Lab Report 2

DSA

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**Task 1:**

Write a function in python that checks if paraenthesis in the string are balanced or not. Possible parenthesis are “{}”,”()” or “[]”. Use Stack class

Is\_balanced (“({a+b})”) -> True

Is+balanced (“)))((a+b){“} -> False

Is\_balanced (“((a+b))”) -> True

Is\_balanced (“))”) -> False

Is\_balanced (“[a+b]\*(x+2y)\*{gg+kk}”) - > True

**Code:**

from collections import deque  
open = ["[", "{", "("]  
close = ["]", "}", ")"]  
class valid\_equation:  
 def \_\_init\_\_(self):  
 self.stack = deque()  
 def push(self,value):  
 self.stack.append(value)  
 def pop(self):  
 self.stack.pop()  
 def isempty(self):  
 if self.size() == 0:  
 return True  
 else:  
 False  
 def size(self):  
 return len(self.stack)  
  
  
 def check(self,checkequation):  
 for brackets in checkequation:  
 if brackets in open:  
 self.push(brackets)  
 elif brackets in close:  
 pos = close.index(brackets)  
 if ((self.size() > 0) and (open[pos] == self.stack[self.size() - 1])):  
 self.pop()  
 else:  
 return " InValid Equation"  
 if self.size() == 0:  
 return "Valid Equation"  
 else:  
 return "InValid Equation"  
  
s = valid\_equation()  
equation1 = '(“({a+b})”)'  
equation2 = '(“)))((a+b){“}'  
equation3 = '(“((a+b))”)'  
equation4 = '(“))”)'  
equation5 = '(“[a+b]\*(x+2y)\*{gg+kk}”) '  
print("This ",equation1 ,"equation is ",s.check(equation1))  
print("This ",equation2 ,"equation is ",s.check(equation2))  
print("This ",equation3 ,"equation is ",s.check(equation3))  
print("This ",equation4 ,"equation is ",s.check(equation4))  
print("This ",equation5 ,"equation is ",s.check(equation5))

**Output:**

