

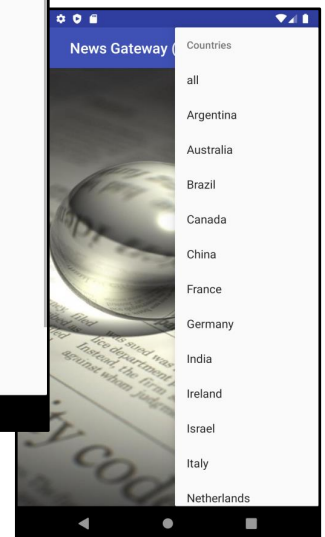
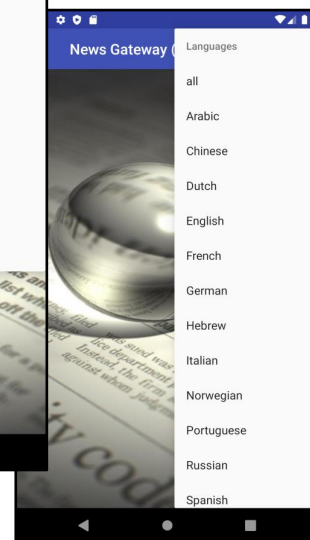
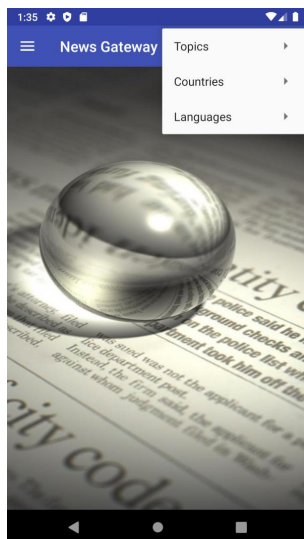
## CSC 392/492: Mobile Applications Development for Android II

### Assignment 2 – News Aggregator (400 pts)

Uses: Drawer Layout, Fragments, FragmentManager, ViewPager, FragmentPagerAdapter, Internet, APIs

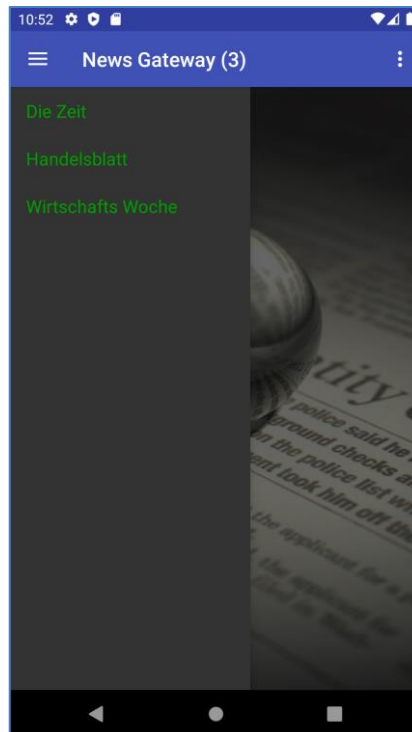
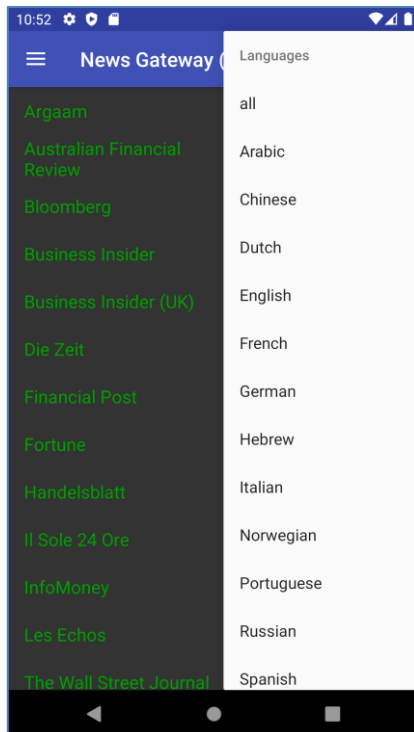
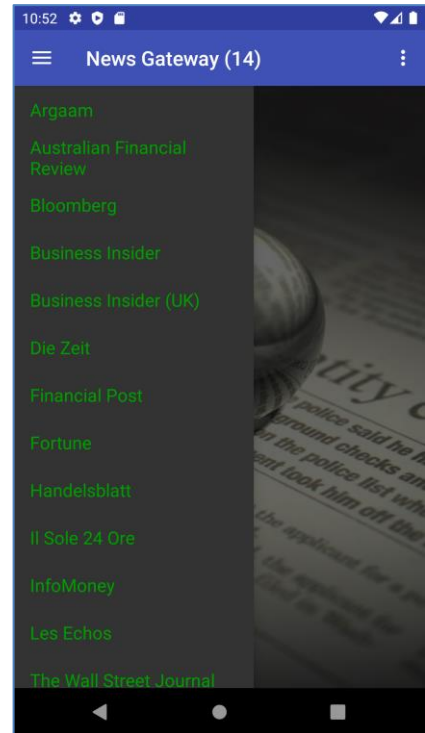
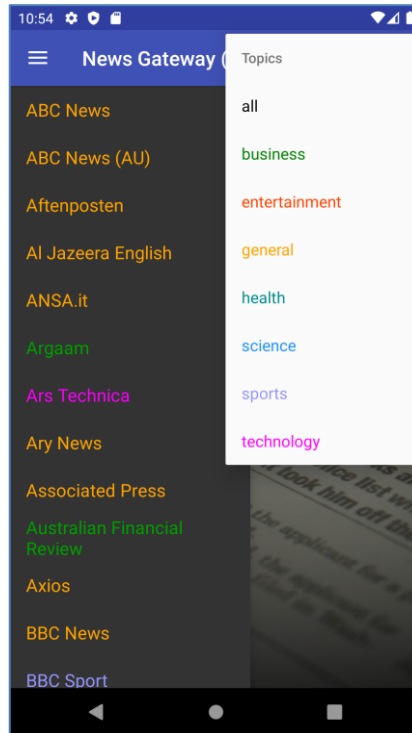
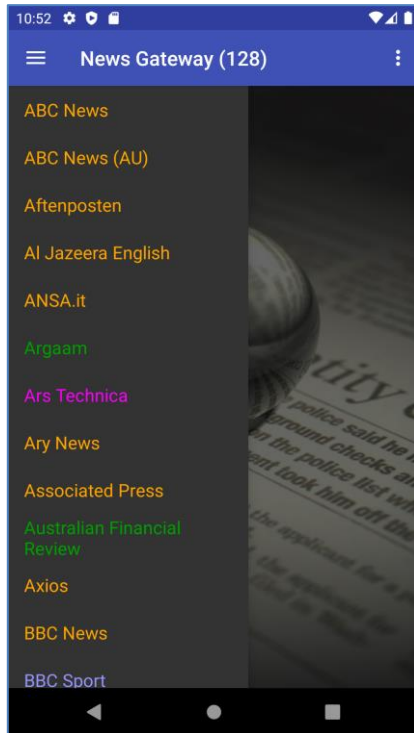
#### App Highlights:

