Junglee Rummy Data Analysis

Introduction:

Game - www.jungleerummy.com

In Rummy Game, we have a variant 101 Pool Games, that is available for users to play online.

This is just one of the 4 variants that is available. This 101 Pool Games have different ‘Entry Fee’ (the money the user pays to play the game). Say 3 users A,B,C are playing the game with Entry Fees of INR 10. All users will pay a certain Cut% to Junglee Games for the gaming experience.

This cut% varies according to Entry Fees. Let us say this cut% for Entry Fees of INR 10 is 15%.

All users will pay INR 1.5 each (INR 4.5 is the rake / revenue for the company) and the remaining INR 8.5 from each user goes into the final pot that is available as the winnings amount. Ultimately a single user wins. If B wins, then (s)he wins INR 25.5 with a net winning of INR 15.5 (25.5 minus 10). Other users have a net losses of INR 10 each.

Dataset Description:

1. Entry Fee: This is the Buy-in (money user pays) in rupees to enter the game
2. Seat: Max number of players that can sit on the table i.e. 2,6 for the data set
3. Composition: Actual number of players that actually joined the table
4. Date: It's a data set of 1st July 2018 to 30 Sep 2018 which gives daily data for each table configuration
5. Configuration: Defined as the combination of Entry Fees – Seats – Composition
6. Cut %: %age amount deducted for each game from each user
7. '#Users': Distinct count of players (unique players) who played at least 1 game for table configurationfor the date
8. User Cash Game Count: Total number of games played by users on table configuration for the date. If user A,B,C play together a single game, then the value will be 3
9. Rake: Total amount generated in revenue from a table configuration for the date
10. Wager: Total amount paid by the users in terms of Entry Fees to play the game

Loading Data:

In [1]:

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

```
In [2]:
```

```
# reading the data using pandas
df = pd.read_excel('BI Skill Test - Data Set.xlsx')
```

```
In [3]:
```

```
# There are total of 14161 rows and 9 columns
df.shape
```

```
Out[3]:

(14161, 9)
```

Exploratory Data Analysis:

```
In [4]:
```

```
df.head()
```

```
Out[4]:
```

	Date	Entry Fee	Seat	Composition	Cut %	# Users	User Cash Game Count	Rake	Wager
0	July 1, 2018	10	2	2	0.15	198	593	889.5	5930
1	July 1, 2018	10	6	2	0.15	347	560	840.0	5600
2	July 1, 2018	10	6	3	0.15	568	1029	1543.5	10290
3	July 1, 2018	10	6	4	0.15	584	1035	1552.5	10350
4	July 1, 2018	10	6	5	0.15	592	1065	1597.5	10650

```
In [5]:
```

```
# Multiplying cut% with 100 to make it easy for computation
df['Cut %'] = df['Cut %'] * 100
```

Basic Stats:

In [6]:

```
# Basic statistics of tha data
pd.options.display.float_format = '{:.0f}'.format
df.describe()
```

Out[6]:

	Entry Fee	Seat	Composition	Cut %	# Users	User Cash Game Count	Rake	Wager
count	14161	14161	14161	14161	14161	14161	14161	14161
mean	854	5	4	13	165	305	10137	106726
std	1675	2	1	2	173	306	19686	280970
min	5	2	2	6	2	2	9	60
25%	25	6	2	10	33	69	952	6950
50%	100	6	3	15	112	212	3195	24000
75%	1000	6	5	15	233	444	9900	78000
max	10000	6	6	15	1155	2256	271200	4520000

Observation:

1. **Entry Fee:**Average entry fee is Rs.854, minimum entry fee is Rs 5 and maximum entry fee is Rs 10000. Most of the time users pay Rs 100 as a entry fee to play the game.
2. **Seat:** Average number of players sit together is 5, out of them 4 play in average. Whereas 6 number of players play at max.
3. **Cut%:** Average cut % is 13%. Most of the players pay 15% as cut.
4. **#Users:** Average number of user played at least one game per day is 165 whereas maximum number of users played at least one game per day is 1155.
5. **Rake:** Average amount company earn per day is Rs 10137. Maximum amount company earned in a day is Rs 271200. Most of the time company earns Rs 3195.
6. **Wager:** Maximum amount players invested to play game is Rs 4520000, whereas most of the time users pay Rs 24000

