ITIS/ITCS 5180 Mobile Application Development
Midterm Exam

Basic Instructions:

1. This is the Midterm Exam, which will count for 20% of the total course grade.
2. This Midterm is an individual effort. Each student is responsible for her/his own Midterm and its submission.
3. Once you have picked up the exam, you may not discuss it in any way with anyone until the exam period is over.
4. During the exam, you are allowed to use the course videos, slides, and your code from previous home works and in class assignments. You can use the internet to search for answers. You are NOT allowed to use code from other students or solicit help from other online persons.
5. Answer all the exam parts, all the parts are required.
6. Please download the support files provided with the Midterm and use them when implementing your project.
7. Your assignment will be graded for functional requirements and efficiency of your submitted solution. You will loose points if your code is not efficient, does unnecessary processing or blocks the UI thread.
8. Export your Android project and create a zip file which includes all the project folder and any required libraries. The file name is very important and should follow the following format: **800#_Midterm.zip.** Submit the exported file using the provided canvas submission link.
9. **Do not try to use any Social Messenger apps, Emails, Or Cloud File Storage services in this exam.**
10. **The required Android Virtual Device (AVD) should have minimum SDK version set to 26 and target SDK at 28+.**
11. **Failure to follow the above instructions will result in point deductions.**
12. **Any violation of the rules regarding consultation with others will not be tolerated and will result disciplinary action and failing the course.**

Midterm Exam (100 points)

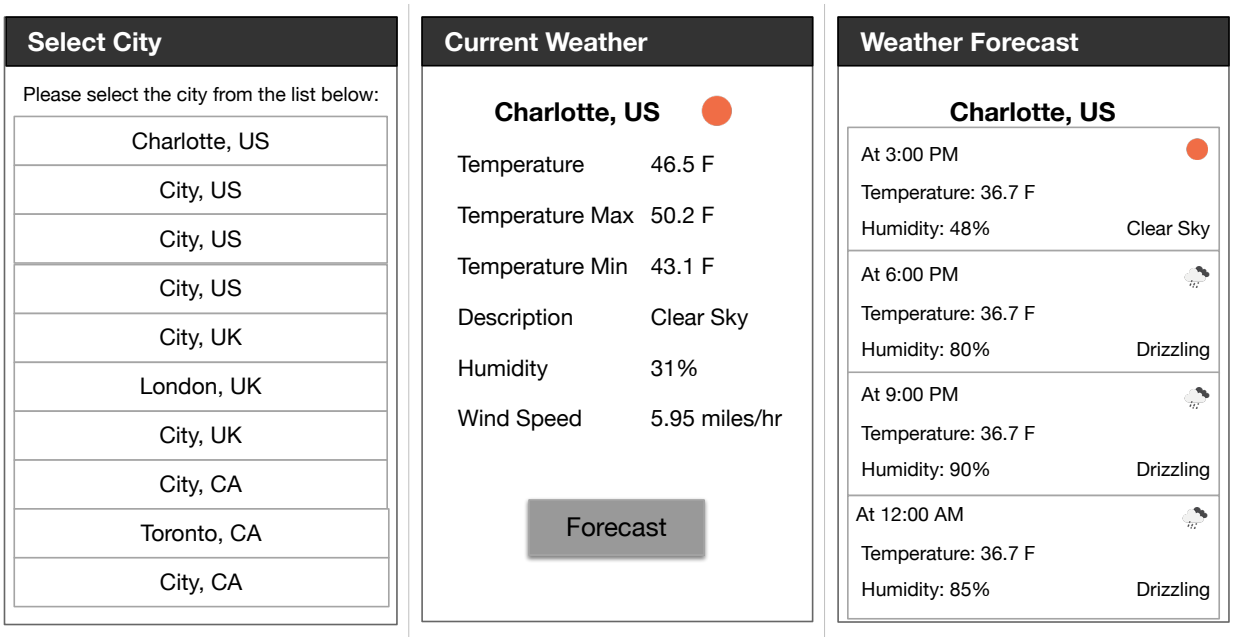
This is the midterm exam. In this assignment you will build a weather application using the OpenWeather api.

API details:

1. Create an account at https://openweathermap.org/ and get an api key, which will be used to make the api calls.
2. You should use the Weather API, check the documentation for that is provided by the OpenWeatherMap APIs
    1. For the city and country information you should use the data provided in the support files.
    2. All the retrieved information should be in the imperial units. Check the api documentation to retrieve the data in this unit. All data should be retrieved in JSON format. The following table shows examples of the API calls.

Current weather of a City	api.openweathermap.org/data/2.5/weather? **q=London,uk&appid=<API_Key>**
5 day weather forecast	api.openweathermap.org/data/2.5/forecast? **q=London,us&appid=<API_Key>**
Weather icon documentation	https://openweathermap.org/weather-conditions

Table 1: API calls



(a) Select city activity (b) Current weather activity (c) Forecast activity

Figure 1: App Screens

Part 1: Select City activity (10 points):
The activity should look like Figure 1(a). The requirements are as follows:
1. Import the JSON file from the support files and import it into the project.
2. Display the cities provided in the JSON file in a ListView. The format should be: City, Country, see Figure 1(a).
3. On Click any of the items in the ListView it should start the Current Weather activity with the details of the current weather in that city.

Part 2: Current Weather activity (40 points):
1. This activity should parse the current weather of the selected city.
2. This activity should display the name of the city, weather icon in an ImageView, current temperature, maximum temperature, minimum temperature, description, humidity, and wind speed.
3. There should be a button named, "Forecast."
4. Upon clicking on the Forecast button should finish the activity and start Weather Forecast activity.

Part 3: Weather Forecast activity (50 points):
The requirements are as follows:
1. This activity should retrieve the 5 day forecast for the city.
2. The forecasts for every three hours should be listed using RecyclerView, see Figure 1(c).
3. Every element in the RecyclerView should contain, the time, the weather icon, temperature, humidity, and the condition as it is in Figure 1(c).
4. You can use pretty time library to display the time.
5. If you are unable to implement RecyclerView, You can still use ListView with 5 points deduction.

Rubrics:

Part 1: Importing JSON file into project, and parsing it to retrieve cities.	5
Part 1: Creating the ListView and implementing onClick.	5
Part 2: Setting up API, parsing JSON, and displaying texts.	25
Part 2: Retrieving and displaying weather icon.	10
Part 3: Forecast Button onClick Logic	5
Part 3: API and JSON Parsing	20
Part 3: RecyclerView	20
Part 3: Retrieving and displaying weather icons.	10
Total	**100**