COMPUTER SCIENCE AND DA

Data Structures through Python

Stack

Lecture No. 06

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Topics to be covered

APPLICATIONS OF STACK

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X : i * (j / k) ^ l ^ (m / n ^ (p * q)) .

S

Y = ijk/l^mnpq*^/^*

X: 3 + (2 * (4^3 - 1) / (5^2) + 3) * 6

1 T

Y = 3243^1- * 52^/3 + 6 * +

^

*, /, //, %

+, -

O_S → push

empty → push

(→ push

O_T → pop add to Y, push O_S

Infix to Prefix Conversion

Procedure

Let X be the given infix expression, Y be the intermediate expression and Z be the resultant prefix expression. Let S be empty stack.

1) Scan elements of X one at a time from right to left
   (Note: (≈≈) ,) ≈≈ (
2) Perform infix to postfix procedure step by step, except
   1) $O_T > O_S$ pop O_T, add to Y, push O_S
   2) $O_T <= O_S$ push O_S
3) Reverse of Y ≈≈ Z => Resultant prefix expression

X: a + b * (c / d) / e ^ (f * g / h)

Y = h g f * / e ^ d c / b * / a +

Z = + a / * b / c d ^ e / * f g h

X : 1 + 2 * 3 / 4 * 5 / 6 ^ 7 - 8

S : | - | * | + | * | + | * | * |

Y = 876 ^ 5432 * / * / 1 + -

Z = - + 1 / * / ^ 2 3 4 5 ^ 6 7 8

THANK - YOU