

JAVA EXAMPLES - INFIX TO POSTFIX

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Problem Description:

How to convert an infix expression to postfix expression?

Solution:

Following example demonstrates how to convert an infix to postfix expression by using the concept of stack.

```
import java.io.IOException;

public class InToPost {
    private Stack theStack;
    private String input;
    private String output = "";
    public InToPost(String in) {
        input = in;
        int stackSize = input.length();
        theStack = new Stack(stackSize);
    }
    public String doTrans() {
        for (int j = 0; j < input.length(); j++) {
            char ch = input.charAt(j);
            switch (ch) {
                case '+':
                case '-':
                    gotOper(ch, 1);
                    break;
                case '*':
                case '/':
                    gotOper(ch, 2);
                    break;
                case '(':
                    theStack.push(ch);
                    break;
                case ')':
                    gotParen(ch);
                    break;
                default:
                    output = output + ch;
                    break;
            }
        }
        while (!theStack.isEmpty()) {
            output = output + theStack.pop();
        }
        System.out.println(output);
        return output;
    }
    public void gotOper(char opThis, int prec1) {
        while (!theStack.isEmpty()) {
            char opTop = theStack.pop();
            if (opTop == '(') {
                theStack.push(opTop);
                break;
            }
        }
        else {
            int prec2;
            if (opTop == '+' || opTop == '-')
                prec2 = 1;
            else
                prec2 = 2;
            if (prec2 < prec1) {

```

```

        theStack.push(opTop);
        break;
    }
    else
        output = output + opTop;
    }
}
theStack.push(opThis);
}
public void gotParen(char ch){
    while (!theStack.isEmpty()) {
        char chx = theStack.pop();
        if (chx == '(')
            break;
        else
            output = output + chx;
    }
}
public static void main(String[] args)
throws IOException {
    String input = "1+2*4/5-7+3/6";
    String output;
    InToPost theTrans = new InToPost(input);
    output = theTrans.doTrans();
    System.out.println("Postfix is " + output + '\n');
}
class Stack {
    private int maxSize;
    private char[] stackArray;
    private int top;
    public Stack(int max) {
        maxSize = max;
        stackArray = new char[maxSize];
        top = -1;
    }
    public void push(char j) {
        stackArray[++top] = j;
    }
    public char pop() {
        return stackArray[top--];
    }
    public char peek() {
        return stackArray[top];
    }
    public boolean isEmpty() {
        return (top == -1);
    }
}
}

```

Result:

The above code sample will produce the following result.

```

124*5/+7-36/+
Postfix is 124*5/+7-36/+

```