Documentation

For ad recommendation problem I have used following methods and steps.

Data preprocessing steps:-

1) I have used python language and in-built CSV and Collections library.
2) All data are stored in dictionary format with key as *user_id, category_id* etc. So, that data can be accessed in O(1) (Big-O) time complexity.
3) From user_messages.csv data are stored such that with key value of *category_id* most common 10 ads are return.
4) From ads_data.csv *ad_id* are mapped with *category_id* and enabled status of ads.
5) From user_data.csv data are stored such that all data are accessed with *user_id* key value.

Steps for recommender system:-

1) First of all, all ads are mapped with their category in which they belong to with the help of data from *ads_data.csv* and *user_data.csv*
2) As we can see in our day to day digital activity that ads are shown based on our search history and frequency of searches. And also based upon recent search.
3) The same thing I applied in this problem statement first of all, I applied filtering criteria as recent date of search of ads of a particular user in a particular category, then I applied filtering criteria as frequency of ad search.
4) Then I checked that if particular ad are enabled or disabled. I choose only enabled ads because there is no sense in displaying disabled ads.
5) Finally, I checked that for the given user if they already message for that ad, and discard all that ads which are '*first_message'* by user.
6) For all other cases like user are new, given category are new for particular user and there are no matched ads based upon data from *user_data*. So most common ten ads of that category shown to user.