- This app displays current news articles from a wide variety of news sources covering a range of news categories.
- [NewsAPI.org](http://NewsAPI.org) will be used to acquire the news sources and news articles.
- Selecting a news source (i.e., CNN, Time, etc.) will display up to 10 top stories from that news source.
- Selecting a *topic* will limit the news source choices to only those offering that topic of news.
- Selecting a *country* will limit the news source choices to those from the selected country.
- Selecting a *language* will limit the news source choices to only those offering news in the selected language.
- News articles are viewed by swiping right to read the next article, and left to go back to the previous article
- You *will not* need to develop separate landscape layouts.
- The user can go to the complete extended article on the news source's website by clicking on the article title, text, or image content.
- You must add a professional looking launcher icon to your app.

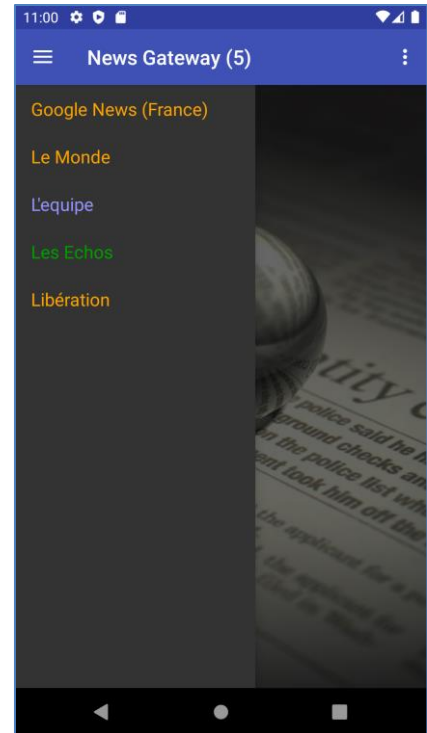
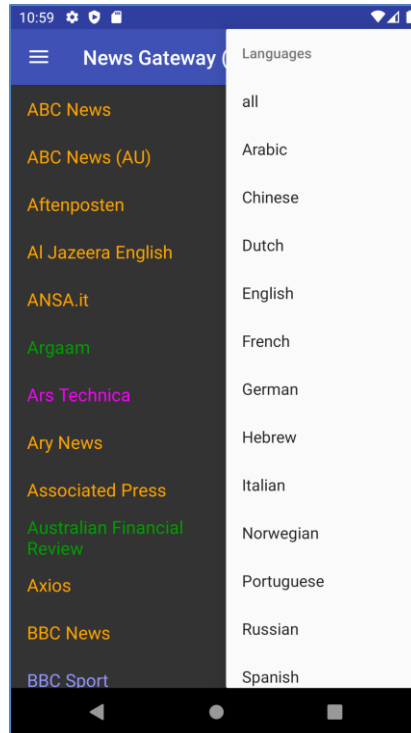
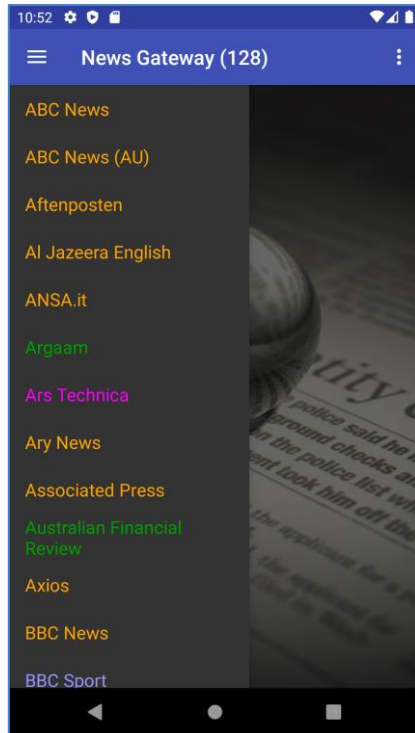


