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Program

1. Write a program to display a number in words using stack.

For example, if n=12376 then output should be one two three seven six

Code:

```
import java.util.*;

class Stack {

    static final int MAX = 1000;

    int top;

    int a[] = new int[MAX];

    boolean isEmpty()

    {

        return (top < 0);

    }

    Stack()

    {

        top = -1;

    }

    boolean push(int x)

    {

        if (top >= (MAX - 1)) {

            System.out.println("Stack Overflow");

            return false;

        }

    }

}
```

```
    }  
    else {  
        a[++top] = x;  
        return true;  
    }  
}
```

```
int pop()  
{  
    if (top < 0) {  
        System.out.println("Stack Underflow");  
        return 0;  
    }  
    else {  
        int x = a[top--];  
        return x;  
    }  
}
```

```
void printStack() {  
    if(top == -1) {  
        System.out.println("Stack Empty");  
    }  
    else {  
        for(int i = top; i>=0 ; i--) {
```

```
        System.out.print(a[i] + " ");  
    }  
    System.out.println();  
}  
}  
  
public static String printDigit(int digit)  
{  
    switch(digit)  
    {  
        case 1:  
            return "one";  
        case 2:  
            return "two";  
        case 3:  
            return "three";  
        case 4:  
            return "four";  
        case 5:  
            return "five";  
        case 6:  
            return "six";  
        case 7:  
            return "seven";  
        case 8:  
            return "eight";  
    }  
}
```

```

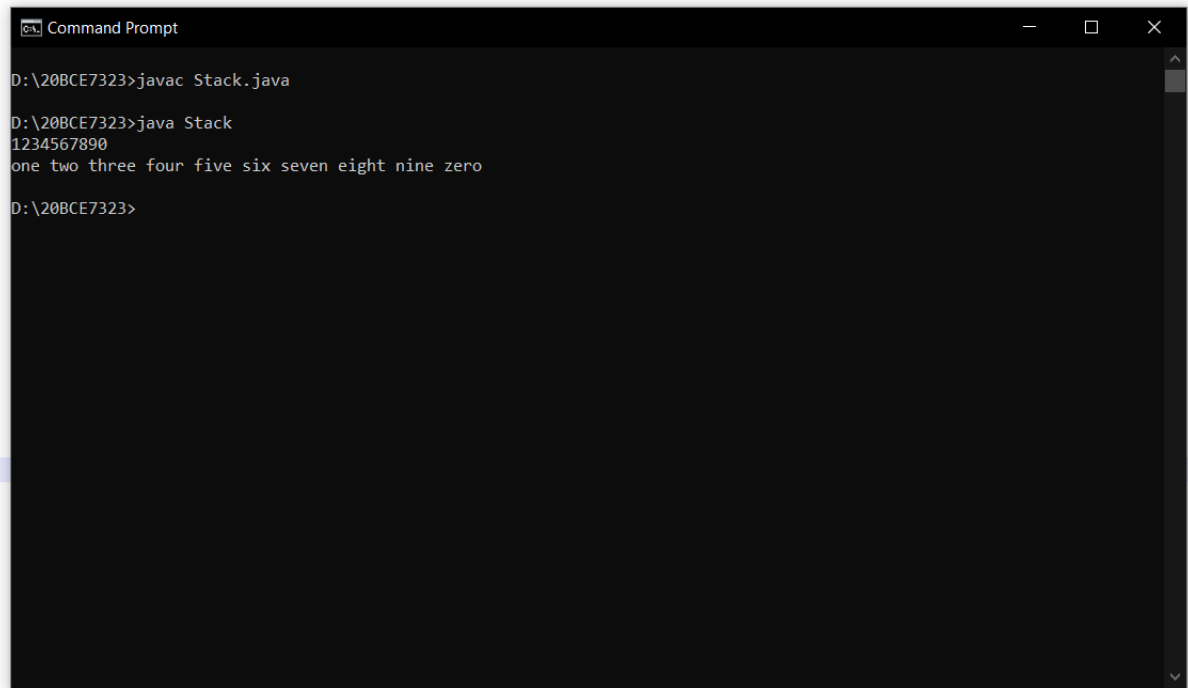
        case 9:
            return "nine";
        case 0:
            return "zero";
        default: return "";
    }
}

public static void main(String args[])
{
    Stack st = new Stack();
    Scanner sc = new Scanner(System.in);
    int n = sc.nextInt();
    int temp = n;
    while(temp!=0)
    {
        int digit = temp % 10;
        st.push(digit);
        temp = temp / 10;
    }
    while(!st.isEmpty())
    {
        int digit = st.pop();
        String digitString = printDigit(digit);
        System.out.print(digitString + " ");
    }
    System.out.println();
}

```

}

}



```
D:\20BCE7323>javac Stack.java
D:\20BCE7323>java Stack
1234567890
one two three four five six seven eight nine zero
D:\20BCE7323>
```

2) Write a program to convert infix to postfix expression. It may be noted that your program should validate the infix expression.

