

# INFIX TO POSTFIX CONVERTER AND CALCULATOR

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## I. Problem statement

The function of the program is to get an infix expression as input from the user and check whether it consists only of digits and operators or else print an incorrect message.

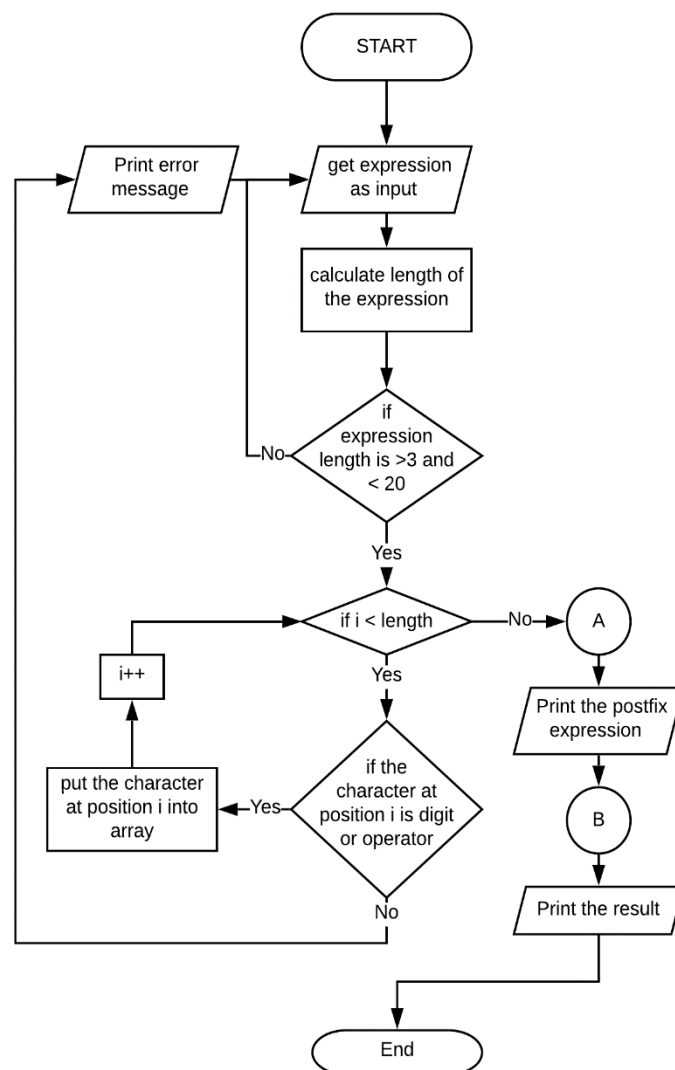
After checking for the correctness of the input, the infix expression must be converted to postfix expression and print it. Then the postfix expression needs to be evaluated and the result must be printed.

## II. Analysis and Design

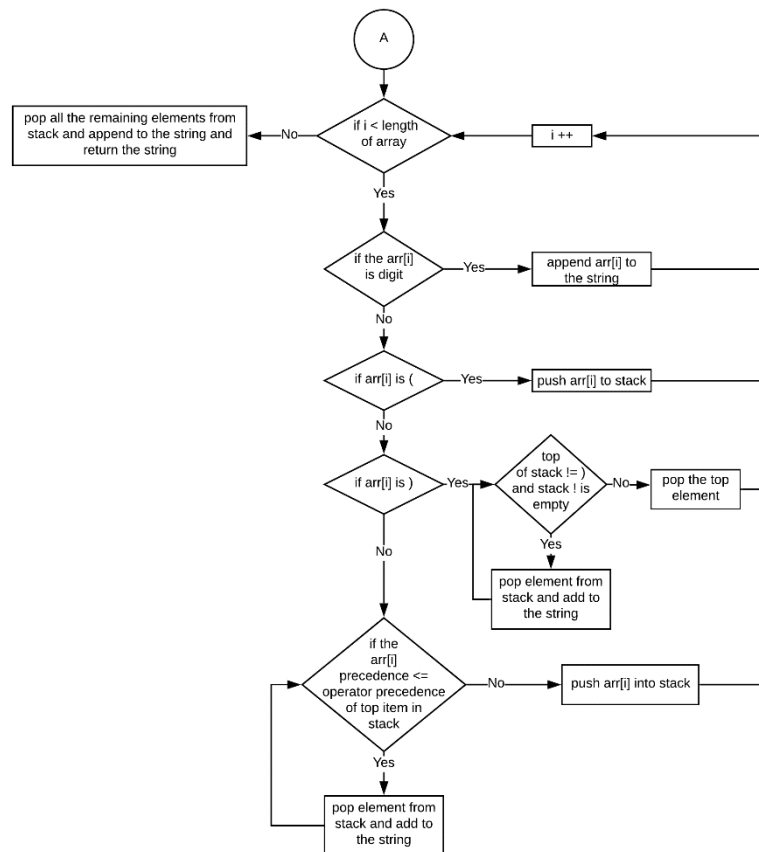
For the program I chose to have 2 separate functions to carry out the 2 different processes:

