CS478: Software Development for Mobile Platforms

Project #3

Due time: 11:59 pm on 3/20/2022

Total points: 100

Instructor: Ugo Buy

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Design and code two new Android apps meant to work together on an Android phone or tablet running version Android 11 (API 30). The first app helps visitors in Chicago decide on points of interest in the city. The second app has specific information about the points of interest.

1. Application A_1 defines an activity containing two read-only text views and two buttons. The buttons, when selected, will first show a short toast message, then broadcast two different implicity intents (e.g., *attractions* and *restaurants*) depending on the button pressed. The text views describe the meaning of the buttons to the device user.

2. Application A_2 receives the intents. Depending on the kind of intent that was received, A_2 will launch one of two activities. The first activity (attractions) displays information about 5 points of interest in the city of Chicago, Illinois (e.g., the Lincoln Park Zoo, Navy Pier, the Museum of Science and Indutry, the Art Institute, the TILT!, etc.) The second activity shows at least 5 restaurants located within Chicago's city limits. Both activities contain two fragments, whose behavior is described below. In addition, application A_2 maintains an *options menu* and an *action bar*. The action bar shows the name of the application (your choice) and the overflow area. The options menu allows a device user to switch between attractions and restaurants. This menu should be clearly accessible from the overflow area.

Each of the two activities in A_2 contains two fragments. The first fragment displays a list (either the attractions or the restaurants, depending on the activity). This list may be scrollable, as needed. The device user may select any item from either list; the currently selected item will stay highlighted until another item is selected. The second fragment shows the official web site of the highlighted item using a Webview.

Your apps should display optimally in landscape mode. You need not make provisions to display the apps differently in portrait mode. Regardless of the mode, the activities in A_2 initially show only the first fragment across the entire width of the screen. As soon as a user selects an item, the first fragment is "shrunk" to about 1/3 of the screen's width. This fragment will appear in the left-hand side of the screen, with the second fragment taking up the remaining 2/3 of the display on the right. Pressing the "back" button will return the activity to its initial configuration. The action bar should be displayed at all times regardless of whether the device is in portrait or landscape mode.

Finally, the state of application A_2 should be retained across device reconfigurations, e.g., when the device is switched from landscape to portrait mode and vice versa. This means that the selected list item (in the first fragment) and the page displayed in the second fragment will be kept during configuration changes.

Implementation notes. For this project use a Pixel 3XL AVD and API 30, as with previous projects. You don't need to provide compatibility with previous Android versions. Use method *setRetainInstance()* to prevent fragments from getting deleted when a configuration change occurs, resulting in the destruction of the containing activity.

Beware that A_2 must define two broadcast receivers in order to handle the intents. Since the intents are implicit, you must register those intents programmatically.

Finally, you must use a *ViewModel* with *LiveData* for communication between fragments. (We discussed this approach to interfragment communication in class.) Substantial penalties will apply if you use other methods of communication between fragments.

You must work alone on this project. Submit the two Studio projects as a single zip archive using the submission link in the assignment's page on Blackboard. No late submissions will be accepted.