### Menu Behavior Examples:

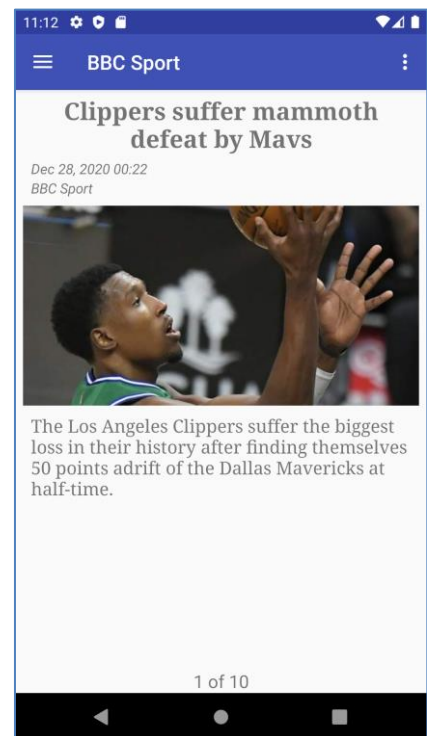
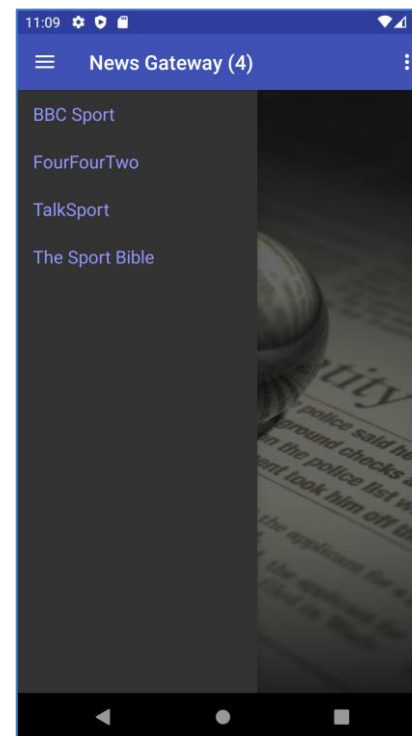
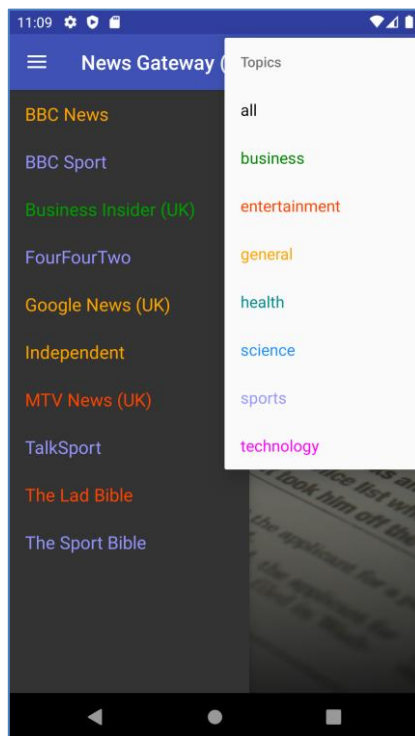
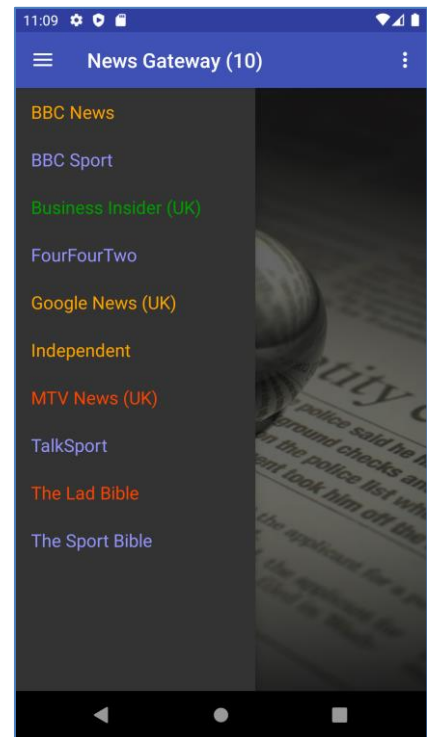
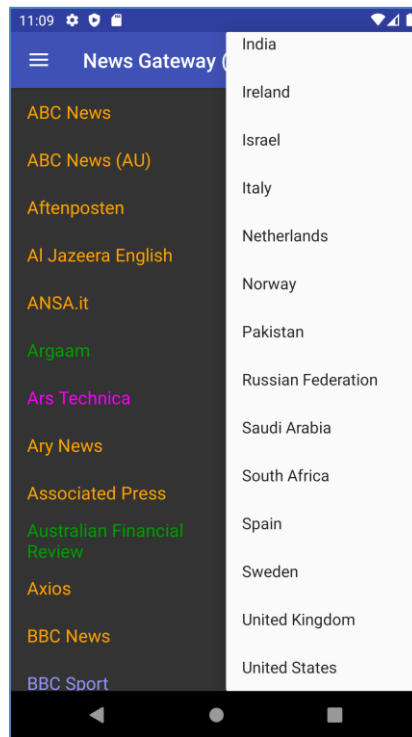
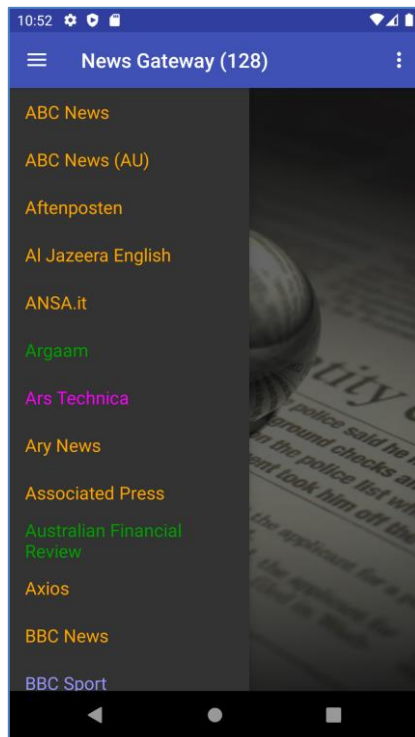
- Filter News Sources by Topic (Business) and Language (German) – then view the news from source “Handelsblatt”:



