

Due date: 24 April 2019 (Wed)

Assignment 6

Full mark: 100

Expected normal time spent: 5 hours

Voice Weather Report Application (for HK)

- Aim:
1. build a practical web information system using Java;
 2. practise using String, file I/O and URL classes for web-data processing;
 3. practise interpreting and extracting information from textual/ HTML information source.

Task: Create a Java program for displaying and saving weather information.

In this assignment, we create a practical web information application. We specifically focus on the following data source from the HK Observatory:

HK Observatory Weather Forecast Text Page - Temperature in C
<http://www.weather.gov.hk/textonly/v2/forecast/englishwx2.htm>

The application requires Internet access in order to extract the weather information. It extracts and displays the raw HTML weather report on a Message Dialog. It also saves the HTML weather report to a file **weather.txt** with the temperature readings converted from degrees Celsius to degrees Fahrenheit. You shall use try-catch to silent all possible kinds of Exception.

Message

At 6 p.m. at Hong Kong Observatory :
Air Temperature : 28 degrees Celsius
Relative Humidity : 78 per cent
Weather Cartoon : No. 76 - MAINLY CLOUDY

During the past hour the mean UV Index recorded at King's Park : 0.3
Intensity of UV radiation : low

The air temperatures at other places were:

King's Park	28 degrees;
Wong Chuk Hang	27 degrees;
Ta Kwu Ling	28 degrees;
Lau Fau Shan	27 degrees;
Tai Po	27 degrees;
Sha Tin	27 degrees;
Tuen Mun	27 degrees;
Tseung Kwan O	27 degrees;
Sai Kung	27 degrees;
Cheung Chau	28 degrees;
Chek Lap Kok	28 degrees;
Tsing Yi	27 degrees;
Shek Kong	28 degrees;
Tsuen Wan Ho Koon	26 degrees;
Tsuen Wan Shing Mun Valley	27 degrees;
Hong Kong Park	27 degrees;
Shau Kei Wan	27 degrees;
Kowloon City	28 degrees;
Happy Valley	27 degrees;
Wong Tai Sin	29 degrees;
Stanley	27 degrees;
Kwun Tong	27 degrees;
Sham Shui Po	27 degrees;
Kai Tak Runway Park	27 degrees;
Yuen Long Park	28 degrees;
Tai Mei Tuk	27 degrees.

OK

```
<!--Current Weather-->
<pre>
At 6 p.m. at Hong Kong Observatory :
Air Temperature : 82.4 degrees Fahrenheit
Relative Humidity : 78 per cent
Weather Cartoon : No. 76 - MAINLY CLOUDY

During the past hour the mean UV Index recorded at King's Park : 0.3
Intensity of UV radiation : low

The air temperatures at other places were:

King's Park                82.4 degrees;
Wong Chuk Hang             80.6 degrees;
Ta Kwu Ling                82.4 degrees;
Lau Fau Shan               80.6 degrees;
Tai Po                     80.6 degrees;
Sha Tin                    80.6 degrees;
Tuen Mun                   80.6 degrees;
Tseung Kwan O              80.6 degrees;
Sai Kung                   80.6 degrees;
Cheung Chau                82.4 degrees;
Chek Lap Kok               82.4 degrees;
Tsing Yi                   80.6 degrees;
Shek Kong                  82.4 degrees;
Tsuen Wan Ho Koon          78.8 degrees;
Tsuen Wan Shing Mun Valley 80.6 degrees;
Hong Kong Park             80.6 degrees;
Shau Kei Wan               80.6 degrees;
Kowloon City               82.4 degrees;
Happy Valley               80.6 degrees;
Wong Tai Sin               84.2 degrees;
Stanley                    80.6 degrees;
Kwun Tong                  80.6 degrees;
Sham Shui Po               80.6 degrees;
Kai Tak Runway Park        80.6 degrees;
Yuen Long Park             82.4 degrees;
Tai Mei Tuk                80.6 degrees.

</pre>
<!--/Current Weather-->
```

Output file **weather.txt** with temperature readings converted from degrees Celsius to degrees Fahrenheit.

Tasks:

1. Create another **NEW** NetBeans Project **Weather** with a package named **weather** and a new Java **Main Class Weather**. Type your name, student ID and declaration statement clearly at the top comment block of the ALL Java source files in the project.

```
/**
 * CSCI1530 Assignment 6
 * Aim: build a practical weather information system using Java
 *
 * Declaration: . . . [please refer to Assignment 1 for our requirements]
 * Student Name: xxx [fill in yourself]
 * Student ID : xxx [fill in yourself]
 */
```

2. Complete the Main Class **Weather** as described below:
 - You are suggested studying the HTML sources (using a browser such as Chrome OR writing a simple Java program to crawl the page) to view the raw text (HTML source) weather report from the HK Observatory.
 - Identify the specific lines containing the required data items as well as figuring out the **key lines and keywords** using String methods. For example, lines 37 – 77 in this sample:

```
<!--Current Weather-->
...
Air Temperature : 28 degrees Celsius
Relative Humidity : 78 per cent
...
The air temperatures at other places were:

King's Park                28 degrees;
...
Tai Mei Tuk                 27 degrees.

</pre>
<!--/Current Weather-->
```

Target lines extracted from
the URL of the HKO.

- Notice that it may NOT be starting from line 37 always. We shall look for the first line containing **<!--Current Weather-->** using String method **contains**. We shall also look for the end of block marker instead of hard coding at line 77.
3. On one hand, read the target lines and use a **StringBuilder** object to prepare a message in HTML for displaying a dialog:
 - a. Display a dialog using **JOptionPane.showMessageDialog()** with **HTML**:

```
String messageInHTML = "<html>" + ... + "</html>"; // insert target lines in ...
JOptionPane.showMessageDialog(null, messageInHTML);
```

4. On the other hand, separately process each target line and output the processed lines to a file named **weather.txt**:
 - String method **replaceAll** may be useful for changing the word Celsius to Fahrenheit.
 - We shall locate the keyword "degrees" using String method **indexOf** which can help us extract a 2-char **substring** in front of it, which is a temperature reading.
 - Temperature in degrees Celsius shall be converted to Fahrenheit in the following way:

```
String temperatureString = "29";

double tempInCelsius = Double.parseDouble(temperatureString);

double tempInFahrenheit = ...; // F = 9/5 C + 32 (in double!)

String tempFah = "" + tempInFahrenheit;
```

- String **replace** the temperature String in degrees Celsius to the Fahrenheit result.

Running and Submission:

1. Run Project with Internet connection.
2. Zip and Submit the whole NetBeans project as **Weather.zip**.

Marking Scheme and Notes:

1. The submitted program should be free of any typing mistakes, compilation errors and warnings.
2. Comment/remark, indentation, style are under assessment in every programming assignments unless specified otherwise.
3. Marker will test your programs vigorously with various inputs. You should test run your own programs properly with different user input scenarios.
4. Remember to do your submission before the due date. No late submission would be accepted.
5. If you submit multiple times, **ONLY** the content and time-stamp of the **latest** one would be counted. Be reminded to click "Submit"! We **ONLY** take into account the last submission.

University Guideline for Plagiarism

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at <http://www.cuhk.edu.hk/policy/academichonesty/>. With each assignment, students will be required to submit a statement that they are aware of these policies, regulations, guidelines and procedures.