IT351 - Human Computer Interaction
Assignment 7 - Onscreen Dynamic Keyboard

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Three logical groups are made:

1. Numbers: 0-9
2. Letters: A -Z
3. Function Keys: F1 - F12

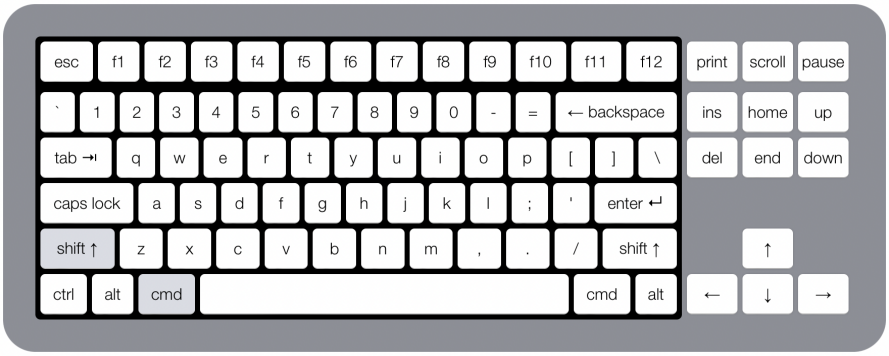


Image 1

Image 2

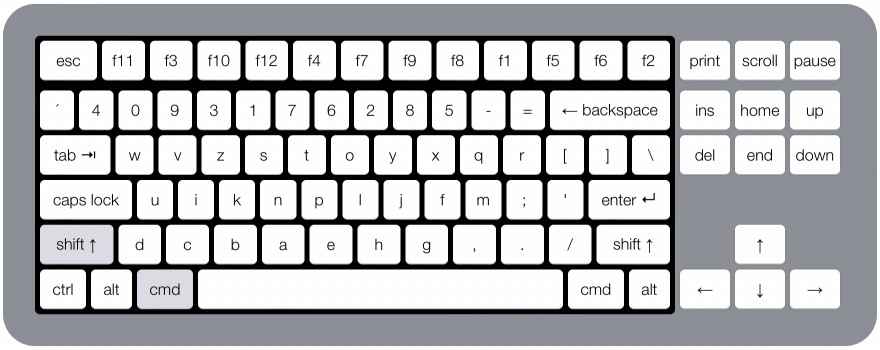


Image 3

Case 1:
Standard QWERTY keyboard as shown in image 1

Case 2a:
Randomised keyboard as shown in image 2

Case 2b:
Randomised keyboard as shown in image 3

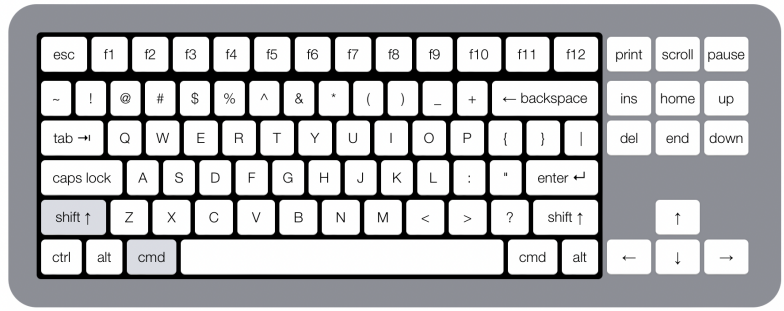
Working

```
function getRandomNumbers() {
   let list = [[1,'!'],[2,'@'],[3,'#'],[4,'$'],[5,'%'], [6,'^'], [7,'&'], [8,'*'],
[9,'('],[0,')']]
   list = list.sort(() => Math.random() - 0.5)
   return list;
}
function getRandomAlphabets(){
   let list2 = [['a','A'],['b','B'],['c','C'],['d','D'],['e','E'], ['f','F'],
['g','G'],['h','H'],['i','I'],['j','J'],['k','K'],['l','L'],['m','M'],['n','N'],['o','
O'],['p','P'],['q','Q'],['r','R'],['s','S'],['t','T'],['u','U'],['v','V'],['w','W'],['
x','X'],['y','Y'],['z','Z']]
   list2 = list2.sort(() => Math.random() - 0.5)
   return list2;
}
function getRandomFunctions(){
   let list3 = ['f1','f2','f3','f4','f5','f6','f7','f8','f9','f10','f11','f12']
   list3 = list3.sort(() => Math.random() - 0.5)
   return list3;
}
```

For the three groupings of keys, corresponding functions are made. They are:

1. getRandomNumbers() - Return random numbers form 0 - 9
2. getRandomAlphabets() - Return random alphabets from A - Z
3. getRandomFunctions() - Return random function keys from F1 - F12

Using these functions, keys are randomly arranged within the logical groupings.
Qwerty keyboard is also generated at random when the page is refreshed.



When **Shift** key is pressed, the all alphabets are capitalised and numbers are replaced by the corresponding symbols.

Analysis

Different users have tried different keyboards and these are the results. Each user was tested against a paragraph of 87 words.

User	**Case 1**	**Case 2a**	**Case 2b**
1	123 sec	382 sec	367 sec
2	174 sec	398 sec	402 sec
3	169 sec	378 sec	396 sec

Observations:

1. All people are habituated to the usual qwerty keyboard. **Case 1** takes significantly less time compared to **Case 2a** and **Case 2b**
2. Everyone performs the same in **Case 2a** and **Case 2b** because the keyboard is randomly generated and all people take time in searching for characters in the keyboard.