

Note to grader: I have uploaded the example program I used for the output screenshots to the GitHub repository if you want to test it. I also have it on repl.it: <https://repl.it.com/@Vulpolox/Assignment3>

Expression Handler

Menu

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
>>>
```

Getting Infix Expression from User Input

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---

>>>a

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>(
Current Expression:
---
(

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>t
Current Expression:
---
( t

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>+
Current Expression:
---
( t +
```

```
Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>10
Current Expression:
---
( t + 10

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>)
Current Expression:
---
( t + 10 )

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>*
Current Expression:
---
( t + 10 ) *

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>3
Current Expression:
---
( t + 10 ) * 3

Enter a variable, parenthesis, or number [enter 'q' to stop, 'c' to clear expression]
>>>q
Final Expression:
---
( t + 10 ) * 3
```

Check if Expression Is Balanced

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
( t + 10 ) * 3

>>>b
Expression is balanced
```

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
( [ { } ] )

>>>b
Expression is balanced
```

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
( [ { } ] ) (

>>>b
Expression is not balanced
```

Postfix Conversion

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
( t + 10 ) * 3

>>>c
Postfix Expression
---
t 10 + 3 *
```

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
( a + b ) - d * { e % 7 } + [ a - ( 6 * 5 ) ]

>>>c
Postfix Expression
---
a b + d e 7 % * - a 6 5 * - +
```

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- edit infix expresssion
b -- check if expression is balanced
c -- see postfix expression
q -- quit
---
Current Expression:
---
( a + 7 * ( 3 + t )

>>>c
Postfix Expression
---
Unable to create postfix expression; infix expression is unbalanced
```

Queue

Menu

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>
```

enqueue() and peek()

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>a
Enter string to add to queue

>>>Hello
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>c
Top of the queue: Hello
```

getSize() and dequeue()

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>c
Top of the queue: Hello

CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>a
Enter string to add to queue

>>>World!
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>e
2
```

```
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>b
CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>c
Top of the queue: World!

CHOOSE ONE OF THE FOLLOWING:
---
a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>e
1
```

isEmpty()

CHOOSE ONE OF THE FOLLOWING:

a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>d

Queue is not empty

CHOOSE ONE OF THE FOLLOWING:

a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>b

CHOOSE ONE OF THE FOLLOWING:

a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>d

Queue is empty

CHOOSE ONE OF THE FOLLOWING:

a -- add element to queue
b -- remove element from queue
c -- see top element of queue
d -- check if queue is empty
e -- get the size of the queue
q -- quit

>>>