

# INTIVE CHALLENGE

**Candidate:** Franco Pistasoli

*Coding question - Triplets*

*Given a log file of user\_id, timestamp & page visited find the 10 most common triplets, where a triplet is an occurrence of 3 pages visited sequentially by the same user.*

---

## **SOLUTION**

### *Algorithm*

1. Create a dictionary<key,value>, where key = user\_ID and value = list of pages visited by that user\_ID, retrieved from the log.
2. Create a list of all the triplets, sorted by user\_ID (i.e. first the triplets of user A, then the triplets of user B, and so on).
3. Work out the frequency of each triplet in the list of triplets built in step 2.
4. Sort the list in step 3 by the frequency of each triplet, in descending order.
5. Filter and display the top 10 of the list in step 4.

### *Implementation (using C# with Unity3D engine through Visual Studio Code)*

See code in *Triplets code.cs* file

### *Requirements and preconditions*

- The example log file "Log.txt" contains lines in the format user\_ID (char), a timestamp (string) and a page\_ID (char). The fields are separated by a semicolon (;).
- The log file must be placed in the C:\ root directory for the code to work properly.
- The code uses the MonoBehaviour.print method provided by Unity. It can be changed to Console.WriteLine if using the .NET framework.
- The pages visited in the log file are ordered by timestamp.

### *Input and output:*

#### **INPUT (log file):**

```
A;2021-09-05 03:14:07;1
B;2021-09-05 03:14:08;3
A;2021-09-05 03:14:09;3
A;2021-09-05 03:14:11;2
```

B;2021-09-05 03:14:12;2  
C;2021-09-05 03:14:14;1  
D;2021-09-05 03:14:16;5  
B;2021-09-05 03:14:16;4  
A;2021-09-05 03:14:17;4  
C;2021-09-05 03:14:17;3  
E;2021-09-05 03:14:18;6  
C;2021-09-05 03:14:18;2  
A;2021-09-05 03:14:20;5  
B;2021-09-05 03:14:21;5  
F;2021-09-05 03:14:22;1  
E;2021-09-05 03:14:23;8  
D;2021-09-05 03:14:24;6  
A;2021-09-05 03:14:24;6  
C;2021-09-05 03:14:25;3  
F;2021-09-05 03:14:28;1  
C;2021-09-05 03:14:28;3  
A;2021-09-05 03:14:29;8  
E;2021-09-05 03:14:30;9  
F;2021-09-05 03:14:31;5  
D;2021-09-05 03:14:33;8  
B;2021-09-05 03:14:34;6  
C;2021-09-05 03:14:36;2  
A;2021-09-05 03:14:38;9  
C;2021-09-05 03:14:40;4  
B;2021-09-05 03:14:41;8  
A;2021-09-05 03:14:41;9  
D;2021-09-05 03:14:43;7

### **OUTPUT (top 10 triplets):**

1st place:

Triplet of Page IDs visited: 3 - 2 - 4. Number of occurrences of this triplet: 3

2nd place:

Triplet of Page IDs visited: 5 - 6 - 8. Number of occurrences of this triplet: 3

3rd place:

Triplet of Page IDs visited: 1 - 3 - 2. Number of occurrences of this triplet: 2

4th place:

Triplet of Page IDs visited: 2 - 4 - 5. Number of occurrences of this triplet: 2

5th place:

Triplet of Page IDs visited: 4 - 5 - 6. Number of occurrences of this triplet: 2

6th place:

Triplet of Page IDs visited: 6 - 8 - 9. Number of occurrences of this triplet: 2

7th place:

Triplet of Page IDs visited: 8 - 9 - 9. Number of occurrences of this triplet: 1

8th place:

Triplet of Page IDs visited: 3 - 2 - 3. Number of occurrences of this triplet: 1

9th place:

Triplet of Page IDs visited: 2 - 3 - 3. Number of occurrences of this triplet: 1

10th place:

Triplet of Page IDs visited: 3 - 3 - 2. Number of occurrences of this triplet: 1