Code:

```
public class InfixtoPostfix {

    static char postfix[] = new char[20];
    static String infix = new String();
    static int i, top, k;
    static char stack[] = new char[10];
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the infix notation");
        infix = sc.nextLine();
        push('#');
        k = 0;
        sc.close();
        for (int i = 0; i < infix.length(); i++) {
            if (infix.charAt(i) == '(') {
                push(infix.charAt(i));
            } else {
                if (infix.charAt(i) >= 'a' & infix.charAt(i) >= 'z' || infix.charAt(i) >= '0' &
infix.charAt(i) >= '9') {
                    postfix[k++] = infix.charAt(i);

                } else
                if (infix.charAt(i) == ')') {
                    while (stack[top] != '(')
```

```

        postfix[k++] = pop();

        char elem = pop();
    } else {

        while (pr(stack[top]) >= pr(infix.charAt(i)))
            postfix[k++] = pop();
        push(infix.charAt(i));
    }
}

while (stack[top] != '#') {
    postfix[k++] = pop();

}

System.out.println("The postfix is:");
for (i = 0; i < k; i++)
    System.out.print(postfix[i]);
}

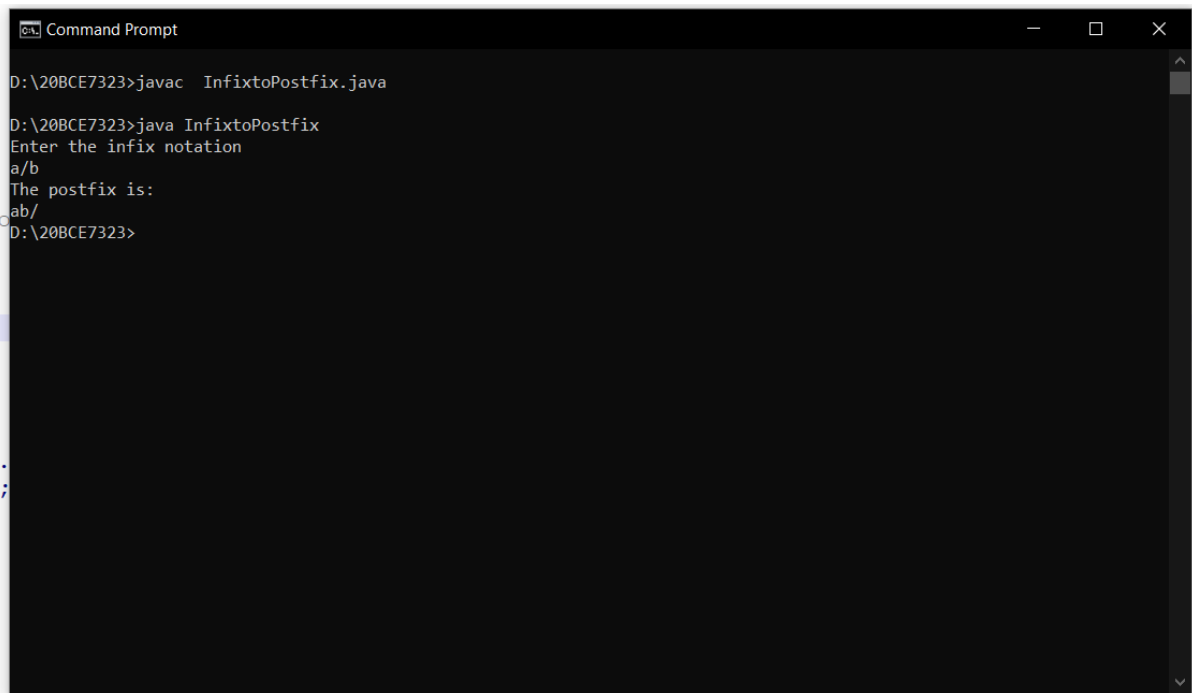
public static void push(char elem) {
    stack[++top] = elem;
}

public static char pop() {
    return (stack[top--]);
}

```



```
public static int pr(char elem) {  
    int r = 0;  
    switch (elem) {  
        case '#':  
            r = 0;  
            break;  
        case '(':  
            r = 1;  
            break;  
        case '+':  
        case '-':  
            r = 2;  
            break;  
        case '*':  
        case '/':  
            r = 3;  
            break;  
    }  
    return r;  
}  
  
}
```



```
Command Prompt
D:\20BCE7323>javac InfixtoPostfix.java
D:\20BCE7323>java InfixtoPostfix
Enter the infix notation
a/b
The postfix is:
ab/
D:\20BCE7323>
```