# TERM PROJECT

- **Team Members:** Ümit Zafer Karakuş – 1618005020
- I do not have the project group so all transactions have been done by me.

- IP Address And Name:

```
import socket

def get_Host_name_IP():
    try:
        host_name=socket.gethostname()
        host_ip=socket.gethostbyname(host_name)
        print("Hostname: ", host_name)
        print("IP: ", host_ip)
    except:
        print("Unable to get Hostname and IP")

# Driver Code
get_Host_name_IP()
```

```
Hostname:  DESKTOP-AEGKDCD
IP:  192.168.1.38
```

Report:

While preparing my project, I used the "Book-Crossing: User review ratings" dataset. The reason I used this dataset was that it was organized separately as user rating and book and I thought it was the most suitable dataset for ALS. Most of the data in the dataset was inaccurate, and I tried hard to correct them. I managed to make some of the data available, but the data I could not recover caused minor errors. That's why there are minor shortcomings in my homework.

I first added the necessary libraries for the project. Then I printed my computer's IP address and name using the required codes. Inside my data set, I assign the book information to a variable and print the total number of books. To find out the ages of the books, I took out the printing year from today and learned the ages of the books. I made the ages of the books I found into a table. Then I assigned the user information from my data set to another variable and printed the total number of users, location and ages. I have tabulated the ages of the users (unidentified users are entered as '0'). I assigned my last dataset, the ratings, to a variable. There were too many errors in the rating dataset. I used a function to get rid of these errors. I printed the top 10 ratings and the total number of ratings to check its accuracy. I calculated the average of the

ratings and tabulated the ratings. Later, I included ALS and Rating Class in the project. I created a model with ALS. I prepared a rating system by entering User ID and Product ID, comparing a book that the user did not read with the books they used to read. Later, I created a book recommendation site just by entering User ID. I also created a user suggestion system by just entering the Product ID. I created the Titles section for users to easily enter the title of the book by entering the Product ID. I trained 0.7 of the data in the dataset and used the remaining 0.3 for testing. I trained 0.7 of the data in the data and used the remaining 0.3 for testing. Using the data from the test, I calculated how many points the user would rate without reading a book. Finally, I calculated the 'Mean Square Error' using the test data and printed it.

**Mean Square Error:**

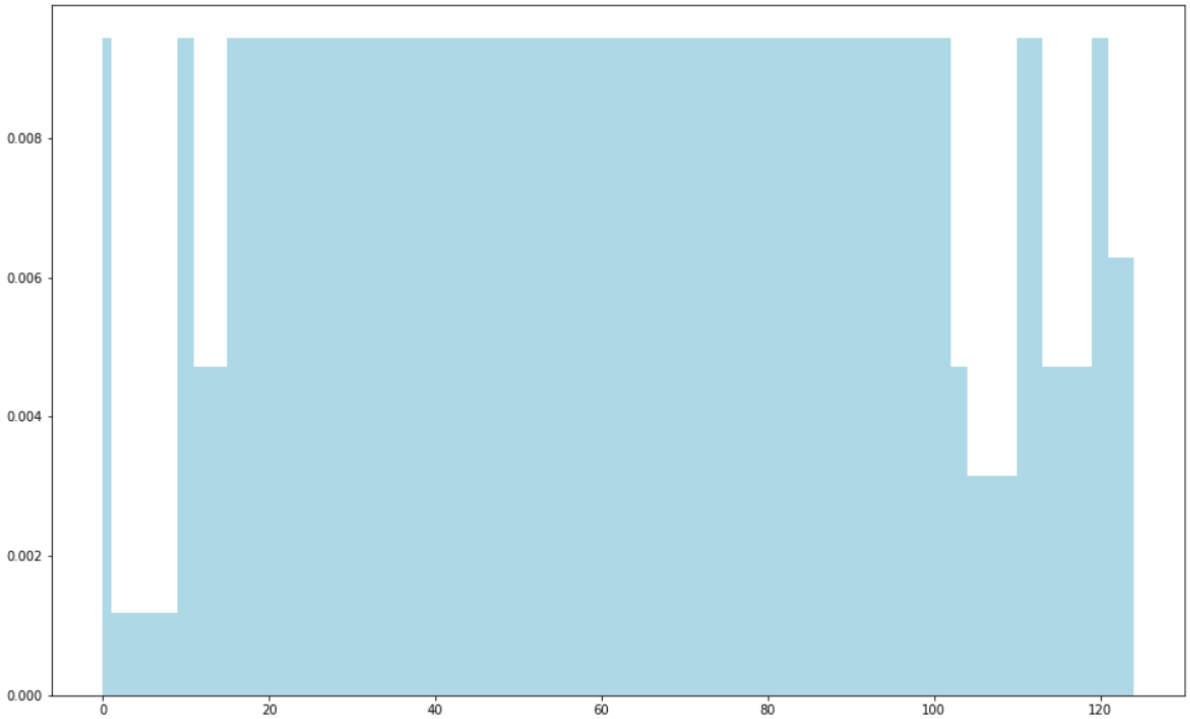
- **Rank=10 Iteration=5 Lambda=0,01:** 6.8712072636965145
- **Rank=10 Iteration=5 Lambda=0,1:** 4.18727616879829
- **Rank=10 Iteration=7 Lambda=0,01:** 6.204665661522919
- **Rank=10 Iteration=7 Lambda=0,1:** 4.078978186020014
- **Rank=10 Iteration=10 Lambda=0,01:** 5.946574208710724
- **Rank=10 Iteration=10 Lambda=0,1:** 4.002385492376571
- **Rank=50 Iteration=5 Lambda=0,01:** 5.349008769057108
- **Rank=50 Iteration=5 Lambda=0,1:** 3.872228791337387
- **Rank=50 Iteration=7 Lambda=0,01:** 5.033082892496153
- **Rank=50 Iteration=7 Lambda=0,1:** 3.7661517135008524
- **Rank=50 Iteration=10 Lambda=0,01:** 4.75785217231005
- **Rank=50 Iteration=10 Lambda=0,1:** 3.7050616360200475
- **Rank=200 Iteration=5 Lambda=0,01:** 4.734408757543218