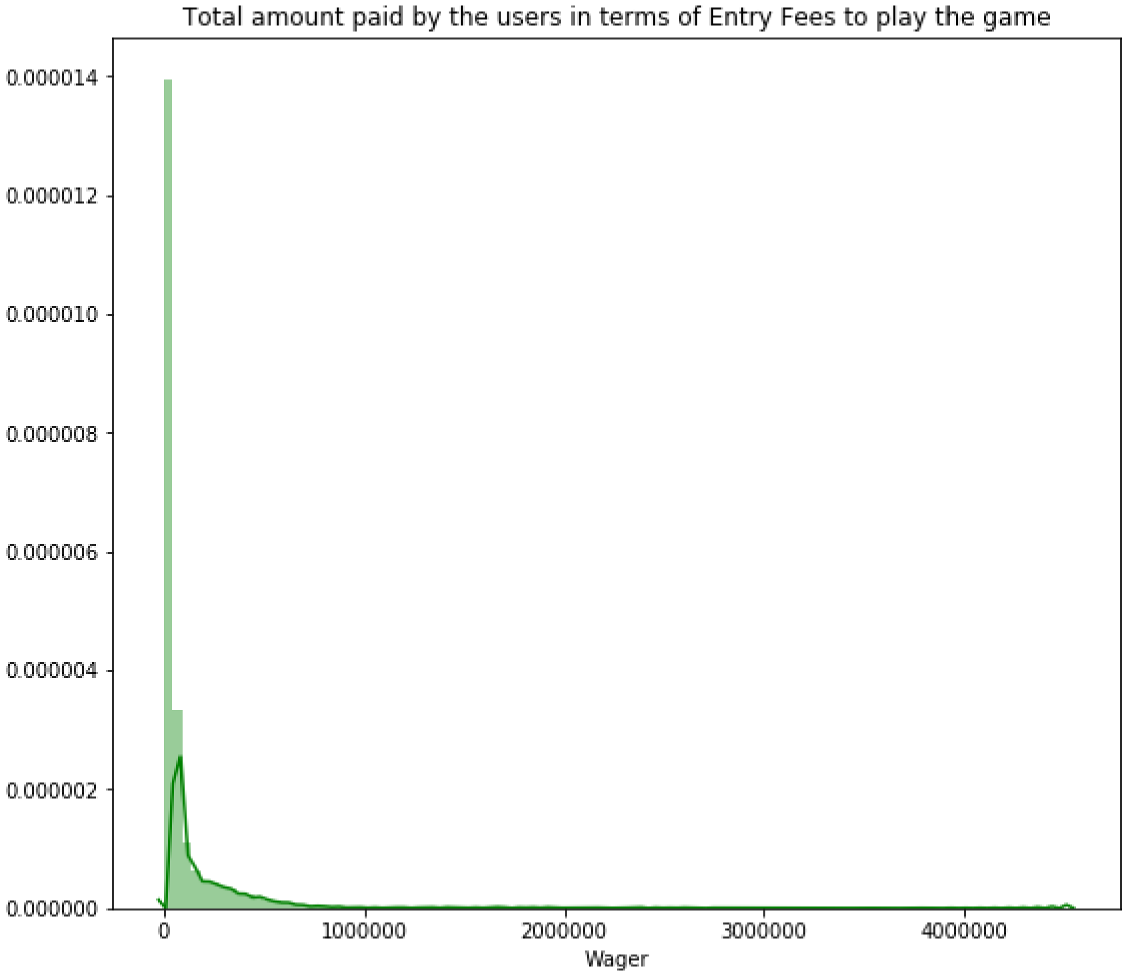
```
In [7]:
```

```
plt.figure(figsize=(9, 8))
sns.distplot(df['Wager'], color='g', bins=100, hist_kws={'alpha': 0.4})
plt.title("Total amount paid by the users in terms of Entry Fees to play the game")
```

```
C:\Users\Shamim Ahmed\Anaconda3\lib\site-packages\scipy\stats\stats.py:170
6: FutureWarning: Using a non-tuple sequence for multidimensional indexing
is deprecated; use `arr[tuple(seq)]` instead of `arr[seq]`. In the future
this will be interpreted as an array index, `arr[np.array(seq)]`, which wi
ll result either in an error or a different result.
  return np.add.reduce(sorted[indexer] * weights, axis=axis) / sumval
```

```
Out[7]:
```

```
Text(0.5,1,'Total amount paid by the users in terms of Entry Fees to play
the game')
```



