D

February 20, 2020

```python
In [1]: import matplotlib.pyplot as plt
        import pandas
        import numpy as np

In [2]: f = open("d_tough_choices.txt", "r")

In [3]: b, l, d = map(int, f.readline().split())

In [4]: book_scores = map(int, f.readline().split())

In [5]: lib_books_count = []
        lib_days_signup = []
        lib_speed = []

In [6]: book_count_in_libs = dict()

In [7]: # for bb in range(b):
        #     book_count_in_libs[bb] = 0

In [8]: for i in range(l):
            n, t, m = map(int, f.readline().split())
            lib_books_count.append(n)
            lib_days_signup.append(t)
            lib_speed.append(m)

            books = map(int, f.readline().split())
            for book in books:
                if book not in book_count_in_libs:
                    book_count_in_libs[book] = 0

                book_count_in_libs[book] += 1

In [9]: books_counts = book_count_in_libs.values()

In [10]: print("Books", b)
         print("Libraries", l)
         print("Days", d)
```
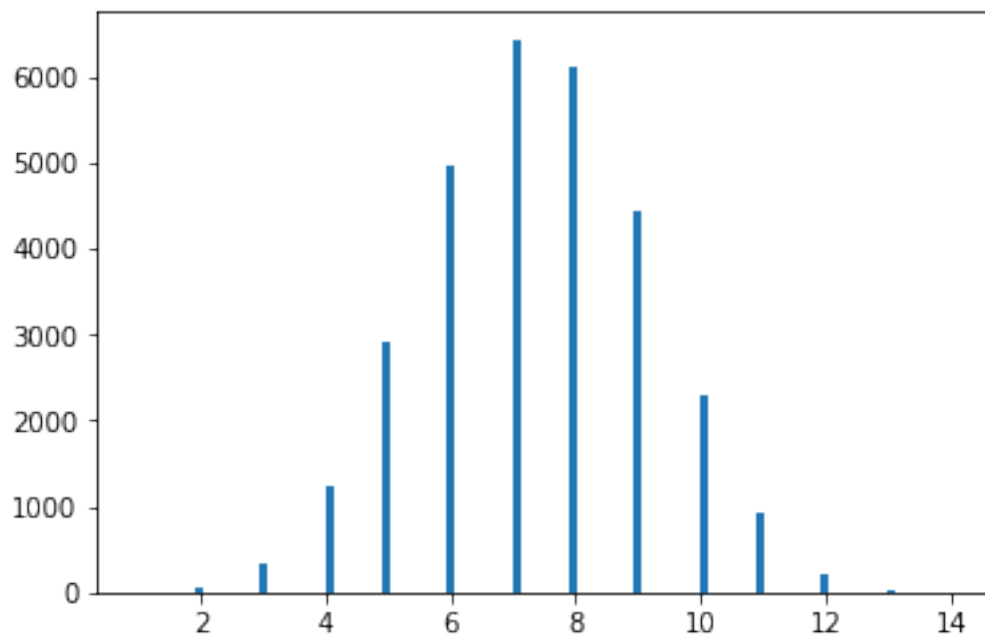
```
('Books', 78600)
('Libraries', 30000)
('Days', 30001)


In [11]: print("Books per library stats")
         _ = plt.hist(lib_books_count, 100)
