DSA LAB 2

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Q1) Write a function in python that can reverse a string using stack data structure. Use Stack class.

reverse_string("Muhammad Asad") should return "dasa dammahum"

```
A='Hamza Shabbir'
stack_Memory=[]
Reverse_stack=[]
b=''
print(len(A))
for i in range(len(A)):   # pushing into stack
    stack_Memory.append(A[i])

print(stack_Memory)

for i in range(len(stack_Memory)):  # popping from stack

    Reverse_stack.append(stack_Memory.pop())

print(stack_Memory)
print(Reverse_stack)
b=b.join(Reverse_stack)
print(b)
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
4087327\pythonFiles\lib\python\debugpy\launcher' '49717' '--' 'c:\Users\Ha

13
['H', 'a', 'm', 'z', 'a', ' ', 'S', 'h', 'a', 'b', 'b', 'i', 'r']
[]
['r', 'i', 'b', 'b', 'a', 'h', 'S', ' ', 'a', 'z', 'm', 'a', 'H']
ribbahS azmaH
PS C:\Users\Hamza\Desktop\Python\Assignment1>
```

Q2) Write a function in python that checks if parenthesis in the string are balanced or not. Possible parenthesis are "{}","()" or "[]". Use Stack class.

```
steck=[]
exp_meth='[x+{(y+z)}]'
for i in range(len(exp_meth)):
    if exp_meth[i]=='[':
        steck.append('[')
    if exp_meth[i]=='{':
        steck.append('{')
    if exp_meth[i]=='(':
        steck.append('(')
    if exp_meth[i]==')':
        steck.pop()
    if exp_meth[i]=='}':
        steck.pop()
    if exp_meth[i]==']':
        steck.pop()


print(steck)
print(type(steck))
#print(exp_meth[1])
```

```
[]
<class 'list'>
PS C:\Users\Hamza\Desktop\Python\Assignment1>
```

Discussion:

Stack is a linear data structure that follows a particular order in which the operations are performed. The order may be LIFO(Last in First Out) or FILO(First In Last Out). In this lab, we reversed a string using a stack by pushing and popping, and also we checked for a valid mathematical expression by checking braces on left and right which returns us an empty list.