- Filter News Sources by Language (French) – then view the news from source “Le Monde”:



- Filter News Sources by Country (United Kingdom) and Topic (Sports) – then view the news from source “BBC Sport”:





### A) News Data:

Acquiring news source and news article data will be done via the [NewsAPI.org](https://newsapi.org) news aggregation service. This service allows you to download news sources and news articles (by news source)

*NOTE: You MUST sign up get an API key in order to access the NewsAPI.org services. Your API KEY must be supplied with NewsAPI.org queries. You can do this by registering at:*

<https://newsapi.org/register>

Register with an email and a new password and agree to the terms and click Submit to register and get your API key (the key is displayed to you right after you click the Submit button).

#### The API:

The NewsAPI.org service offers 2 API calls – one to get news *sources* (organizations offering news – CNN, Time, etc.) and one to get top news articles from a selected news source.

#### 1) News **Sources** Query Format (to be used in our assignment):

To get all sources: `https://newsapi.org/v2/sources?apiKey=`

For example, if your API Key was “ABC123xyz”, the URL would be:

`https://newsapi.org/v2/sources?apiKey=ABC123xyz`

The News Source Query response is sent in JSON format (described in the next section).

#### 2) News **Article** Query Format (to be used in our assignment):

To get top articles for a News Source: `https://newsapi.org/v2/top-headlines?sources=` &apiKey=

For example, if your API Key was “ABC123xyz” and you wanted “cnn” news, the URL would be:

`https://newsapi.org/v2/top-headlines?sources=cnn&apiKey=ABC123xyz`

The News Article Query response is sent in JSON format (described in the next section).

**NOTE: This API requires the “User-Agent” request property be provided with connection requests. The value this property is set to does not matter, but it must be set (See example below):**

```
...
connection = (HttpURLConnection) url.openConnection();
connection.setRequestMethod("GET");
connection.addRequestProperty("User-Agent", ""); ← Add this!
...
```



**NewsAPI.org Sources Query Results Example:**

`https://newsapi.org/v2/sources?apiKey=ABC123xyz`

The results come in the form of a JSON Object that contains a JSON Array of source entries as shown below. Each entry represents an individual news source. Example:

```
{
  "status": "ok",
  "sources": [
    {
      "id": "abc-news",
      "name": "ABC News",
      "description": "Your trusted source for breaking news, analysis, exclusive
        interviews, headlines, and videos at ABCNews.com.",
      "url": "https://abcnews.go.com",
      "category": "general",
      "language": "en",
      "country": "us"
    }, {
      "id": "aftenposten",
      "name": "Aftenposten",
      "description": "Norges ledende nettavis med alltid oppdaterte nyheter innenfor
        innenriks, utenriks, sport og kultur.",
      "url": "https://www.aftenposten.no",
      "category": "general",
      "language": "no",
      "country": "no"
    }, {
      "id": "argaam",
      "name": "Argaam",
      "description": "ارقام موقع متخصص في متابعة سوق الأسهم السعودي تداول - تاسي
        ، مع تغطيه معمقة لشركات واسعار ومنتجات البتروكيماويات -
        ، تقارير مالية الاكتتابات الجديد",
      "url": "http://www.argaam.com",
      "category": "business",
      "language": "ar",
      "country": "sa"
    }, {
      . . .
      . . .
      . . .
    }
  ]
}
```

*Note that the language and country values are provided as 2-letter codes (not full names). The newsapi.org API uses these 2-letter codes, not the names.*

*Provided with the materials for this project are 2 JSON files – one that associates the 2-letter language codes with a language names and one that associates the 2-letter country codes with a country names.*

*You should load these 2 files and use the code to name data they contain to translate codes to names(for app display) and then from names back to codes for use in the API.*