By the graph we observe that most of the time users pay around Rs 25000 in a particular day.

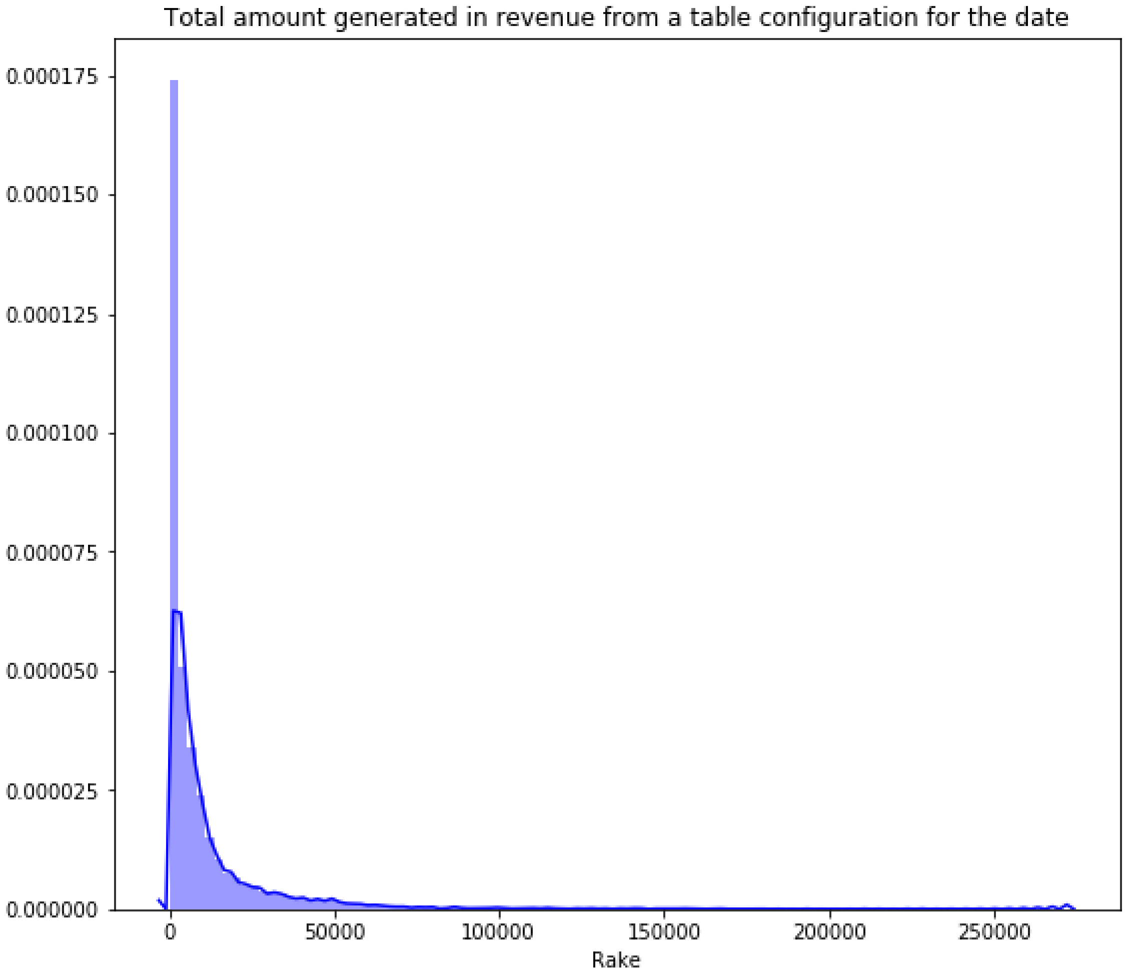
In [8]:

```
plt.figure(figsize=(9, 8))
sns.distplot(df['Rake'], color='b', bins=100, hist_kws={'alpha': 0.4})
plt.title("Total amount generated in revenue from a table configuration for the date")
```

```
C:\Users\Shamim Ahmed\Anaconda3\lib\site-packages\scipy\stats\stats.py:170
6: FutureWarning: Using a non-tuple sequence for multidimensional indexing
is deprecated; use `arr[tuple(seq)]` instead of `arr[seq]`. In the future
this will be interpreted as an array index, `arr[np.array(seq)]`, which wi
ll result either in an error or a different result.
  return np.add.reduce(sorted[indexer] * weights, axis=axis) / sumval
```