- **Rank=200 Iteration=5 Lambda=0,1:** 3.781965798877076
- **Rank=200 Iteration=7 Lambda=0,01:** 4.534484806158816
- **Rank=200 Iteration=7 Lambda=0,1:** 3.691218164836206
- **Rank=200 Iteration=10 Lambda=0,01:** 4.373054148064345
- **Rank=200 Iteration=10 Lambda=0,1:** 3.634076710425536

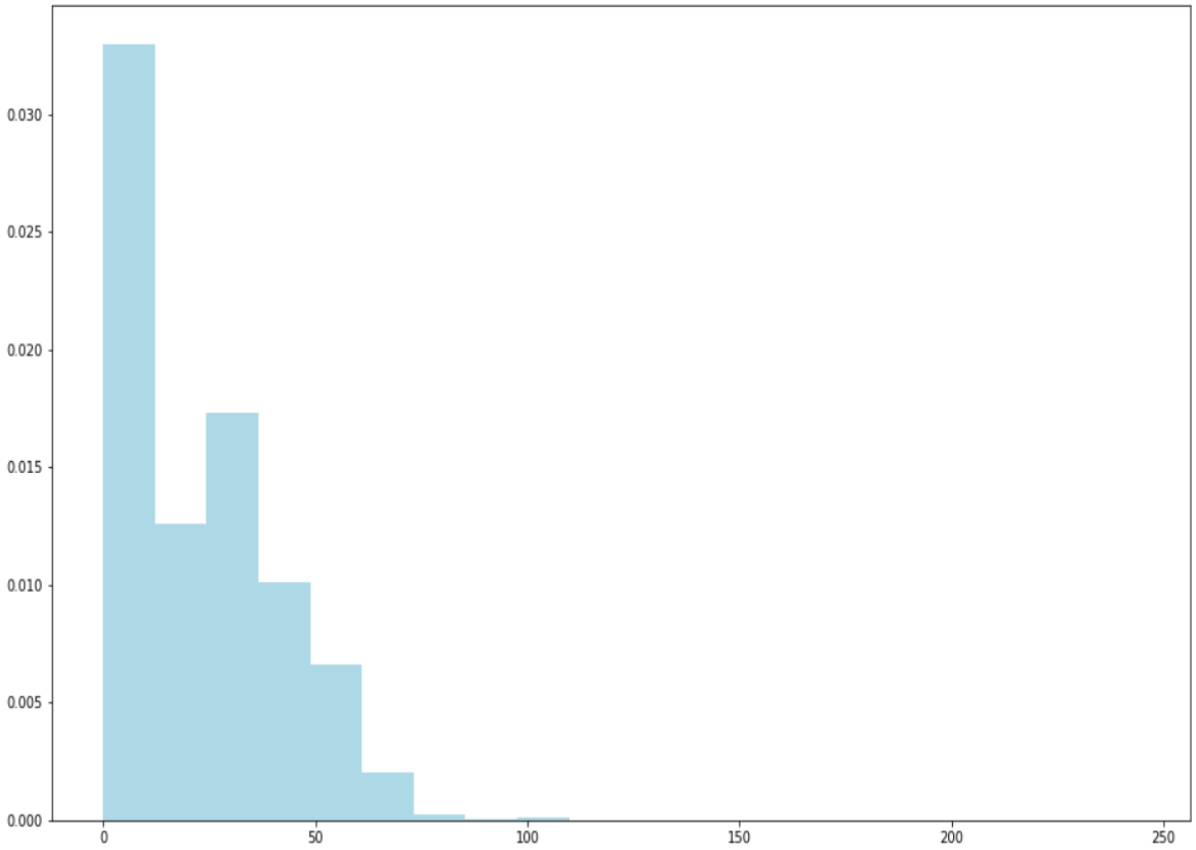
➢ Considering the above results, Rank = 200 Iteration = 10 Lambda = 0.1 to find the most accurate result. Rank = 200 will give the best results but it will take a very long time so my suggestion would be Rank = 50, Iteration = 10 Lambda = 0.1. We can shorten the transaction process by reducing the rank.