         print(np.mean(lib_books_count), np.min(lib_books_count), np.max(lib_books_count), np.s

Books per library stats
(7.36, 1, 14, 1.800870160043009)
```
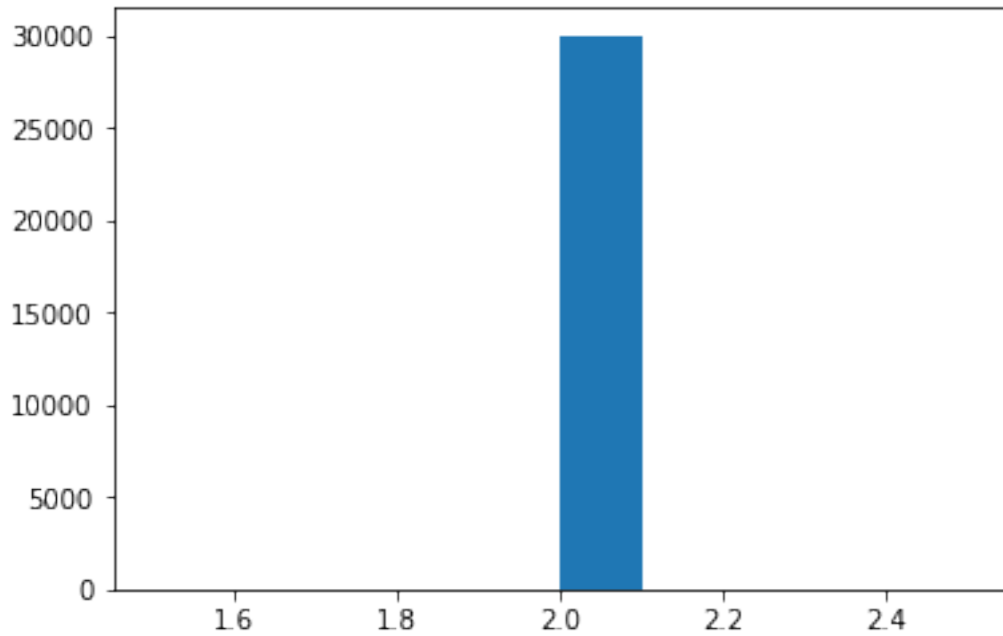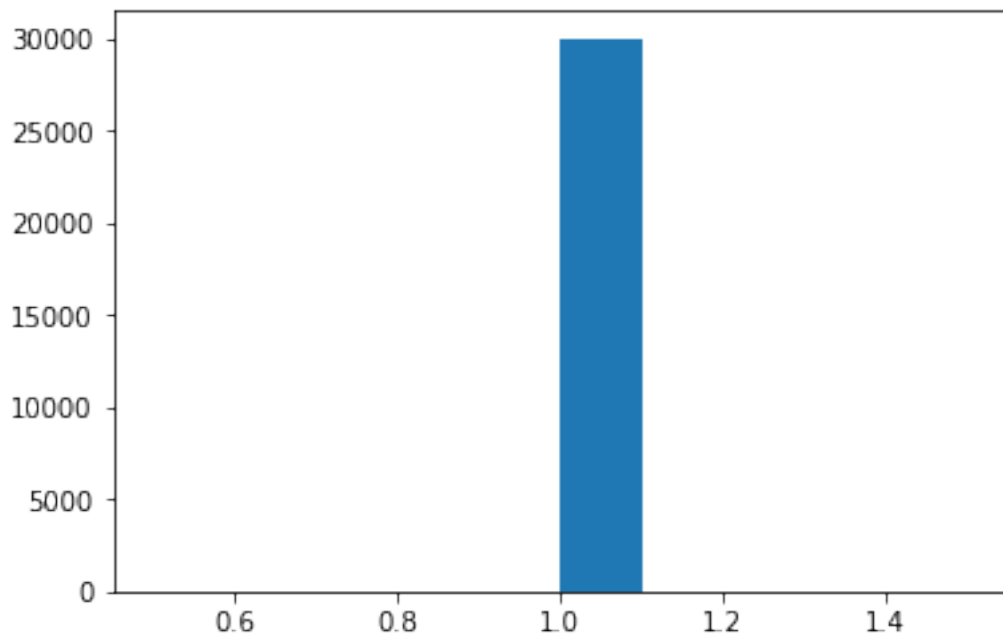


```
In [12]: print("Signup duration stats")
         _ = plt.hist(lib_days_signup, 10)
         print(np.mean(lib_days_signup), np.min(lib_days_signup), np.max(lib_days_signup), np.s

Signup duration stats
(2.0, 2, 2, 0.0)
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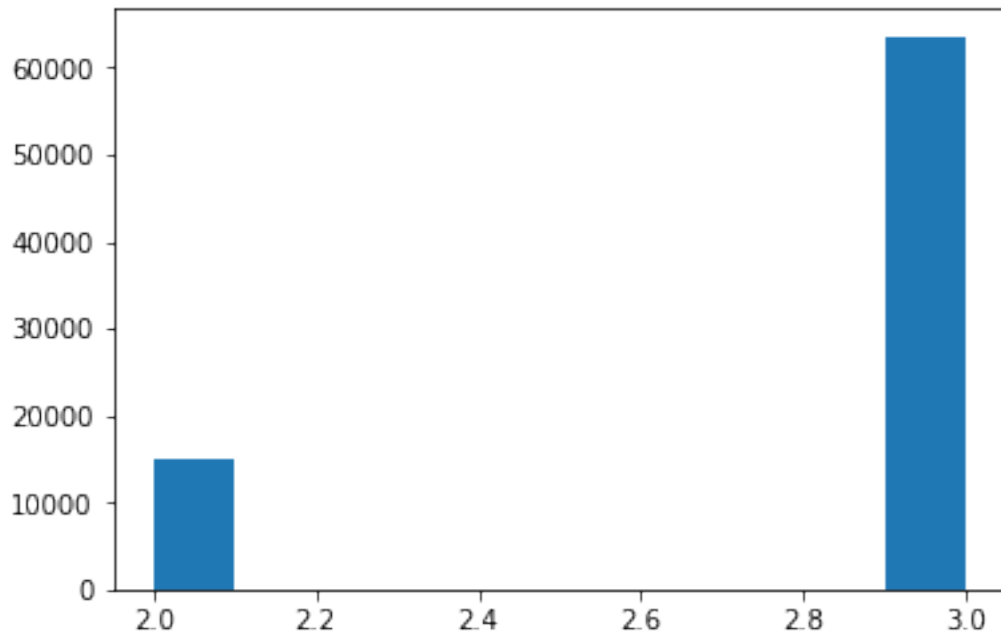
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In [13]: print("Speed stats")
         _ = plt.hist(lib_speed, 10)
         print(np.mean(lib_speed), np.min(lib_speed), np.max(lib_speed), np.std(lib_speed))
```

```
Speed stats
(1.0, 1, 1, 0.0)
```

```
In [14]: print("Libraries per book stats")
         _ = plt.hist(books_counts, 10)
         print(np.mean(books_counts), np.min(books_counts), np.max(books_counts), np.std(books_
```

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Libraries per book stats
(2.8091603053435112, 2, 3, 0.39296298248041983)
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In [41]: books_counts
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