Comp 319 Programming Assignment #2
GameOS
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1 Definition

In this first assignment, you developed a QuickQuiz game that users answer different category of questions and collect points from them. In this assignment, you are expected to extend your application with different types of game. The application, namely GameOS, will have two categories of a game that are QuickQuiz and MemoGame. Category 1 opens the QuickQuiz game, whereas Category 2 is for MemoGame. The specification of MemoGame is as follows.

Figure 1: Memo Game

In MemoGame, a user can train his/her short-term memory and concentration. The game has 3 levels where square board on the screen will contain 4x4, 5x5 and 6x6 boxes, respectively. Whenever the square board appears on the screen all boxes in the board will display flags; one flag per box. The flags need to be selected randomly from the flag pool (it will be provided with the assignment). The number of target flags that user needs to find is different for each level, which is 4, 5 and 6 flags, respectively. Each target flag is represented on the square board in two different boxes and user needs to find these flags pair to complete the each level of the game. Figure 1 demonstrates the 4x4 square board of MemoGame with 4 target flags.

When the square board is presented, the user can see all boxes and the target flag list that needs to be found by the user are presented on top of the square board. The time duration that the square board is presented to the user is 5 seconds and needs to be controlled via the timer. After 5 seconds, the square board will be closed and the target flag list is presented on top of the square board. User clicks on the boxes and boxes display the flag to the user for 5 seconds. After 5 seconds, the box is closed. If the user clicks the correct box that matches with the currently shown flag within 5 seconds then these two boxes stay opened. The target flag list updated where the found flag is removed from the view.

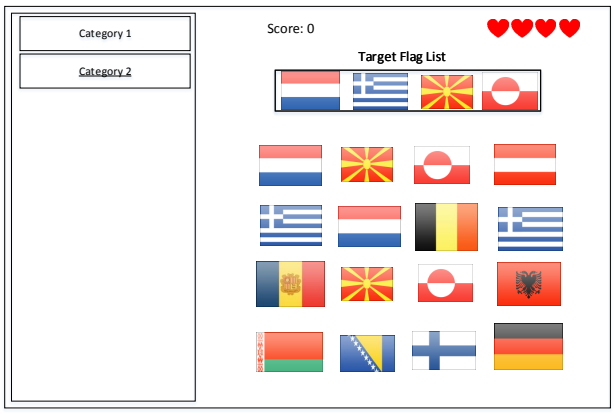

Figure 2: GameOS Tablet View

Figure 2 demonstrates the screenshot of GameOS where the category 2 is selected for game. The MemoGame is initialized with the 4x4 square board and stays opened for 5 seconds. After 5 seconds, the square board is closed and the target flag list stays opened. After this step, the user is expected to click on the boxes in which the flags previously were shown. A correct guess will increase the user's score, while the wrong guess will reduce the points.

Every time the user achieves to find all the target flags in a square board, a new square board appears bringing up the next level of the game. For each level of the game, the difficulty level is increased as the number of different flags and the number of boxes in a square board increased. For example, at the lowest level, the user needs to find 4 flags from 16 boxes, while on a higher difficulty level, there can be 5 or 6 different flags whose pictures appear on a square board with size 5x5 and 6x6, respectively.

Application has the following properties;

- Application starts with an initial screen and user needs to enter a nickname.
- After nickname entrance, the application presents the category of applications. Category of applications is represented in ListActivity or ListFragment based on the device screen size. We have two categories of application that are Quiz Game and Memo Game.
- User can select one of the categories and the correlated game is started.

- The QuickQuiz game needs to obey the specifications that are pointed in the first assignment.
- In MemoGame, a square board will be displayed with size 4x4. First, a square board is shown to the user. In the square board, there exist 16 boxes where 8 of them contains 4 different flag pairs. Other boxes contain random flags that are different than the target flag list. The user needs to find box pairs that contain the flag from the target flag list.
- On the top right corner of the screen there are 4 heart icons which represent user's life points and, on the top left corner, there is a number which shows the user's current score.
- After 5 seconds, the square board is closed, and on the top of the screen, the target flag list stays opened. The user is expected to find the flags via clicking on boxes where the flags have previously appeared.
- For each user guess where the flags match correctly, the score will be incremented by 100. However, for wrong pairs, one heart icon disappears starting from left.
- After user guesses all of the correct locations, a new square board will replace the previous square board and it displays the square board with defined specifications as follows
  - The first square board has size 4x4, possess 4 target flags (shown in 8 random boxes) and other boxes display random flags (must be different than the target flags) from the pool.
  - The second square board has size 5x5, posses 5 target flags (shown in 10 random boxes) other boxes display random flags (must be different than the target flags) from the pool.
  - The third square board has size 6x6, posses 6 target flags (shown in 12 random boxes) other boxes display random flags (must be different than the target flags) from the pool.
- The game is over when the user finishes all of the levels or when his/her life points are finished.

2 Requirements

The application needs to be designed in object oriented manner. The user, Game Board, Score and Life Points have to be separate classes. Students are expected to be aware of the underlying class model and the relation of classes. The application has to satisfy the defined objectives and properties in Section 1. Each of the objectives and properties should be tested before submission. The design guidelines are as follows;

1. You need to change your QuickQuiz Application into fragment adopted version. You have already designed the QuicQuiz with multiple activities and used Intents to change activities. In this assignment, you will learn how to convert an existing activity into the fragment.

2. You need to developed another game, namely MemoGame where user trains his/her memory and concentration. The MemoGame specification is defined. Pay attention to rules and game logic in development.

3. GameOS will have two categories of the game, Category 1 and 2 and these categories are listed via a ListActivity and ListFragment in phone and tablet, respectively. GameOS needs to be designed for not only phones but also tablets. This stands for designing GameOS where activities are using fragments in tablet, whereas fragments will be separate activities on the phone.

4. GameOS will have two different layouts such that one for large device and one for phone that we have already developed during the lecture (Lecture-7, Fragments)

5. GameOS without fragments will not be accepted as a valid assignment.

3 Submission

Students need to submit their source code and screenshot of the working demo to Blackboard website. The missing or corrupted files, nonworking demos are not accepted. Students are expected to explain the code details or show working demo when it is requested.

4 Demo and Grading

In grading, each group or student needs to demonstrate the working copy of the code with the submitted files. Each defined objectives and properties is evaluated separately. Students will be asked a different kind of questions related to the application, class model and application structure. Group members can take different points based on the evaluation. The doodle poll for demo session will be announced by TAs.