**NewsAPI.org Articles Query Results Example:**

`https://newsapi.org/v2/top-headlines?sources=cnn&apiKey=ABC123xyz`

The results come in the form of a JSON Object that contains a JSON Array of article entries as shown below. Each entry represents an individual news article. Example:

```
{
  "status": "ok",
  "totalResults": 10,
  "articles": [{
    "source": {
      "id": "cnn",
      "name": "CNN"
    },
    "author": null,
    "title": "Joe Biden: Sen. Joni Ernst just proved our point about Trump - CNN Video",
    "description": "Democratic candidate Joe Biden says Sen. Joni Ernst's (R-IA) comments about the impeachment testimony impacting Biden's chances in the state proves the real motivation behind Trump's attack on the former vice president and his son.",
    "url": "http://us.cnn.com/videos/politics/2020/01/28/joni-ernst-biden-iowa-caucus-sot-ctn-sot-vpx.cnn",
    "urlToImage": "https://cdn.cnn.com/cnnnext/dam/assets/200128022738-joe-biden-joni-ernst-split-super-tease.jpg",
    "publishedAt": "2020-01-28T17:54:48.1249684Z",
    "content": "Chat with us in Facebook Messenger. Find out what's happening in the world as it unfolds."
  }, {
    "source": {
      "id": "cnn",
      "name": "CNN"
    },
    "author": "Kaitlan Collins, CNN",
    "title": "Ex-WH chief of staff Kelly says he believes Bolton's account of Ukraine allegation",
    "description": "Former White House chief of staff John Kelly says he believes John Bolton's allegation that President Donald Trump told the former national security adviser that US security aid to Ukraine was conditioned on an investigation of the President's political rival...",
    "url": "http://us.cnn.com/2020/01/28/politics/john-kelly-believes-john-bolton/index.html",
    "urlToImage": "https://cdn.cnn.com/cnnnext/dam/assets/181018155457-bolton-kelly-split-super-tease.jpg",
    "publishedAt": "2020-01-28T17:54:34Z",
    "content": "Washington (CNN)Former White House chief of staff John Kelly says he believes John Bolton's allegation that President Donald Trump told the former national security adviser that US security aid to Ukraine was conditioned on an investigation of the President's... [+1156 chars]"
  }, {
    . . .
    . . .
  }]
}
```

*Note that any of the JSON fields can be skipped or specified as null in the JSON. Skipped or null fields should be removed from the display.  
Missing or invalid image links should result in a default image displaying.*

## B) Application Behavior Diagrams:

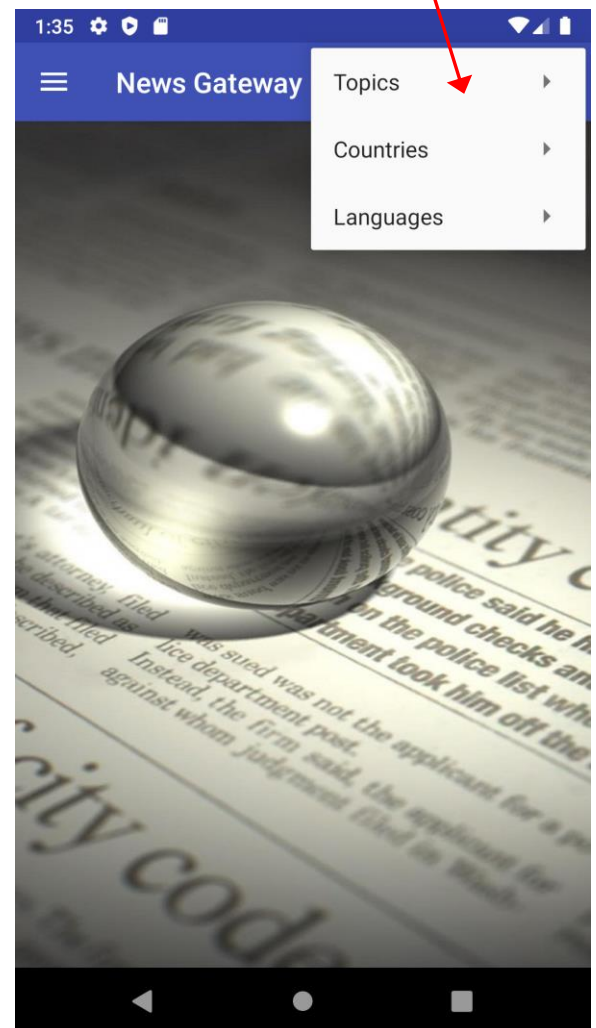
### 1) Startup



*Topics, Countries, and Languages can be selected using the options menu. Note these top-level menus should always be present. The content displayed under each of these menus is dynamic – based upon the data retrieved from the news sources.*