Out[8]:

```
Text(0.5,1,'Total amount generated in revenue from a table configuration f
or the date')
```



By the graph it is clearly visible that most of the time company earns aroung Rs 3000 per day as mentioned above.

Time series analysis:

In [9]:

```
# introducing datetime
from datetime import datetime, date, time
datetime.strptime('July 1, 2018', '%B %d, %Y')
```

Out[9]:

```
datetime.datetime(2018, 7, 1, 0, 0)
```

In [10]:

```
# converting date to datetime format
date = []
for d in df['Date']:
    x = datetime.strptime(d, '%B %d, %Y')
    date.append(x)
df['my_date'] = date
```

In [11]:

```
df.head()
```

Out[11]:

	Date	Entry Fee	Seat	Composition	Cut %	# Users	User Cash Game Count	Rake	Wager	my_date
0	July 1, 2018	10	2	2	15	198	593	890	5930	2018-07-01
1	July 1, 2018	10	6	2	15	347	560	840	5600	2018-07-01
2	July 1, 2018	10	6	3	15	568	1029	1544	10290	2018-07-01
3	July 1, 2018	10	6	4	15	584	1035	1552	10350	2018-07-01
4	July 1, 2018	10	6	5	15	592	1065	1598	10650	2018-07-01

In [12]:

```
print(df['my_date'][0].month)
print(df['my_date'][0].day)
print(df['my_date'][0].year)
```

```
7
1
2018
```

In [13]:

```
# converting datetime to individual columns
day = []
month = []
year = []
for i in df['my_date']:
    day.append(i.day)
    month.append(i.month)
    year.append(i.year)
```

In [14]:

```
df['day'] = day
df['month'] = month
df['year'] = year
```

In [15]:

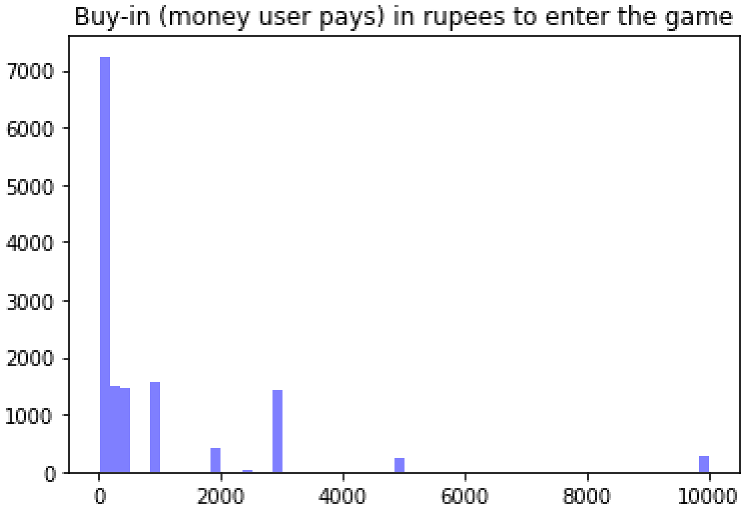
```
df.head(2)
```

Out[15]:

