KEYBOARDING

B.Rajini : 21B01A1226 IT-A
P.Dharani Satya : 21B01A0241 EEE
S.Nikhita : 21B01A5494 AIDS-B
Y.Tulasi : 22B05A5412 AIDS-B

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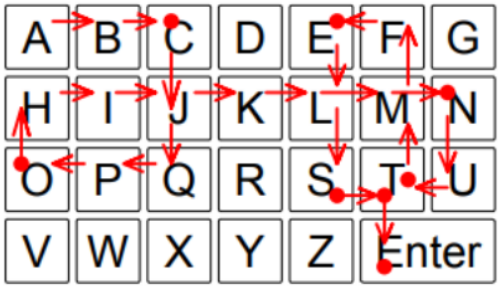
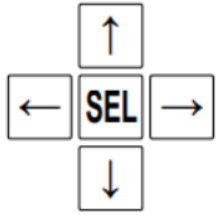
Introduction

- Determining the minimal number of strokes needed to type a given text using virtual keyboard layout, where pressing any of the five hardware buttons constitutes a stroke. The keys are arranged in a rectangular grid, such that each virtual key occupies one or more connected unit squares of the grid

Virtual Keyboard





5 20
12233445566778899000
QQWWEERRTTYYUUIIOOPP
-AASSDDFFGGHHJJKKLL*
--ZZXXCCVVBBNNMM--**

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Approach

- We divided our Function into two parts. One part is for calculating the Minimum Strokes for characters and Second part is for calculating the Minimum Strokes for Enter key.
- The total function gives minimum number of strokes which we have to calculate.

Learnings

- We learnt how to work with team members.
- We learnt how to use Gitlab and Latex.
- We learnt how to use the sys module efficiently.
- We developed communication skills.

Challenges

- It took more time to understand the problem statement and to build the logic.
- We faced some challenges while writing code for second case study.
- We overcame by understanding the problem statement and the inputs given in the second case study.

Statistics

- Number of Lines of Code : 56
- Number of Functions : 2
- Function 1 : keystrokes1
- Function 2 : keystrokes2

Demo/Screenshot

```
]: import sys
def keystrokes1(keyboard,text):
    strokes = 0
    count_key,count_enter = 0,0
    rows, columns = 4,7

    for char in text:
        count1 = []
        for i in range(rows):
            for j in range(columns):
                if keyboard[i][j] == char:
                    count1.append(count_key)
                    count_key += 1


        strokes += min(count1) + 1
    count2 =[]
    for i in range(rows):
        for j in range(columns):
            if keyboard[i][j] == '*':
                count_enter += 1
                count2.append(count_enter)

    strokes += min(count2) + 1
    return strokes


def keystrokes2(keyboard,text):
    strokes = 0
    count_key,count_enter = 0,0
    rows,columns = 5,20
```

Demo/Screenshot

```
    for char in text:
        count1 = []
        for i in range(rows):
            for j in range(columns):
                if keyboard[i][j] == char:
                    count1.append(count_key)
                    count_key += 1

        strokes += min(count1) + 1
    count2 = []
    for i in range(rows):
        for j in range(columns):
            if keyboard[i][j] == '*':
                count_enter += 1

                count2.append(count_enter - iterate_count )
    strokes += min(count2) + 1
    return strokes

keyboard1 = [['A','B','C','D','E','F','G'],
             ['H','I','J','K','L','M','N'],
             ['O','P','Q','R','S','T','U'],
             ['V','W','X','Y','Z','*', '*']]
keyboard2 = [['1','2','2','3','3','4','4','5','5','6','6','7','7','8','8','9','9','0','0','0'],
             ['Q','Q','W','W','E','E','R','R','T','T','Y','Y','U','U','I','I','O','O','P','P'],
             ['_','A','A','S','S','D','D','F','F','G','G','H','H','J','J','K','K','L','L','*'],
             ['-','-','Z','Z','X','X','C','C','V','V','B','B','N','N','M','M','-','-','',''],
             ['-','-','-','-','-','-','-','-','-','-','-','-','-','-','-','-','-','-','-','-']]
print(keystrokes2(keyboard2,'ACM-ICPC-WORLD-FINALS-2015'))
print(keystrokes1(keyboard1,'CONTEST'))
```

```
160
30
```

THANK YOU