

## Rainfall Analysis

For this project, you will write a program that analyzes the amount of rain observed over the course of several days. Your program should prompt the user to specify the number of days for which observation data will be entered (between 1 and 10 inclusive). If the user enters an invalid number of days, the program should display an error message and keep asking the user for a valid number of days until the user enters an appropriate number. The program should then prompt the user for the observed amount of rain that fell on each of the specified number of days.

Once rainfall data has been entered, the program should then present the user with a menu of options that will display information about the observation period. The menu will provide the following options to display (1) the total rainfall, (2) the average rainfall, (3) the day and the amount of the greatest rainfall, (4) the day and the amount of the least rainfall, (5) the number of days a flood warning was issued due to six or more inches of rain in a single day, or eight or more inches of rain over two consecutive days, and (6) quit. The menu should continue to be displayed until the user selects the *quit* option. If the user enters an invalid option, the program should display an “Invalid response, please try again!” message and redisplay the menu.

Note: If two days have the same greatest (or least) rainfall, report the first/earliest day that had that value.

You should develop your project using Eclipse. Create a new project in Eclipse called **RainfallAnalysis<lastname>** where <lastname> is replaced by *your* last name. For example, if your last name is Turing, your project should be named RainfallAnalysisTuring.

Your program should have only one class file which you should name **RainfallAnalysis**. The file should include the entry point for your program (i.e., the main method) and should facilitate all user input and output.

Include comments throughout your program to explain what the program is doing

## Submitting your project

The project is due at the beginning of lab on **Wednesday, October 23th**.

At that time you need to hand in **printouts** of the following (stapled together):

1. Your source code for `RainfallAnalysis.java`
2. Output from running your program. Your output should demonstrate the various features of your program. Your output example should include as many executions as necessary to demonstrate the various conditions in your program.

Also, you need to hand in a **USB flash drive** that contains your **RainfallAnalysis<lastname>** project directory. Do not provide your entire workspace... just the rainfall analysis project. Clearly label your flash drive with your name.

## Sample Run 1

How many days of data will be analyzed? 4

Enter the rainfall for day 1: 2.3

Enter the rainfall for day 2: 0

Enter the rainfall for day 3: 0.2

Enter the rainfall for day 4: 1

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 1

Total rainfall for the 4 day period was 3.500 inches.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 2

Average rainfall for the 4 day period was 0.875 inches per day.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 3

Day 1 had the highest rainfall with 2.300 inches.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.

4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 4

Day 2 had the lowest rainfall with 0.000 inches.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 5

There were 0 flood alert days during the 4 day period.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 6

Goodbye!!

## Sample Run 2

Note: Although no single day had 6 or more inches of rain, day 2 is a flood alert day. The rainfall for day 2 and the previous day totaled 8 or more inches.

How many days of data will be analyzed? 13  
Invalid number of days. Enter a number between 2 and 10.  
How many days of data will be analyzed? 3  
Enter the rainfall for day 1: 5  
Enter the rainfall for day 2: 4.1  
Enter the rainfall for day 3: 0

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 5

There was 1 flood alert day during the 3 day period.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 9

Invalid menu choice. Choose again.

Rainfall Analysis Menu

1. Display total rainfall.
2. Display average daily rainfall.
3. Display day and amount of greatest rainfall.
4. Display day and amount of least rainfall.
5. Display number of days a flood alert was issued.
6. Quit

Enter your choice: 6

Goodbye!!