	Date	Entry Fee	Seat	Composition	Cut %	# Users	User Cash Game Count	Rake	Wager	my_date	day	m
0	July 1, 2018	10	2	2	15	198	593	890	5930	2018-07-01	1	7
1	July 1, 2018	10	6	2	15	347	560	840	5600	2018-07-01	1	7

In [16]:

```
num_bins = 60
plt.hist(df['Entry Fee'], num_bins, facecolor='blue', alpha=0.5)
plt.title("Buy-in (money user pays) in rupees to enter the game")
plt.show()
```



We observe that most of the people buy tickets less than 1000 Rs. There are some users who spend Rs 10000 as an enrty fees to play the game.

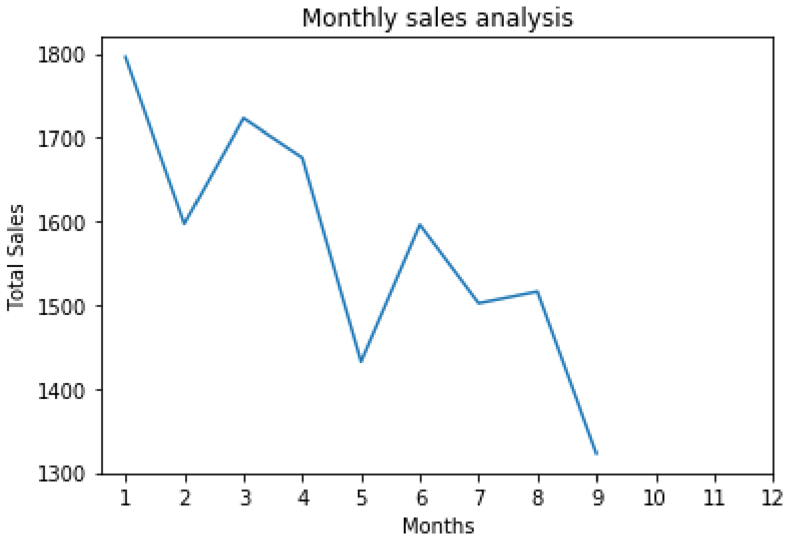
In [17]:

```
# sale by month
sales_by_month = df.groupby('month').size()
print(sales_by_month)
#Plotting the Graph
plot_by_month = sales_by_month.plot(title='Monthly Sales',xticks=(1,2,3,4,5,6,7,8,9,10,
11,12))
plot_by_month.set_xlabel('Months')
plot_by_month.set_ylabel('Total Sales')
plt.title("Monthly sales analysis")
```

```
month
1    1796
2    1597
3    1723
4    1676
5    1432
6    1596
7    1502
8    1516
9    1323
dtype: int64
```

Out[17]:

```
Text(0.5,1,'Monthly sales analysis')
```



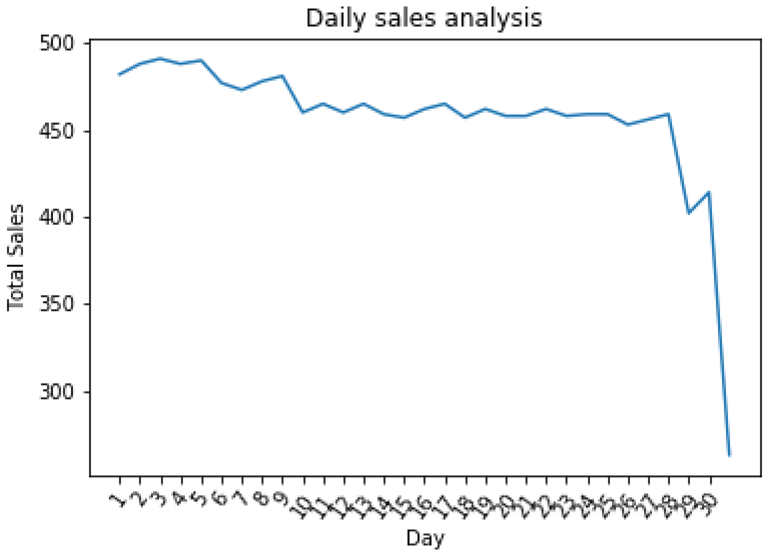
It is observed that number of sales in the month of January is high as compared to other months. As the months progressed the number of sales decreased.

