: 12 – August – 2021**

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**Let's workout the assignment for the utterance  $11\%3*(10-3-2)/2$** **Exercise 1: Convert the given mathematical utterance into new notation**

Next Token	Operation on Stack	Stack	New Notation
11			11
%	Push '%'	%	11
3			11 3
*	Pop		11 3 %
	Push '*'	*	11 3 %
(	Push '('	* (	11 3 %
10		* (	11 3 % 10
-	Push '-'	* ( -	11 3 % 10
3		* ( -	11 3 % 10 3
-	Pop	* (	11 3 % 10 3 -
	Push '-'	* ( -	11 3 % 10 3 -
2		* ( -	11 3 % 10 3 - 2
)	Pop	* (	11 3 % 10 3 - 2 -
	Pop	*	11 3 % 10 3 - 2 -
/	Pop		11 3 % 10 3 - 2 - *
	Push '/'	/	11 3 % 10 3 - 2 - *
2		/	11 3 % 10 3 - 2 - * 2
	Pop		11 3 % 10 3 - 2 - * 2 /

Table 1: Working of the Operator Stack - Rightmost token is the Stack Top

Therefore, the obtained utterance in New Notation is:  **$11\ 3\ \% \ 10\ 3\ -\ 2\ -\ * \ 2\ /\$**

Let's calculate the value of the expression  $11\ 3\ \% \ 10\ 3\ -\ 2\ -\ *\ 2\ /\$

**Exercise 2: Evaluate the mathematical utterances in new notation**

Next Token	Operation on Stack	Stack
11	Push	11
3	Push	11 3
%	Pop	11
	Pop	
	Calculate and Push	2
10	Push	2 10
3	Push	2 10 3
-	Pop	2 10
	Pop	2
	Calculate and Push	2 7
2	Push	2 7 2
-	Pop	2 7
	Pop	2
	Calculate and Push	2 5
*	Pop	2
	Pop	
	Calculate and Push	10
2	Push	10 2
/	Pop	10
	Pop	
	Calculate and Push	5
	Pop	

Table 2: Working of the Operand Stack - Rightmost token is the Stack Top

Therefore, the value of the given arithmetic expression is **5**