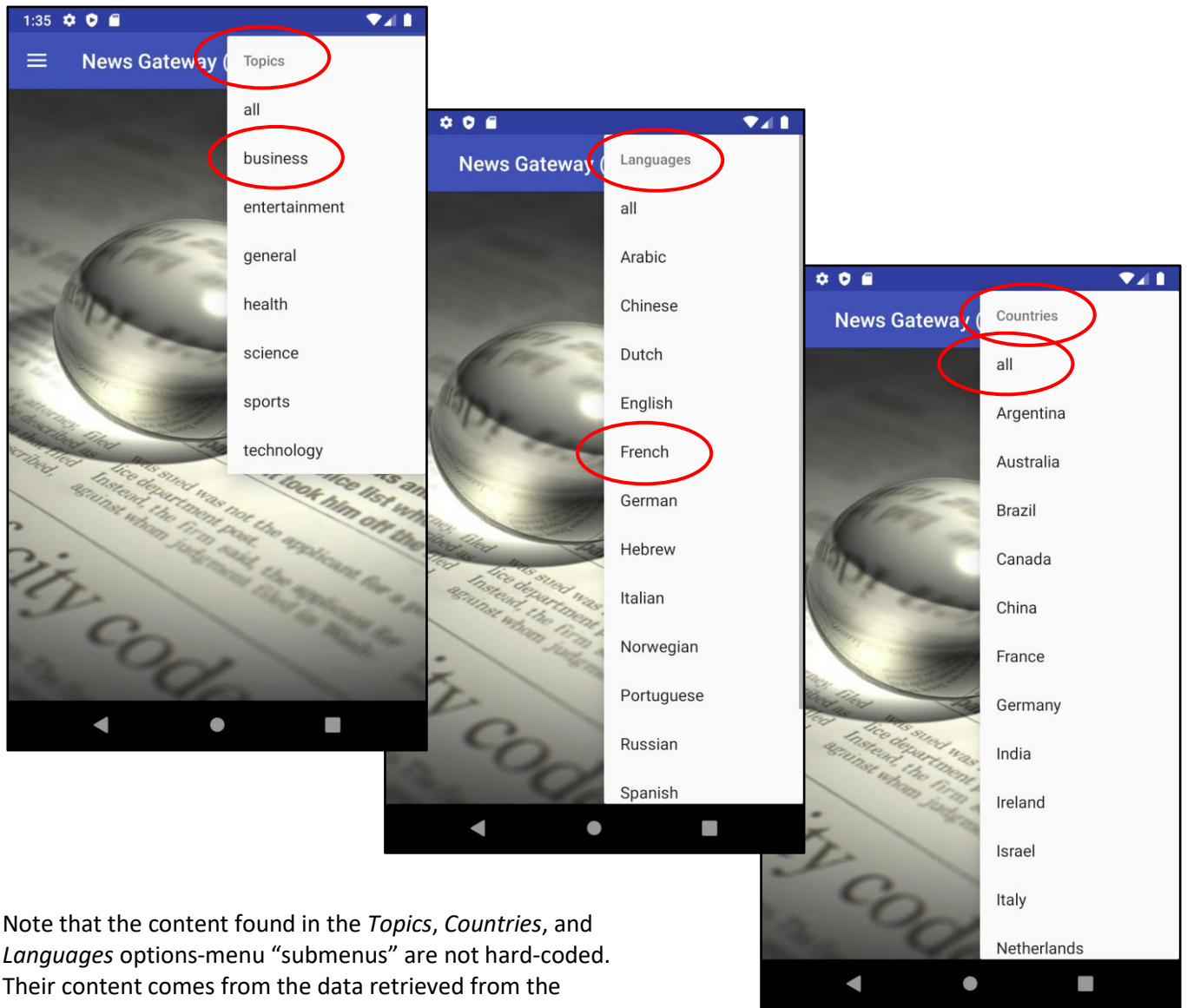
*A News Source (i.e., "cnn") can be selected by opening the "drawer" and selecting a source*

*A news-related background is shown before any articles are loaded (you find a news-related background image for yourself)*





## 2) Selecting Topics, Countries, and Languages



Note that the content found in the *Topics*, *Countries*, and *Languages* options-menu “submenus” are not hard-coded. Their content comes from the data retrieved from the news sources.

For example, the unique list of all news topics from all sources in this example is *business*, *entertainment*, *general*, *health*, *science*, *sports*, and *technology*. Those topics are used to populate the “Topics” submenu (with the default “all” also added to the submenu). *Note that the unique set of topics changes over time and should NOT be hard-coded.*

The Countries and Languages submenus are populated in the same fashion.

Selecting a Topic, Language or Country will reduce the content of the News Sources drawer-list by eliminating those that do not match the specified Topic, Language or Country criteria.

*If the specified criteria result in no News Sources at all, an AlertDialog should be displayed indicating that no sources exist that match the specified Topic, Language and/or Country*

3) Selecting a News Source

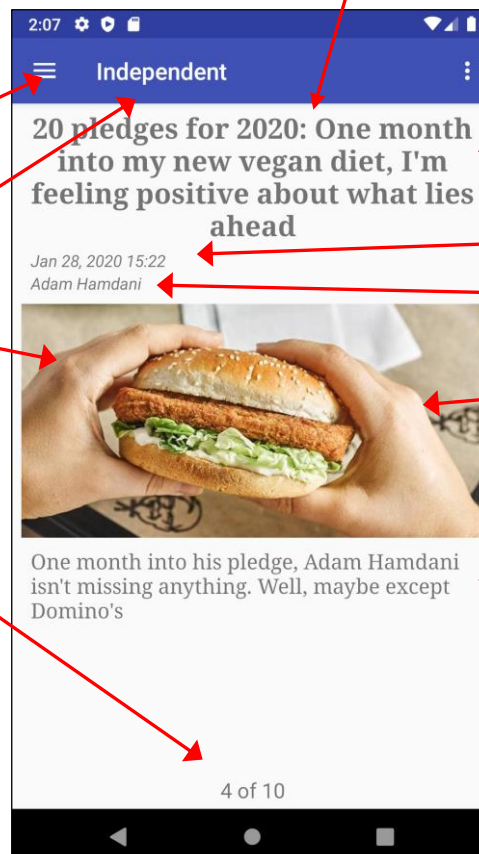


Selecting a new source will refresh this display to show the first article of the new source.

