Gebze Technical University
Department Of Computer Engineering
CSE 312 / CSE 504 Operating Systems
Homework #04
Due Date: June 6th 2017, 08:00AM
No Late submissions will be accepted
Concentration Game on Android

Concentration, also known as Match Match, Memory, Pelmanism, Shinkei-suijaku, Pexeso or simply Pairs, is a card game in which all of the cards are laid face down on a surface and two cards are flipped face up over each turn. The object of the game is to turn over pairs of matching cards. In this homework you will implement a simple version of Concentration game on the Android Operating System. You can try the web version of the game from http://www.play.vg/games/52-Concentration.html

Your game will have these features

- N x N board (**every tile is a button**)
- Each level you will extend size +2 for each direction (4 x 4, 6 x 6, 8 x 8 so on..)
- Every button must have one of the 3 images depending on the situation below
    - A Loading Image (While you downloading the pair image this must seen)
    - A Closed Tile Image
    - An Open Tile Image (Which is downloaded from internet)
- Score method. (It depends on you, You can keep time, count wrong moves etc.)
- Every level **must start after** all open tile images downloaded from the internet.

For Open Tile Images you will use **Pixabay API. (** https://pixabay.com/api/docs/ **)** Register here and get an api key. Take a look for API documentation.

In this homework you will have the following steps

1. A background thread for downloading image list. (For the 4x4 you need 8 images you can use per_page parameter of API for getting N sized image list)
2. NxN background thread for downloading images. (Careful every image must be downloaded twice.)
3. An NxN size mutual list for threads at **Step 2**. (This must be thread safe)
4. Every thread must have it's own info for start and execution time. Write this info to debug log.

Careful! Threads at **Step 2** don't know their placement till they download the image. After downloading images, every thread will cover a list member, depends on execution time, list must be randomly ordered.

Don't forget to update your UI with methods we mentioned in class while downloading images, after downloaded them etc. Your app have to responsive all time. Encountering with ANR errors will reduce your grade severely.

Create your project with Android Studio API level 19 (4.4 Kitkat)

If your program won’t compile you won’t get graded.

Comment well your classes and methods.

Write a short report about the problems you encountered and how you solve them.