Analyze the latest feature releases

Project Description

Two pieces of data that would be helpful immediately: the number of daily active users, the number of status changes by card (daily).

Import Libraries

In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import random

import datetime
from datetime import datetime, timedelta
import scipy.stats

import sqlite3

#import mysql.connector (#pip install mysql-connector-python)

#import ibm_db
#import ibm_db_dbi

#import pyodbc

#from pymongo import MongoClient

import warnings
warnings.filterwarnings('ignore')

%matplotlib inline
#sets the default autosave frequency in seconds
%autosave 60
sns.set_style('dark')
sns.set(font_scale=1.2)

plt.rc('axes', titlesize=9)
plt.rc('axes', labelsize=14)
plt.rc('xtick', labelsize=12)
plt.rc('ytick', labelsize=12)

pd.set_option('display.max_columns',None)
#pd.set_option('display.max_rows',None)
pd.set_option('display.width', 1000)
pd.option_context('float_format','{:.2f}'.format)

random.seed(0)
np.random.seed(0)
np.set_printoptions(suppress=True)
```

```
Autosaving every 60 seconds
```

Load Data from SQL database

SQLite

In [2]:
```
db = sqlite3.connect("shiptivity.db") #Create connection
```

In [3]:
```
cursor = db.cursor()
```

In [4]:
```
cursor.execute("SELECT name FROM sqlite_schema\
                WHERE \
                type ='table' AND\
                name NOT LIKE 'sqlite_%';")
available_table=(cursor.fetchall())
```

In [5]:
```
available_table
```

Out[5]:
```
[('user',), ('login_history',), ('card',), ('card_change_history',)]
```

Write SQL Queries

In [6]:
```
pd.read_sql_query("SELECT * FROM user", db)
```

Out[6]:

	id	firstname	lastname
0	1	Dawna	Pellegren
1	2	Tama	Courtois
2	3	Nadene	Otwell
3	4	Genesis	Wible
4	5	Lissa	Braatz
...	...	...	...
95	96	Harvey	Moncrief
96	97	Shirly	Conners
97	98	Lacresha	Dunne
98	99	Elenore	Varley
99	100	Gudrun	Ashe

100 rows × 3 columns

In [7]:
```
df2 = pd.read_sql_query("SELECT * FROM login_history", db)
df2
```

Out[7]:

	id	user_id	login_timestamp
0	1	36	1517667588
1	2	6	1517828610
2	3	85	1518062400
3	4	12	1518175184

	id	user_id	login_timestamp
4	5	6	1518344617
...	...	...	...
4055	4056	46	1549048024
4056	4057	73	1549050664
4057	4058	26	1549058099