**Graphics:**

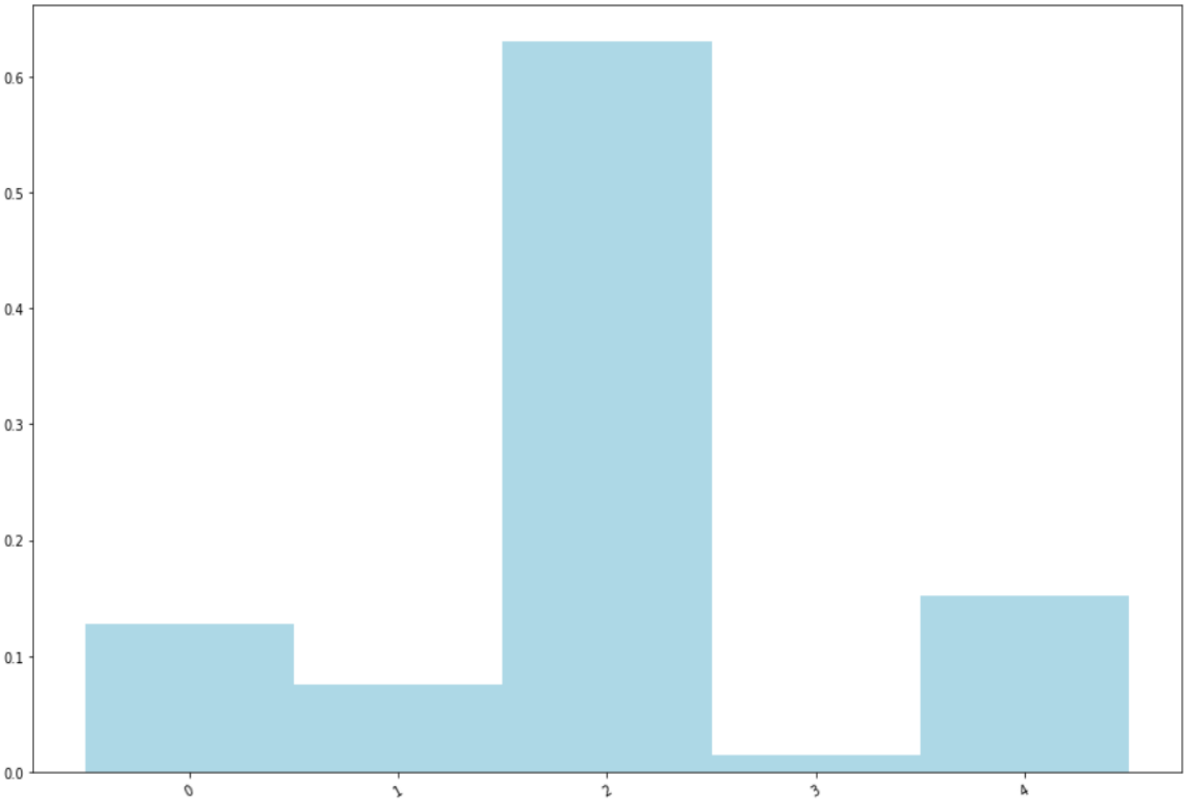
- Book Age:



User Age:




Ratings:



## Dataset:

Books:

BookID; BookName; Year;Press

```
0195153448;Classical Mythology;Mark P. O. Morford;2002;Oxford University Press
0002005018;Clara Callan;Richard Bruce Wright;2001;HarperFlamingo Canada
0060973129;Decision in Normandy;Carlo D'Este;1991;HarperPerennial
```

Ratings:

UserID; BookID; Rating

```
183;100940586;5
103915;102233681;3
186025;102345711;1
110029;103571073;2
147451;103571073;1
193952;105254988;5
166065;105612457;1
174054;106412227;1
135383;106711106;3
15923;107884471;1
```

User:

UserID; Location; Age

```
1;nyc, new york, usa;0
2;stockton, california, usa;18
3;moscow, yukon territory, russia;0
4;porto, v.n.gaia, portugal;17
5;farnborough, hants, united kingdom;0
6;santa monica, california, usa;61
7;washington, dc, usa;0
8;timmins, ontario, canada;0
9;germantown, tennessee, usa;0
10;albacete, wisconsin, spain;26
```