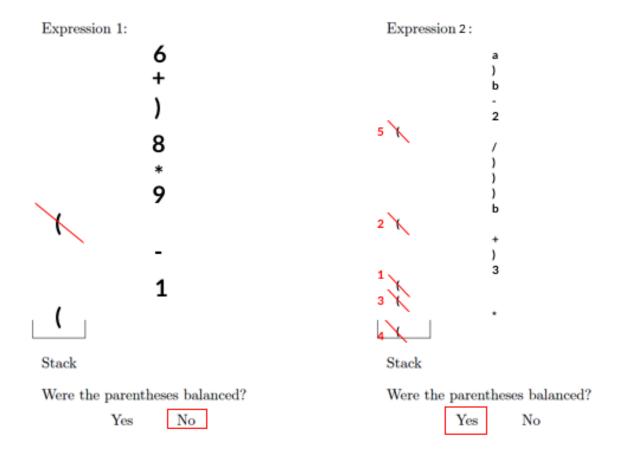
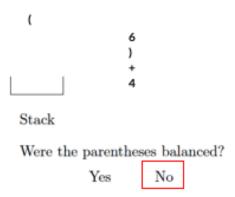
CSC148 Worksheet 9 Solution

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Question 1



Expression 3:



Question 2

- a. For each character being received,
 - 1. If the character is left parenthesis, then we need to store it in stack using push() method
 - 2. If the character is right parenthesis
 - 1. First, check for the non-emptiness of stack.
 - 2. If the list is not empty, then we need to pop an element form stack.
 - 3. If list is empty, then we need to raise error.
 - 3. If the character is other than left or right parenthesis, then pass the character.
- b. We will know the parenthesis are balanced when the number of elements in stack is zero after traversing a string.

Question 3

```
def is_balanced(line: str) -> bool:
    """Return whether <line> contains balanced parentheses.

Ignore square and curly brackets.
```

```
>>> is_balanced('(a * (3 + b))')
          >>> is_balanced('(a * (3 + b]]') # Note that the two ']'s don't
8
     {\tt matter}
          False
9
          >>> is_balanced('1 + 2(x-y)}') # Note that the '}' doesn't matter
10
11
          >>> is_balanced('3 - (x')
12
          False
13
14
          parenthesis_stack = Stack()
16
          for character in line:
17
               # If the character is left parenthesis,
18
               if character == '(':
                   # Store it in stack
20
                   parenthesis_stack.push('('))
21
               # If the character is right parenthesis,
22
               elif character == ')':
23
                   # Check for the non-emptiness of stack.
24
                   if parenthesis_stack.is_empty():
25
                       # if empty, return false.
26
                       return False
27
28
                   # If the list is not empty, then pop an element form stack
29
                   parenthesis_stack.pop()
30
31
          # Check parenthesis are balanced by checking stack is empty.
32
          if not parenthesis_stack.is_empty():
               return False
34
35
          return True
```

Listing 1: worksheet_9_q3_solution.py

Question 4