THE TEST

NOTICE

This problem consists of 3 tasks. Each task adds up to the previous one. It is **not** mandatory to solve all 3 tasks in order to pass the test. You should do as much as you can for the limited amount of time. You should upload solution as soon as you think it's ready for the review. Time limit for solution delivery is 12h after test files are downloaded (ETA for all 3 tasks is around 8h).

PROBLEM STATEMENT

Congratulations, you just bought a telemarketing company! Telemarketing itself is pretty much dead, but there's a great asset you got with the company that you intend to make money with - its phone numbers database. Over the years, the company acquired list of significant amount of telephone numbers including their prices and owners' emails. You came to the great idea to buy those numbers and re-sell them at higher price!

TASK 1 – CREATING THE APP

The company informed you that you can fetch data from their servers and that data is in JSON format. Since you're very experienced Android developer, you decided that it would be really convenient to present data in an Android app.

Data source: http://test.devel.siriomedia.com/telemarketing/numbers.json

Task requirements:

1. Create Android app that will present data as a list.
2. After fetching data app should store it permanently and data should be available without internet connection.
3. In order to easily contact owner of particular phone number, after tapping on a list item your app should automatically open an email app and prepopulate all fields with proper data (email address, subject, body)
4. User should be able to sort data based on the phone number price (lower priced phone numbers should appear on the top of the list).
5. User should be able to search data in the list (search should affect all available fields of the list item)
6. User should be able to manually add new entry to the list, entry should have all fields as other entries that are fetched from the server (new entry should be stored locally)

TASK 2 – HIDDEN VALUE

There is one catch that you're aware about which increases value of the phone numbers a lot. Value of the phone numbers is significantly higher if they form a word or group of words when typed on the standard phone keypad.

	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ

List of words is stored in the dictionary "task2/dictionary.txt", with each line containing one word, like this:
abilities
ability
able
about
above
absence
absolute
absolutely
…

You are interested in phone numbers which can be completely decoded to the word or concatenated group of words from the dictionary.

Completely decoded phone numbers are those numbers which have exactly the same number of digits as their matching decoded word or group of words have number of characters. In other words for every digit in the phone number there must be one character which is a member of the decoded word or group of words.

For example:

- Phone number "2637643" can be completely decoded to word "android" (a=2, n=6, d=3, r=7, o=6, i=4, d=3)
- Phone number "4355696753" can be completely decoded to group of words "helloworld" (h=4, e=3, l=5, l=5, o=6, w=9, o=6, r=7, l=5, d=3)
- Phone number "466358254283386" can be completely decoded to group of words "goodluckhavefun"

On the other hand:

- Phone number "26376437" **cannot** be completely decoded. Its start can be decoded to word "android" but it has one extra character "7" which can be decoded to characters "p","q","r" or "s" and none of those characters appended to the end of word "android" can form word or group of words from the dictionary.
- Phone number "9943556" **cannot** be completely decoded. Its end can be decoded to word "hello" but two "99" digits from the start of the number cannot be decoded to any word from the dictionary and also combining with word "hello" they can't form any new word from the dictionary.
- Phone number "99999" cannot be decoded at all since it cannot produce any word from the dictionary.

Task requirements:

1. Modify existing app so that beside other existing info (phoneNumber, phoneNumberPrice, phoneNumberOwner) it also shows for each item in the list the word its phone number decodes to, of course only in case phone number can be completely decoded to a word from the dictionary. Items which phone numbers can't be completely decoded should have that field empty.

2. Modify sort functionality, so that it sorts entries based on the following pseudo code:

```
If(phone_number_is_decoded){
    sortValue = 100000*decoded_word_length/phoneNumberPrice;
}else{
    sortValue = 1000/phoneNumberPrice;
}
```

Entries with greater sortValue should be on the top of the list;

TASK 3 – HACKING THE COMPETITION

You found out about rival's app which is not as much sophisticated as yours, but it has much more entries! You really want to get those numbers and contacts that they have. You have no idea from where are they fetching data from and it also looks like their communication with server is encrypted. Luckily you got your hands on their apk file (" task3/phoneNumbers.apk").

Task requirement:

Find a way to get their phone numbers data and insert it in existing app that you've created. The endpoint from where they fetch data is unknown and data is encrypted so you will have to find way to fetch data from their servers and somehow decrypt it and present in your app. It should present and handle this data in the same way as it did with the data that you already have.

Good luck!