In [18]:

```
#Sale by Day

sales_by_day = df.groupby('day').size()
plot_by_day = sales_by_day.plot(title='Daily Sales',xticks=(range(1,31)),rot=55)
plot_by_day.set_xlabel('Day')
plot_by_day.set_ylabel('Total Sales')
plt.title("Daily sales analysis")
```

Out[18]:

```
Text(0.5,1,'Daily sales analysis')
```



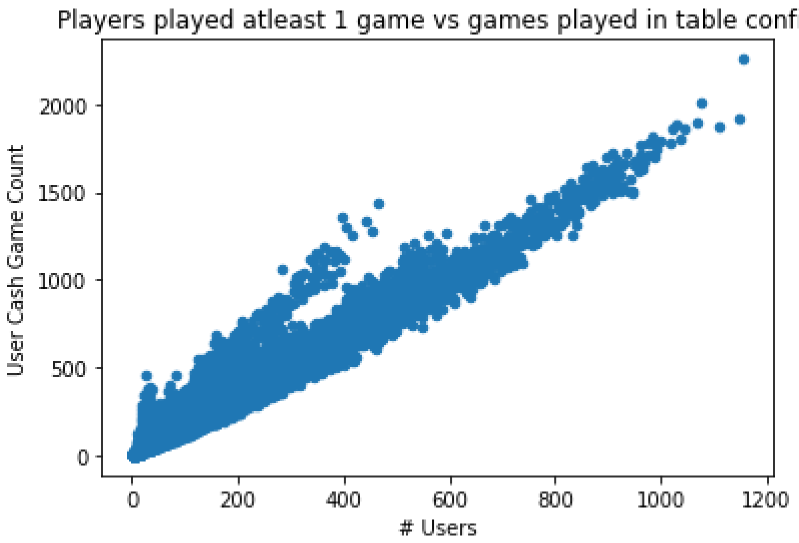
We observe that number of sales in the first five days of the month is high as compared to other months.

In [78]:

```
# could have been better if i could get hourly data.
```

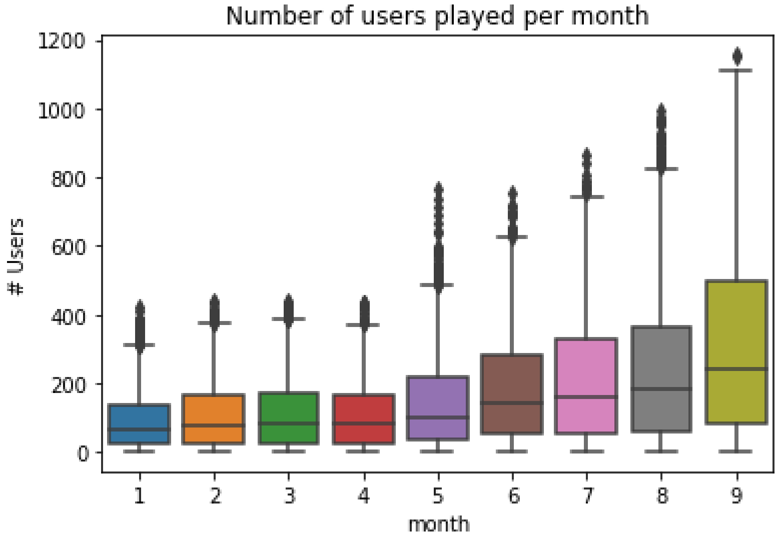
In [19]:

```
df.plot(kind='scatter', x='# Users', y='User Cash Game Count');
plt.title("Players played atleast 1 game vs games played in table config")
plt.show()
```



