

## Homework Four

Theory of Computation

2014

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### Important Note:

Please remember to send your homework before **final exam (6/26)**.

You are **not allowed** to revise the file after **final exam**.

### Please upload your program complying with these rules:

1. We will pull your project, TOC\_HW4, from your github account.
2. Note that your code will be ran at ubuntu 12.04.2 LTS
  1. 140.116.86.90 port:10122
  2. python 2.7.3
  3. java version 1.7.0\_51
  4. For other programming languages, please specify your requirement to TA (bohengorz@gmail.com)
3. **For Java, please put the main function in "ToCHW4.java" file.**
  - Please put "all" your **source file** at the "HW4" directory (you should create the directory at first). **Note that TA will execute a clean build and remove all .class files before execution.**
  - Make sure your code can be successfully compiled by the ANT build file located in **/home/TOC/ANT/toc4/build.xml**.
  - Execute the make process by ant, and you should find a "ToCHW4.jar" created. Try to execute "java -jar ToCHW4.jar" and check if the result follows your expectation.
  - Usage: **"ant -f /home/TOC/ANT/toc4/build.xml build"** for creating the ToCHW4.jar file in the HW4 directory.
4. **For Python, please put the main function in "ToCHW4.py" file.**
5. Your program must accept one argument, which is **"URL" of the data source**. If no input is given, please show messages and reject the execution.
6. Usage: **"ant -f /home/TOC/ANT/toc4/build.xml build"** for creating the ToCHW4.jar file in the HW4 directory.
  - "java -jar ToCHW4.jar **URL**" for running your code.
7. **Write your basic information in the start of the source code, including your name, your student number and brief description of your code.**
8. If you have questions, please email to the TA at bohengorz@gmail.com.

### Data Input:

We use real-price housing information in our country. You can find the data schema here:

<http://www.datagarage.io/datasets/ktchuang/realprice/A>

\*You can try to use “select fields” function provided in the platform to accomplish the data access in an easy way.

\*For general use, please download the full data in the JSON format:

<http://www.datagarage.io/api/5365dee31bc6e9d9463a0057>

**Homework 4:** Given a **URL** which can load a Json file containing less than 2000 pieces of house trading data in our country, please scan the whole data and find out “**which road in a city has house trading records spread in #max\_distinct\_month**”. Please print out the roads name and their cities with their highest sale price and lowest sale price. **Note that the answer may contain several roads.**

**Test Case:**

Case 1:

<http://www.datagarage.io/api/538447a07122e8a77dfe2d86>

Answer of Case 1:

“臺北市中正區汀州路, 最高成交價: 65380000, 最低成交價: 2000000”

Case 2:

<http://www.datagarage.io/api/5384489ae7259bb37d9238d8>

Answer of Case 2:

“臺中市南區忠明南路, 最高成交價: 13730000, 最低成交價: 7600000”

Case 3: (the answer contains 2 roads.)

<http://www.datagarage.io/api/5385b69de7259bb37d925971>

Answer of Case 3:

“臺中市南區忠明南路, 最高成交價: 9500000, 最低成交價: 3960000

臺中市后里區墩北里大興路, 最高成交價: 10000000, 最低成交價: 9380000”

Case 4:

<http://www.datagarage.io/api/5385b858e7259bb37d926912>

Answer of Case 4:

“臺北市中正區汀州路, 最高成交價: 23490000, 最低成交價: 11800000”

**Running Examples:**

**Input:** “java -jar TocHW4.jar

<http://www.datagarage.io/api/538447a07122e8a77dfe2d86>”

**Output:** 臺北市中正區汀州路, 最高成交價: 65380000, 最低成交價: 2000000

**Note:** 1. The sale price is written as “ 總價元” in the input file, and the month comes from “交易年

月”.

2. Since you have to read the data in the Json form, you may need to import the Json.jar. For example: `import org.json.*;`
3. When you count the number of trading records of a specific road, if there are several trading records **in the same month of the same year**, you should think **these records as one piece. Note that what we wonder to know is its number of distinct months that has trading data.**
4. The form of the road name in the txt file could be “**XX路**” or “**XX街**” or “**XX巷**”. See <http://www.datagarage.io/datasets/ktchuang/realprice/A> for the details. For other address cases such as “興泰段一小段301~330地號”, just skip these case without “路,街,巷”.

**Finally:**

When you submit your code to the server, please check if your code is also correct in the linux environment.

When you cannot compile your code by our ant build name and you know the reason (for example, you use some external system library), please inform TA for asking the instruction.

Good luck!