- postfix\_convertor () – to convert infix expression to postfix expression
- evaluate () – to calculate the result using the postfix expression

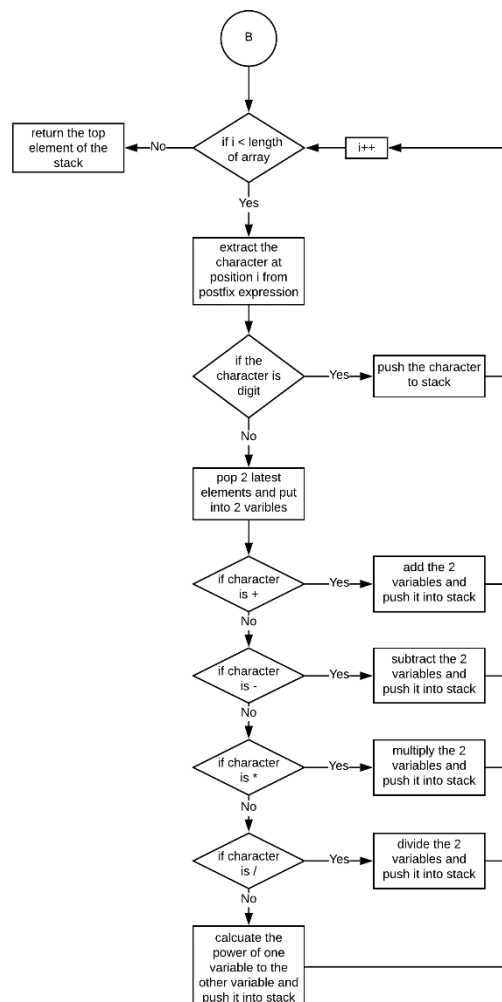
### a) Flowchart for main Method:



## b) Flowchart for postfix\_converter() method:



## c) Flowchart for evaluate() method:



There is also another function `operator_precedence ()` that returns an integer value for the operator that is sent in the arguments so that 2 operators can be compared while popping and pushing into the stack.

### III. Testing

Scenario 1 - when the input is less than 3 or greater than 20:

```
Enter the Infix Expression
1+
Invalid input please try again
Enter the Infix Expression
2+9-8+2-3+9*7-9+1^7-(2+9-0)+1
Invalid input please try again
Enter the Infix Expression
|
```

Scenario 2 - When characters other than 0-9 and +, -, \*, /, ^, (, ) is entered:

```
Enter the Infix Expression
1+a-9=3$9-0^h*i
Invalid input please try again
Enter the Infix Expression
|
```

Scenario 3 - When correct expression is entered:

```
Enter the Infix Expression
2*7+8^9/3+(7+1)-7
Postfix Expression: 27*89^3/+71++7-
Result = 44739257.67
Process finished with exit code 0
|
```

```
Enter the Infix Expression
1+9-8*(3+4)-2/9
Postfix Expression: 19+834+*-29/-
Result = -46.22
Process finished with exit code 0
|
```

```

Enter the Infix Expression
(9-8)*3+9/8^7-9+2
Postfix Expression: 98-3*987^/+9-2+
Result = -4.00
Process finished with exit code 0
|

```

INPUT	Expected Output	Actual Output
1+	Invalid input please try again	Invalid input please try again
2+9-8+2- 3+9*7-9+1^7- (2+9-0)+1	Invalid input please try again	Invalid input please try again
1+a-9=3\$9- 0^h*i	Invalid input please try again	Invalid input please try again
2*7+8^9/3+(7+ 1)-7	Postfix Expression: 27*89^3/+71++7- Result = 44739257.67	Postfix Expression: 27*89^3/+71++7- Result = 44739257.67
1+9-8*(3+4)-2/9	Postfix Expression: 19+834+*- 29/- Result = -46.22	Postfix Expression: 19+834+*- 29/- Result = -46.22
(9-8)*3+9/8^7- 9+2	Postfix Expression: 98-3*987^/+9-2+ Result = -4.00	Postfix Expression: 98-3*987^/+9-2+ Result = -4.00