In [20]:

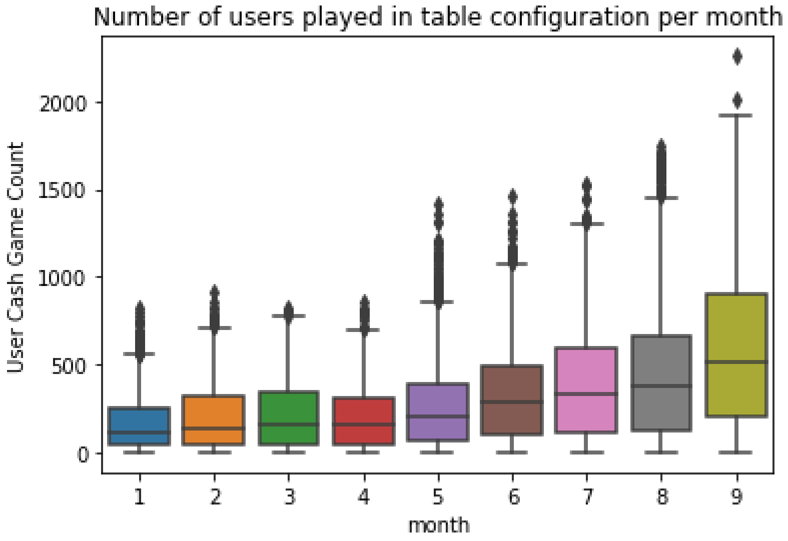
```
# number of users played per month
sns.boxplot(x='month', y='# Users', data=df)
plt.title("Number of users played per month")
plt.show()
```



As the time progressed the number of users per month increased gradually. If we focus on the quantiles, in january there were around 100 people in average per day. But there were around 400 at maximum. In the month of september there were around 220 users in an average per day whereas there were around 1200 user per day. Same can be understood for other months as well.

In [21]:

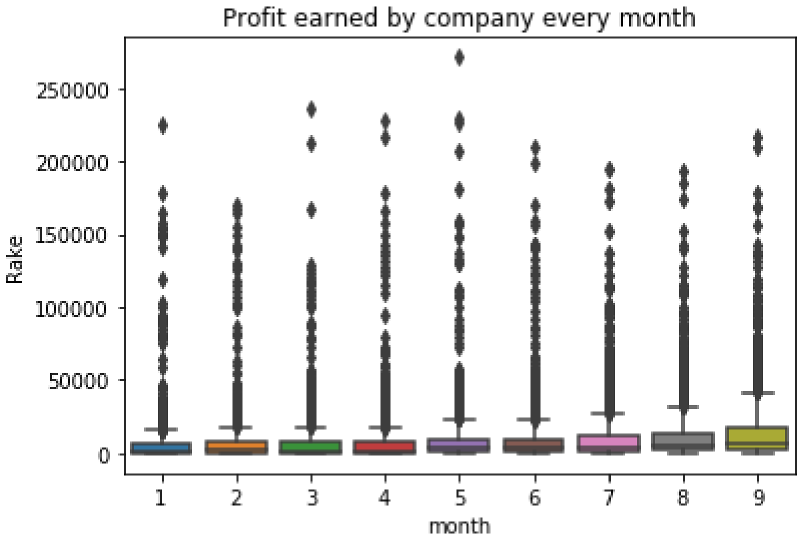
```
# Number of users played in table configuration per month.

sns.boxplot(x='month', y='User Cash Game Count', data=df)
plt.title("Number of users played in table configuration per month")
plt.show()
```



