

- 12 (a) A stack has been implemented using pseudocode to store a maximum of 100 string items using the global variables in the following table:

Identifier	Data type	Description	Initialisation value
Base	INTEGER	pointer for the bottom of the stack	0
Top	INTEGER	pointer for the top of the stack	-1
StackArray	STRING	1D array to implement the stack	[0:99]
Max	INTEGER	maximum number of items in the stack	100

The value of `Top` is incremented each time a data item is added to the stack and decremented each time a data item is removed. If the stack is full, an appropriate error message is output.

- (i) Complete the **pseudocode** for the procedure to add a data item onto the stack.

```

PROCEDURE Push (.....)
    IF Top < Max - 1 THEN

        Top ← .....

        ..... ← NewData
    ELSE

        OUTPUT .....
    ENDIF
ENDPROCEDURE

```

[4]

- (ii) Write **pseudocode** to input a new data item and add it to the stack using `Push()`.

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..... [2]

- (b) Explain the reasons why a stack is used when a recursive algorithm is executed.

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..... [3]