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FACULTY OF EGINEERING & TECHNOLOGY

DATA STRUCTURE USING C

LECTURE -7

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OUTLINE

- Stack Notation
- Infix Notation
- Postfix Notation
- Prefix Notation
- Application of Stack
- Expression convertion
- MCQ
- References

NOTATION OF STACK

Stack Notation

1. Infix Notation
2. Prefix (Polish) Notation
3. Postfix () Reverse-Polish Notation

Infix Notation

We write expression in infix notation, e.g. a - b + c, where operators are used in-between operands. It is easy for us humans to read, write, and speak in infix notation but the same does not go well with computing devices. An algorithm to process infix notation could be difficult and costly in terms of time and space consumption.

Prefix Notation

In this notation, operator is prefixed to operands, i.e. operator is written ahead of operands. For example, +ab. This is equivalent to its infix notation a + b. Prefix notation is also known as Polish Notation.

NOTATION OF STACK

Postfix Notation

This notation style is known as Reversed Polish Notation. In this notation style, the operator is post fixed to the operands i.e., the operator is written after the operands. For example, ab+. This is equivalent to its infix notation a + b.

Sr.No.	Infix Notation	Prefix Notation	Postfix Notation
1	a + b	+ a b	a b +
2	(a + b) * c	* + a b c	a b + c *
3	a * (b + c)	* a + b c	a b c + *
4	a / b + c / d	+ / a b / c d	a b / c d / +
5	(a + b) * (c + d)	* + a b + c d	a b + c d + *
6	((a + b) * c) - d	- * + a b c d	a b + c * d -

NOTATION OF STACK

Applications of Stack

- Recursion
- Expression evaluations and conversions
- Parsing
- Browsers
- Editors
- Tree Traversals

MCQ

1. The postfix form of the expression (A+ B)*(C*D- E)*F / G is?

a) AB+ CD*E – FG /**

b) AB + CD* E – F **G /

c) AB + CD* E – *F *G /

d) AB + CDE * – * F *G /

2. The data structure required to check whether an expression contains balanced parenthesis is?

a) Stack

b) Queue

c) Array

d) Tree

3. What data structure would you mostly likely see in a non recursive implementation of a recursive algorithm?

a) Linked List

b) Stack

c) Queue

d) Tree

4. The process of accessing data stored in a serial access memory is similar to manipulating data on a _____

a) Heap

b) Binary Tree

c) Array

d) Stack

5. The postfix form of A*B+C/D is?

a) *AB/CD+

b) AB*CD/+

c) A*BC+/D

d) ABCD+/*

REFERENCES

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