

# Lab 6

In this lab, we continue our work on the Amazon dataset using Apache Spark. Given the original Amazon food dataset (Reviews.csv), find all the pairs of products frequently reviewed together. The dataset is available in the cluster shared folder:

/share/students/bigdata/Dati/Lab6

In the following Task 1, you find the operations and analyses you are required to perform on the input dataset.

## Task 1

The input Amazon food dataset (Reviews.csv) lists all the reviews per-row (one review per line), and it is comma-separated. In each line, two of the columns represent the user id and product id (third and second columns, respectively). The schema of Reviews.csv is the following:

Id,ProductId,UserId,ProfileName,HelpfulnessNumerator,HelpfulnessDenominator,Score,Time,Summary,Text

On the web site you can download the file ReviewsSample.csv. It contains a sample of Reviews.csv. You can use it to perform some initial tests.

Write a single Spark application that:

1. Transposes the original Amazon food dataset, obtaining an RDD of pairs (tuples) of the type:

(user\_id, list of the product\_ids reviewed by user\_id)

The returned RDD contains one pair/tuple for each user, which contains the user\_id and the complete list of (**distinct**) products reviewed by that user. If user *user\_id* reviewed more times the same product, that product must occur only one time in the returned list of the product\_ids reviewed by *user\_id*;

2. Counts the frequencies of all the pairs of products reviewed together (the frequency of a pair of products is given by the number of users who reviewed both products);
3. Stores on the output folder all the pairs of products that appear more than once and their frequencies. The pairs of products must be **sorted by decreasing frequency**.

Inspect the output of your application to search for interesting facts.

**Pay attention** that the line starting with "Id," is the header of the file and must not be considered.

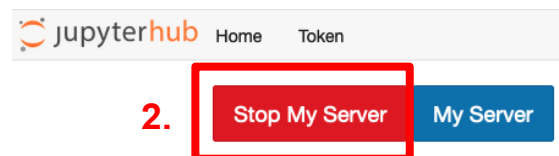
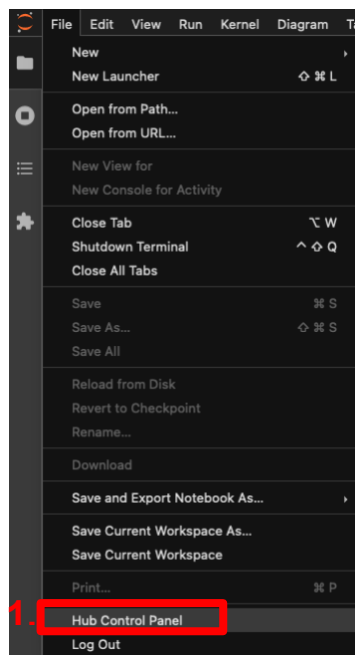
## Task 2 - Bonus task

Extend the implemented application in order to write on the standard output the top 10, most frequent, pairs of products and their frequencies.

## Shut down JupyterHub container

**As soon as you complete all the tasks and activities on JupyterHub environment, please remember to shut down the container** to let all your colleagues in all the sessions connect on JupyterHub and do all the lab activities.

1. Go into File -> Hub Control Panel menu
2. A new browser tab opens with the “Stop My Server” button. Click on it and wait till it disappears.



**Click the “Stop My Server” button**