4058	4059	23	1549061446
4059	4060	15	1549065472

4060 rows × 3 columns

In [8]:
```
df2['date'] = pd.to_datetime(df2['login_timestamp'],unit='s')
```

In [9]:
```
df2
```

Out[9]:

	id	user_id	login_timestamp	date
0	1	36	1517667588	2018-02-03 14:19:48
1	2	6	1517828610	2018-02-05 11:03:30
2	3	85	1518062400	2018-02-08 04:00:00
3	4	12	1518175184	2018-02-09 11:19:44
4	5	6	1518344617	2018-02-11 10:23:37
...	...	...	...	...
4055	4056	46	1549048024	2019-02-01 19:07:04
4056	4057	73	1549050664	2019-02-01 19:51:04
4057	4058	26	1549058099	2019-02-01 21:54:59
4058	4059	23	1549061446	2019-02-01 22:50:46
4059	4060	15	1549065472	2019-02-01 23:57:52

4060 rows × 4 columns

In [10]:
```
df2["date_only"] = df2["date"].dt.date
```

In [11]:
```
df2["date_only"] = pd.to_datetime(df2["date_only"])
```

In [12]:
```
df2
```

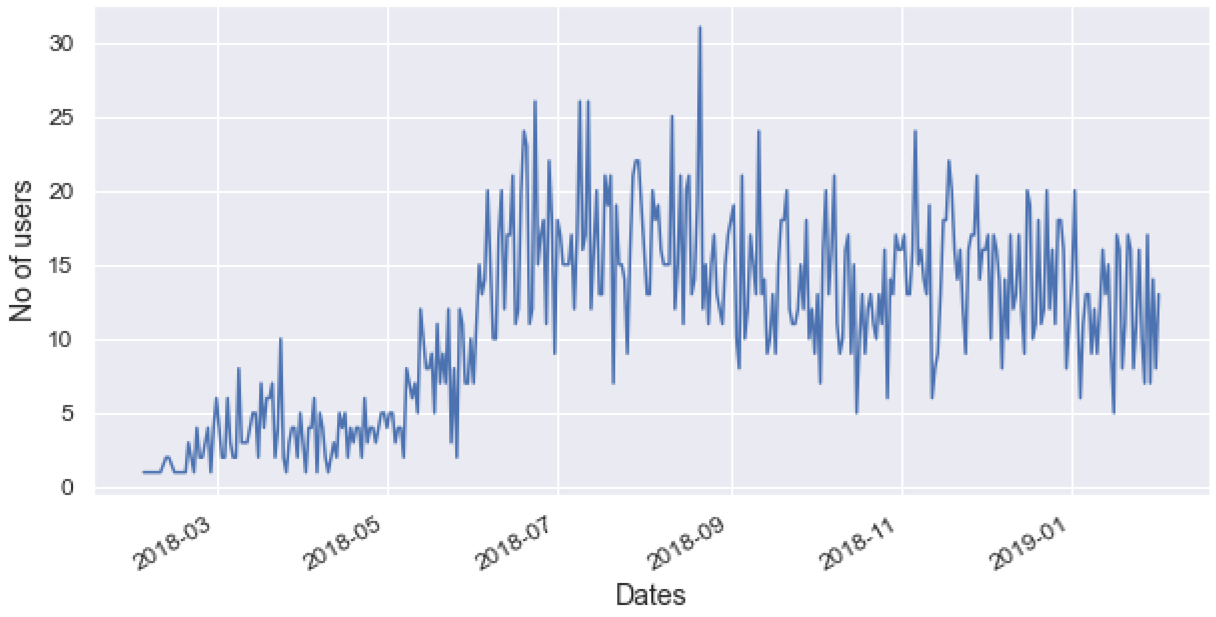
Out[12]:

	id	user_id	login_timestamp	date	date_only
0	1	36	1517667588	2018-02-03 14:19:48	2018-02-03
1	2	6	1517828610	2018-02-05 11:03:30	2018-02-05
2	3	85	1518062400	2018-02-08 04:00:00	2018-02-08

	id	user_id	login_timestamp	date	date_only
3	4	12	1518175184	2018-02-09 11:19:44	2018-02-09
4	5	6	1518344617	2018-02-11 10:23:37	2018-02-11
...	...	...	...	...	...
4055	4056	46	1549048024	2019-02-01 19:07:04	2019-02-01
4056	4057	73	1549050664	2019-02-01 19:51:04	2019-02-01
4057	4058	26	1549058099	2019-02-01 21:54:59	2019-02-01
4058	4059	23	1549061446	2019-02-01 22:50:46	2019-02-01
4059	4060	15	1549065472	2019-02-01 23:57:52	2019-02-01

4060 rows × 5 columns

In [13]:
```
df2.groupby("date_only")["user_id"].count().plot(figsize=(10,5))
plt.xlabel("Dates")
plt.ylabel("No of users")
plt.show()
```



In [14]:
```
pd.read_sql_query("SELECT * FROM card", db)
```

Out[14]:

	id	name	status	priority
0	1	Leuschke Group	backlog	1
1	2	Jacobson, Mertz and Kiehn	backlog	2
2	3	Carroll, Lindgren and Schoen	complete	3
3	4	Russel, Wilderman and Mante	backlog	3
4	5	Kunde Group	complete	5
...	...	...	...	...
195	196	Williamson, Ratke and Weissnat	complete	139
196	197	Dare, Barton and Weber	backlog	100

	id	name	status	priority
197	198	Mitchell-Schoen	complete	141
198	199	Bergstrom-Bruen	backlog	101
199	200	Breitenberg, Waelchi and Murphy	in-progress	102

200 rows × 4 columns

In [15]:

```
df = pd.read_sql_query("SELECT * FROM card_change_history", db)
df
```

Out[15]:

	id	cardID	oldStatus	newStatus	oldPriority	newPriority	timestamp
0	1	1	None	backlog	0	1	1545719521
1	2	2	None	backlog	0	2	1532263781
2	3	3	None	backlog	0	3	1547083910
3	4	4	None	backlog	0	4	1530431160
4	5	5	None	backlog	0	5	1544345250
...	...	...	...	...	...	...	...
481	482	143	in-progress	complete	74	93	1548399582
482	483	98	backlog	in-progress	48	24	1544164392
483	484	60	backlog	in-progress	31	44	1544952588
484	485	28	in-progress	complete	14	51	1544823283
485	486	171	backlog	in-progress	88	55	1543730554

486 rows × 7 columns

In [16]:

```
df['date'] = pd.to_datetime(df['timestamp'],unit='s')
```

In [17]:

```
df
```

Out[17]:

	id	cardID	oldStatus	newStatus	oldPriority	newPriority	timestamp	date
0	1	1	None	backlog	0	1	1545719521	2018-12-25 06:32:01
1	2	2	None	backlog	0	2	1532263781	2018-07-22 12:49:41
2	3	3	None	backlog	0	3	1547083910	2019-01-10 01:31:50
3	4	4	None	backlog	0	4	1530431160	2018-07-01 07:46:00
4	5	5	None	backlog	0	5	1544345250	2018-12-09 08:47:30
...	...	...	...	...	...	...	...	...
481	482	143	in-progress	complete	74	93	1548399582	2019-01-25 06:59:42
482	483	98	backlog	in-progress	48	24	1544164392	2018-12-07 06:33:12
483	484	60	backlog	in-progress	31	44	1544952588	2018-12-16 09:29:48
484	485	28	in-progress	complete	14	51	1544823283	2018-12-14 21:34:43

	id	cardID	oldStatus	newStatus	oldPriority	newPriority	timestamp	date
485	486	171	backlog	in-progress	88	55	1543730554	2018-12-02 06:02:34

486 rows × 8 columns

In [18]:
```
df["date_only"] = df["date"].dt.date
```

In [19]:
```
df
```

Out[19]:

	id	cardID	oldStatus	newStatus	oldPriority	newPriority	timestamp	date	date_only
0	1	1	None	backlog	0	1	1545719521	2018-12-25 06:32:01	2018-12-25
1	2	2	None	backlog	0	2	1532263781	2018-07-22 12:49:41	2018-07-22
2	3	3	None	backlog	0	3	1547083910	2019-01-10 01:31:50	2019-01-10
3	4	4	None	backlog	0	4	1530431160	2018-07-01 07:46:00	2018-07-01
4	5	5	None	backlog	0	5	1544345250	2018-12-09 08:47:30	2018-12-09
...	...	...	...	...	...	...	...	...	...
481	482	143	in-progress	complete	74	93	1548399582	2019-01-25 06:59:42	2019-01-25
482	483	98	backlog	in-progress	48	24	1544164392	2018-12-07 06:33:12	2018-12-07
483	484	60	backlog	in-progress	31	44	1544952588	2018-12-16 09:29:48	2018-12-16
484	485	28	in-progress	complete	14	51	1544823283	2018-12-14 21:34:43	2018-12-14
485	486	171	backlog	in-progress	88	55	1543730554	2018-12-02 06:02:34	2018-12-02

486 rows × 9 columns

In [20]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 486 entries, 0 to 485
Data columns (total 9 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   id           486 non-null    int64
 1   cardID       486 non-null    int64
 2   oldStatus    286 non-null    object
 3   newStatus    486 non-null    object
 4   oldPriority  486 non-null    int64
 5   newPriority  486 non-null    int64
 6   timestamp    486 non-null    int64
 7   date         486 non-null    datetime64[ns]
 8   date_only    486 non-null    object
dtypes: datetime64[ns](1), int64(5), object(3)
memory usage: 34.3+ KB
```

