|  |  |  |
| --- | --- | --- |
|  | **Time complexity** | **Time elapsed** |
| **process\_record\_1** | O(n) | 0.121759 |
| **process\_record\_2** | O(n\*m) | 0.123650 |
| **process\_record\_3** | O(n\*m) | 0.134005 |
| **process\_record\_4** | O(n\*m) | 0.126878 |

I believe there is a discovery with this comparison. When we perform the last three queries, we are sifting through the information of each user’s messages, too. The time complexities are therefore similar. Since we are not wanting to check on any more details for the first query, it’s safe to say that the time complexity for that is linear. The addition of sifting through each users’ messages does not hinder the query time by much, but it is notable.