The selected news source is displayed in the Navigation Bar

News articles from the selected source are displayed in a "view pager" allowing left & right-swipe navigation between articles.

Article count is maintained at the bottom of the screen



News Article Headline

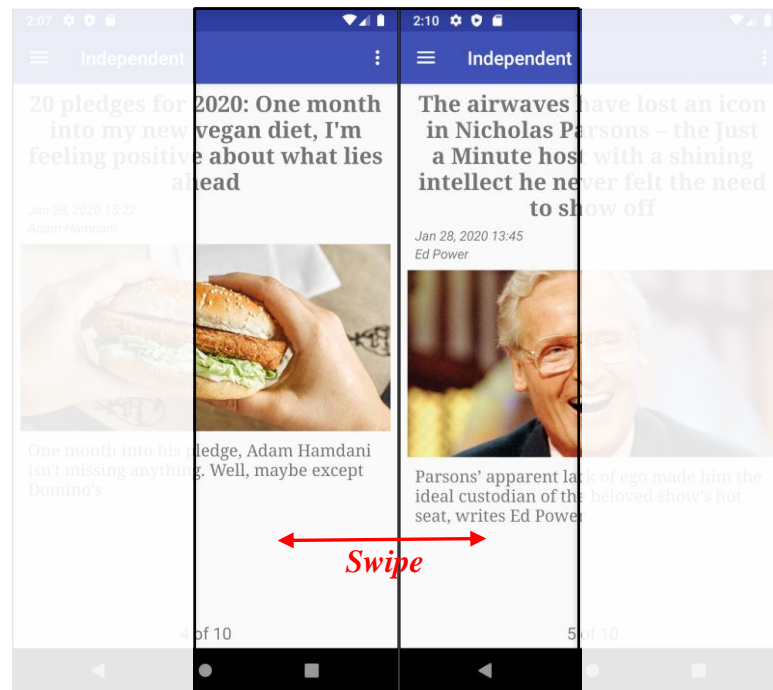
News Article Date

News Article Author(s)

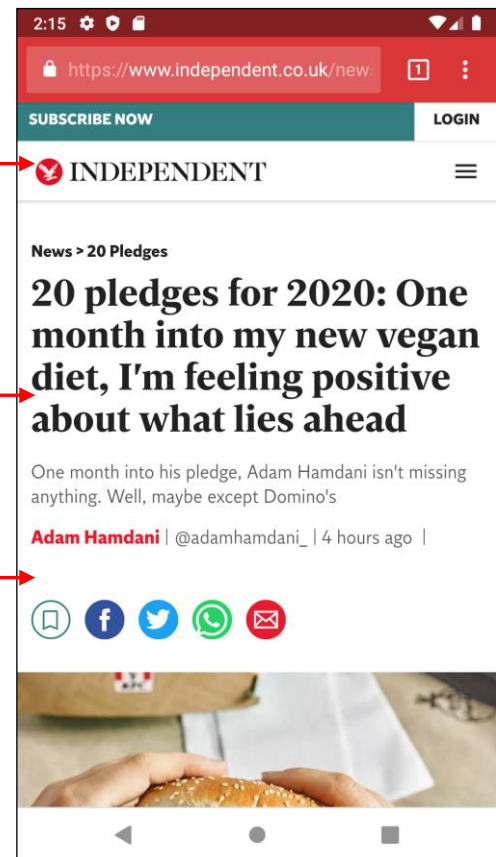
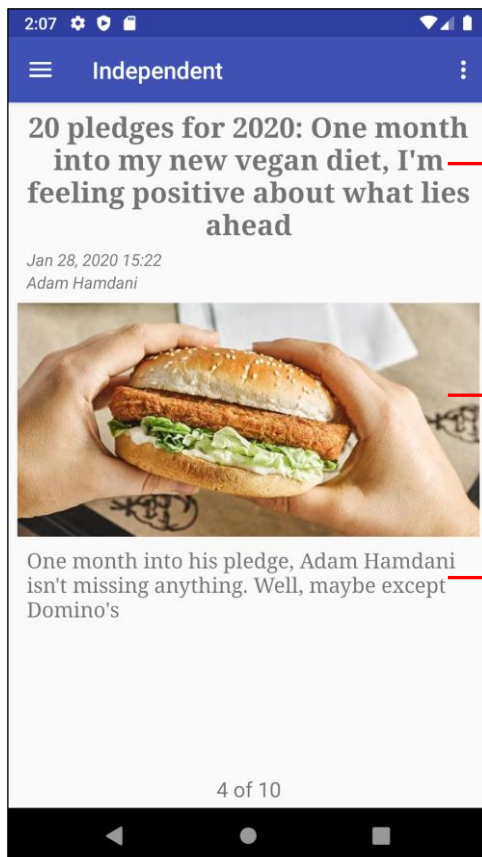
News Article Image

News Article Text (this needs to be scrollable so longer article text can be completely read.)

