**Gamma Lottery 1.0**

**Abstract**

This is a proposal of a software for the Gamma Lottery of the EPZ chapter of ΛΧΑ. To ensure the most random possible results and fairness of the results of said lottery.

**How it works:**

The program generates a list with names of people participating in the Gamma Lottery with multiplicity of the number of entries of said person e.g. if a person has five entries its name appears five times in such list.

When the list is generated, the program shuffles the list with a pseudo random algorithm with a true random seed [1] collected from the website Random.org. After the shuffling, the program gets another number from the website Random.org that it uses to pick the winner of the lottery.

**Testing the distribution of results:**

Testing methodology, it was defined an array with the different draw considering the number of entries of each candidate and to prove a normal distribution those values were shuffled and withdrew 1000 times.

**Test Case 1:**

Input:

|  |  |
| --- | --- |
| **Name of Participant** | **# Entries** |
| **A** | **10** |
| **B** | **25** |
| **C** | **5** |
| **D** | **20** |
| **E** | **30** |
| **F** | **10** |

Result Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of Participant** | **# Entries** | **# of wins** | **Expected %** | **Actual %** | **Diff %** |
| **A** | **10** | **96** | **10** | **9.6** | **0.4** |
| **B** | **25** | **261** | **25** | **26.1** | **-1.1** |
| **C** | **5** | **54** | **5** | **5.4** | **-0.4** |
| **D** | **20** | **185** | **20** | **18.5** | **1.5** |
| **E** | **30** | **319** | **30** | **31.9** | **-1.9** |
| **F** | **10** | **85** | **10** | **8.5** | **1.5** |
| **TOTAL** | **100** | **1000** | **100** | **100** | **0** |