In [21]:
```
df["date_only"] = pd.to_datetime(df["date_only"])
```

In [22]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 486 entries, 0 to 485
Data columns (total 9 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   id           486 non-null    int64
 1   cardID       486 non-null    int64
 2   oldStatus    286 non-null    object
 3   newStatus    486 non-null    object
 4   oldPriority  486 non-null    int64
 5   newPriority  486 non-null    int64
 6   timestamp    486 non-null    int64
 7   date         486 non-null    datetime64[ns]
 8   date_only    486 non-null    datetime64[ns]
dtypes: datetime64[ns](2), int64(5), object(2)
memory usage: 34.3+ KB
```

In [23]:
```
df3 = pd.DataFrame(df.groupby("cardID")["oldStatus", "newStatus"].count())
df3
```

Out[23]:

	oldStatus	newStatus
cardID		
1	0	1
2	2	3
3	2	3
4	0	1
5	2	3
...	...	...
196	2	3
197	0	1
198	2	3
199	2	3
200	3	4

200 rows × 2 columns

In [24]:
```
df3.reset_index(inplace=True)
```

In [25]:
```
df3
```

Out[25]:

	cardID	oldStatus	newStatus
0	1	0	1
1	2	2	3
2	3	2	3
3	4	0	1
4	5	2	3
...	...	...	...

	cardID	oldStatus	newStatus
195	196	2	3
196	197	0	1
197	198	2	3
198	199	2	3
199	200	3	4

200 rows × 3 columns

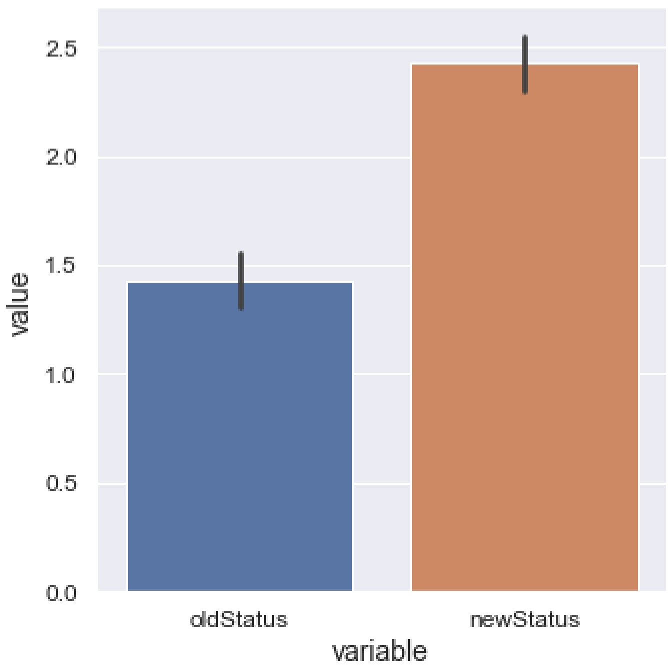
In [26]:
```
df4 = pd.melt(df3, id_vars="cardID")
df4
```

Out[26]:

	cardID	variable	value
0	1	oldStatus	0
1	2	oldStatus	2
2	3	oldStatus	2
3	4	oldStatus	0
4	5	oldStatus	2
...	...	...	...
395	196	newStatus	3
396	197	newStatus	1
397	198	newStatus	3
398	199	newStatus	3
399	200	newStatus	4

400 rows × 3 columns

In [27]:
```
plt.figure(figsize=(60,5))
sns.factorplot(x = 'variable', y='value', data=df4, kind='bar')
plt.show()
```
```
<Figure size 4320x360 with 0 Axes>
```



In [28]:
```
cursor.close()
```

Python code done by Dennis Lam