CS350: Data Structures

**Homework**

Inorder ①→②→③ In △₂³
Preorder ②←①→③ Pre ₂∠³₁
Postorder ③↖①→② Post ₁∠³₂
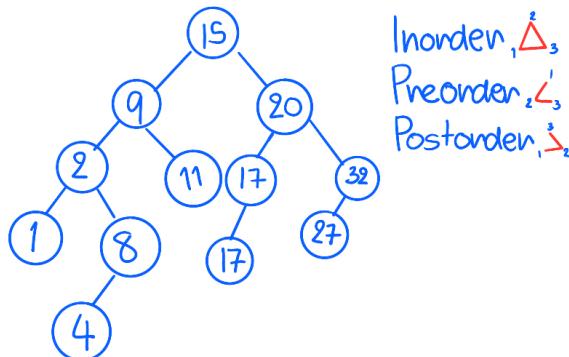
1. จงวาดรูปต้นไม้ BST จาก input ที่กำหนด และหา Preorder, Inorder, Postorder

   1.1) 15, 9, 20, 11, 17, 2, 1, 8, 4, 32, 27, 16

Inorder, △₃
Preorder, ∠₃
Postorder, ∠₂
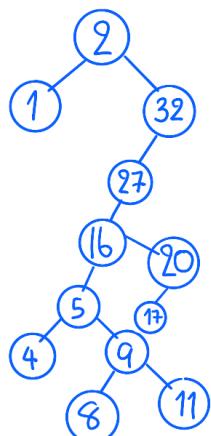
Inorder: 1, 2, 4, 8, 9, 11, 15, 16, 17, 20, 27, 32
Preorder: 15, 9, 2, 1, 8, 4, 11, 20, 17, 16, 32, 27
Postorder: 1, 4, 8, 2, 11, 9, 16, 17, 27, 32, 20, 15

   1.2) 2, 1, 32, 27, 16, 5, 9, 20, 8, 4, 11, 17
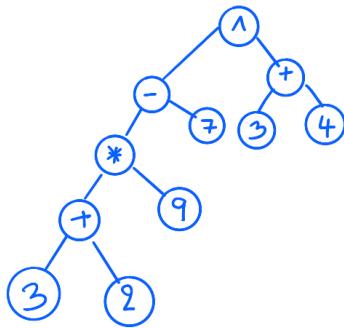
Inorder: 1, 2, 4, 5, 8, 9, 11, 16, 17, 20, 27, 32
Preorder: 2, 1, 32, 27, 16, 5, 4, 9, 8, 11, 20, 17
Postorder: 1, 4, 8, 11, 9, 5, 17, 20, 16, 27, 32, 2
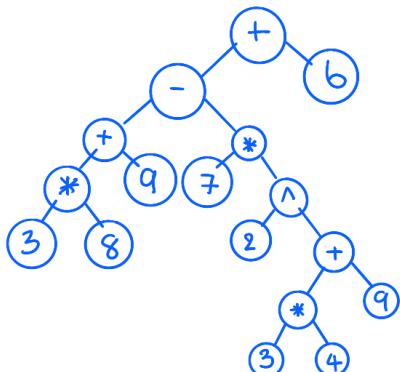
2. จงวาดรูปต้นไม้ BST จาก input ที่กำหนด และหา Prefix, Infix, Postfix

2.1) 3+2*9-7^3+4

$$(((3+2)*9)-7)^\wedge(3+4)$$

Infix: $((3+2)*9-7)^\wedge(3+4))$

Prefix: $^\wedge - * + 3\ 2\ 9\ 7 + 3\ 4$

Postfix: $3\ 2 + 9 * 7 - 3\ 4 + ^\wedge$

2.2) 3*8+9-7*2^(3*4+9)+6

(annotations above: 5 6 7 4 3 1 2)
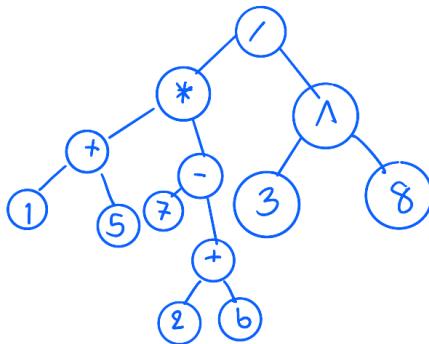
Infix: $(((3*8)+9)-(7*(2^\wedge((3*4)+9))))+6$

Prefix: $+ - + * 3\ 8\ 9 * 7 ^\wedge 2 + * 3\ 4\ 9\ 6$

Postfix: $3\ 8 * 9 + 7\ 2\ 3\ 4 * 9 + ^\wedge * - 6 +$

2

2.3 (1 5 +)(7 (2 6 +) -) * 3 8 ^ /
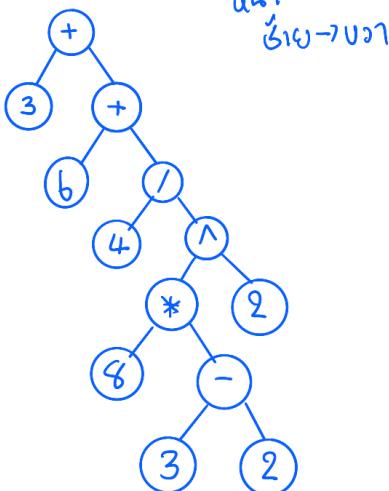
Infix: $(((1+5)*(7-(2+6)))/(3\char94 8))$
Prefix: $/*+15-7+26\char94 38$
Postfix: $15+726+-*38\char94 /$

2.4 + 3 + 6 / 4 $\boxed{\char94 * 8 - 9\,7\,2}$

Infix: $(+3(6+(4/((8*(9-7))\char94 2))))$
Prefix: $+3+6/4\char94 *8-972$
Postfix: $3\,6\,4\,8\,9\,7-*2\char94 /++$

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