4) Swipe Right (or Left) to scroll through articles from the selected new source:



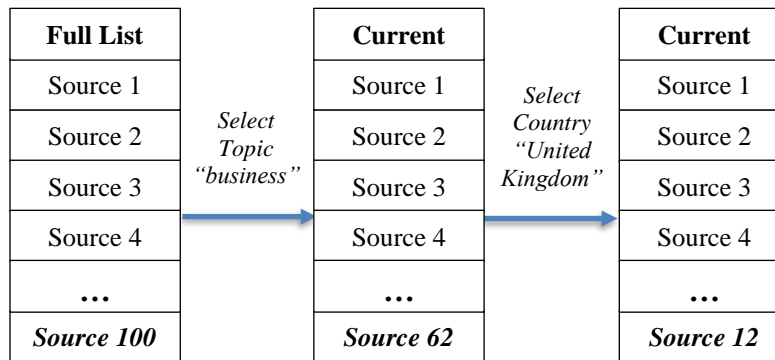
5) Click on article title, image, or text to go to extended article on the news source web site



### C) News Source Data Representation

The full news source list should always be stored as-is from the API, unchanged (nothing removed). Another “current” list of sources should be used to hold the “current” sources to be displayed in the drawer. This “current” list of sources will change based upon the Topic, Language or Country selections. The list of current sources should contain all sources at startup (as no Topic, Language or Country has yet been selected).

When a criteria selection is made (i.e., the “business” topic), the “current” source list should be updated to contain only the sources that have “business” as the topic. If some additional criteria is then selected (i.e., “United Kingdom” selected for the country) the current source list should be updated again to contain only the sources that have “business” as the topic and “United Kingdom” as the country. This is shown below:



### D) Provided Resources (3 images, 2 JSON files)

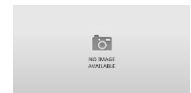
Image Error



Loading Placeholder



No Image (i.e., null)

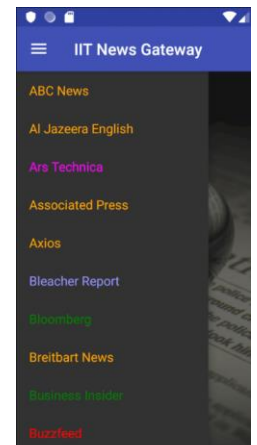
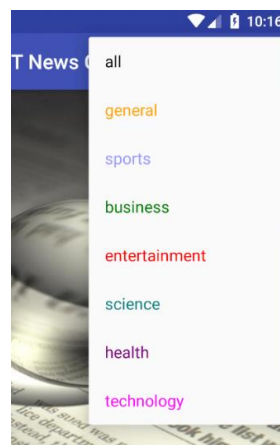


Language Code/Name file (language\_codes.json)

Country Code/Name file (country\_codes.json)

### E) Extra Credit:

- Up to 20 points of extra credit will be awarded if you save and restore the app state when transitioning between portrait and landscape layouts to ensure a smooth user experience. Without this, the app reverts to the start state upon rotation. If this is done properly, the current category selection, the current source list (in the drawer), and the displayed articles will be maintained upon device orientation change.
- Up to 25 points of extra credit will be awarded if you display the news categories in the options menu different colors, and then color the news sources in the drawer according to their category:





**Assignment Assistance**

If you are stuck on an assignment problem that you have exhaustively researched and/or debugged yourself, you can email link to your project (in a ZIP file) so that I can examine the problem. NOTE that Android Studio projects cannot be emailed. You will have to copy the project to a file share (Google drive, DropBox, etc.) and then send me that link.

All emailed assistance requests must include a detailed description of the problem, and the details of what steps you have already taken in trying to determine the source of the problem.

**Note: To make your submission zip file smaller, before zipping your project file you must remove the ".gradle" folder (found in your project's root directory), and remove the "build" folder (found in the "app" folder in your project's root directory).**

**Submissions & Grading**

- 1) Submissions must consist of your zipped project folder. For submission - before zipping your project file you *must* remove the ".gradle" (dot-gradle) folder (found in your project's root directory), and remove the "build" folder (found in the "app" folder in your project's root directory). NOTE: One or both of these folders may not be present – that is ok. Submissions not following these requirements will be penalized.
- 2) Submissions must reflect the concepts and practices we cover in class, and the requirements specified in this document.
- 3) Please review the Academic Integrity and Plagiarism section of the syllabus before, during, and after working on this assignment.
- 4) Late submissions will be penalized by 10% per week late. (i.e., from one second late to 1 week late: 10% penalty, from one week late to 2 weeks late: 20% penalty, etc.). NO SUBMISSIONS CAN BE MADE BEYOND 2 WEEKS LATE.
- 5) Grading will be based upon the presence and proper functionality of all features and behaviors described in this document.
- 6) Grading will be performed with the following SDK details:
  - Project Compile & Target SDK Version: 30
  - Project Minimum SDK Version: 25
  - Use AndroidX libraries where applicable.
- 7) Grading will be performed on emulator devices with the following characteristics:

Resolution	Details	Example Emulators
1080 x 1920	With Playstore	Pixel, Pixel 2, Nexus 5, Nexus 5X
1080 x 2220 or 2280	With Playstore	Pixel 3a, Pixel 4

*If you do not understand anything in this handout, please ask.*

*Otherwise the assumption is that you understand the content.*

***Unsure? Ask!***