CO322 Lab 04

E/19/166
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Battle of Wizardry: Postfix Potion Power

```
# class to define methods of the stack and to evaluate the expression
class posteval:

    # constructor
    def __init__(self):
        self.stack = []
        self.upper = -1

    # to get the value that is on the
    def top(self):
        if not self.emptystack():
            return self.stack[-1]

    def get(self):
        if not self.emptystack():
            self.upper -= 1
            return self.stack.pop()

    def add(self, element):
        self.upper += 1
        self.stack.append(element)
```

```
    def emptystack(self):
        return self.upper == -1

    def evaluate(self, expression):
        for char in expression:
            if char.isdigit():
                self.add(char)

            else:
                op1 = float(self.get())
                op2 = float(self.get())

                if char == '+':
                    result = op2 + op1
                elif char == '-':
                    result = op2 - op1
                elif char == '*':
                    result = op2 * op1
                elif char == '/':
                    result = op2 / op1



                self.add(str(result))

        return int(float(self.get()))

if __name__ == '__main__':
    numofexp = int(input())
```

```
for i in range(numofexp):
    explist = input().split()

    obj = posteval()

    print(obj.evaluate(explist))
```

The Triwizard Merge Sort

```
# defining the function for sorting
def merge(array, left, mid, right):

    len1 = mid - left + 1
    len2 = right - mid

    la = [0] * (len1)
    ra = [0] * (len2)

    for i in range(0, len1):
        la[i] = array[left + i]

    for j in range(0, len2):
        ra[j] = array[mid + 1 + j]

    i = 0
    j = 0
    k = left

    while i < len1 and j < len2:

        if la[i] <= ra[j]:
            array[k] = la[i]
            i += 1

        else:
            array[k] = ra[j]
```

```
            j += 1

        k += 1

    while i < len1:
        array[k] = la[i]
        i += 1
        k += 1

    while j < len2:
        array[k] = ra[j]
        j += 1
        k += 1

# defining the function for merging and sorting
def mergeSort(array, left, right):

    if left < right:
        mid = (left + right) // 2
        mergeSort(array, left, mid)
        mergeSort(array, mid + 1, right)
        merge(array, left, mid, right)


tests = int(input())

for i in range(tests):
    array = list(map(int, input().split()))
    mergeSort(array, 0, len(array) - 1)
```

```
for value in array:
    print(value, end=" ")


print()
```