

## OOP Assignment Week 3

### A. Problem Solving

1. Print a stair case pattern with size n ( $n \geq 2$ ).

Input: 6

Output:

```
#
##
###
####
#####
#####
```

2. Count the number of occurrences of all different characters in a string, print by the format character(number of occurrences), separated by a space.

Input: thisisastring

Output: t(2) h(1) i(3) s(3) a(1) r(1) n(1) g(1)

3) Merge 2 non-descending arrays into one non-descending array without sorting algorithm.

Input: [3, 3, 5, 7, 13, 20]

[1, 2, 5, 6, 18, 19, 21, 33]

Output: [1, 2, 3, 3, 5, 5, 6, 7, 13, 18, 19, 20, 21, 33]

4\*. Rotate a square matrix size n 90 degree clockwise.

Input: [[1, 3, 2],

[5, 6, 9],

[8, 4, 7]]

Output: [[8, 5, 1],

[4, 6, 3],

[7, 9, 2]]

## B. Object Oriented Programming

1) A farm has 3 types of cattle: cow, sheep, and goat. Every type of cattle can give milk and make its own sound. When hungry, the cattle will make a sound to ask for food. The number of liters of milk per cattle is random but within the following limits:

- Cow: 0 – 20 liters.
- Sheep: 0 – 5 liters.
- Goat: 0 – 10 liters.

a. One day the farm owner was away, all the cattle on the farm were hungry. Print all the sounds that could be heard on the farm.

b. The farmer wants to find out how many cattle are on the farm of each type and the total liters of milk each type can give. Write a program to print the required information.

2) The Company BakeFood launched a food sharing contest:

- Each participant (user) includes bellowing information:

- The Id is auto increment (ex: first one will have id = 1, second one will have id = 2)
- Name of the participant/user.
- Phone number

- Each post includes bellowing information:

- The Id is auto-incremented by EACH user (please check the examples below).
- A short description (maximum 50 characters).
- The information of the media file in the post.

- Each participant only has one chance to register with a fixed post number (maximum 3 posts).

- The media file can be an image or a video including file size (MB unit for image, GB unit for video), the date that the image or video was taken.

- The image file contains information about the device and location, the resolution (width and height by pixel unit).

- The video file contains information about the length in seconds and one of the following resolutions: 480p, 720p, 1080p, 1440p.

- Each post will be generated will a link by the following format:

**`https://bakefood.oop/users/<userId>/posts/<postId>`**

For example, the first user with 2 posts will receive the 2 links:

`https://bakefood.oop/users/1/posts/1`

`https://bakefood.oop/users/1/posts/2`

The second user with 3 posts will receive the 3 links:

`https://bakefood.oop/users/2/posts/1`

`https://bakefood.oop/users/2/posts/2`

`https://bakefood.oop/users/2/posts/3`

(Same logic for the other users).

- a) Write the program to register all users and their posts (do not input the user ID and post ID, it will be auto-assigned).
- b) Print all the links of all users after the registration process is completed.
- c) Input a correct format link, print the following information:
  - User name.
  - The post description.
  - Details of the media file.
- d\*) In case the format of the link is incorrect, print "NOT FOUND".

### **C. Winform Exercise**

Download the DemoSolutionManagement project and check the record for requirements.