Similarly if we focus on number of games played per month on table, in january around 100 people played in a day wheras at max 800 people in a day. We observed that there was a slight decrease in number of games played in the month of april. In the month of september in an average 500 people played on table whereas at max 3000 people played on table, 75% time 900 played game on table.

```
In [22]:
```

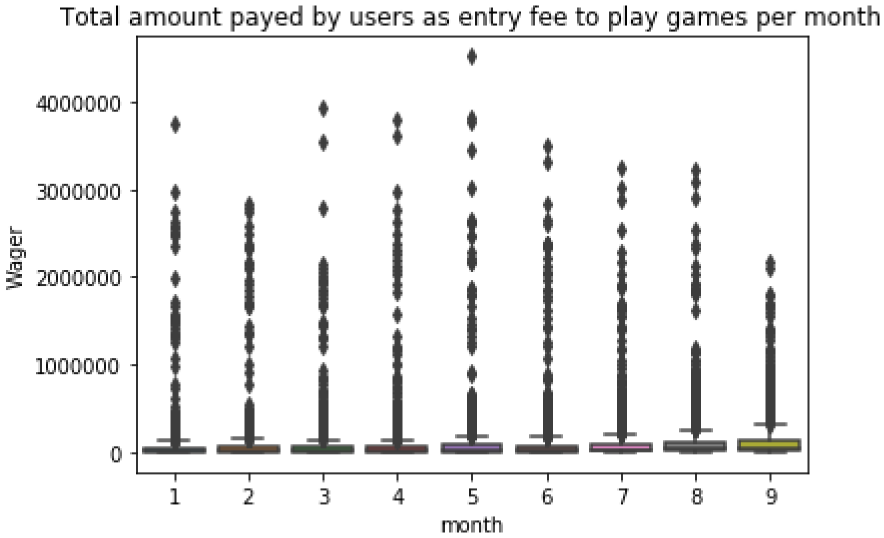
```
# Profit earned by company every month

sns.boxplot(x='month', y='Rake', data=df)
plt.title("Profit earned by company every month")
plt.show()
```



If we observe the boxplot, company earned most of the profit in the month of september in an average. We also see that maximum profit earned at a time is around 300000 in the month of may. In the month of february company earned least revenue.

In [24]:

```
# total amount payed by users as entry fee to play games per month.

sns.boxplot(x='month', y='Wager', data=df)
plt.title("Total amount payed by users as entry fee to play games per month")
plt.show()
```

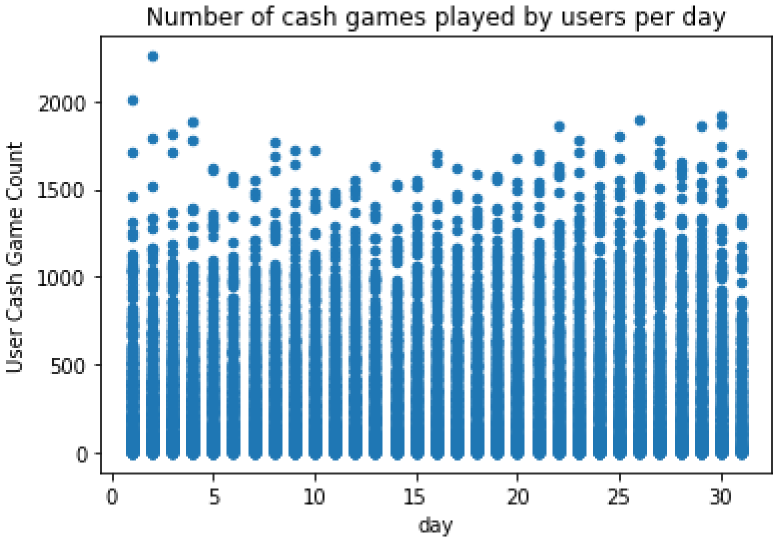


We observed that same scenerio is observed as above RAGE plots. In the month of may maximum amount is spent by user to play a game. In an average september has a good recored.

In [25]:

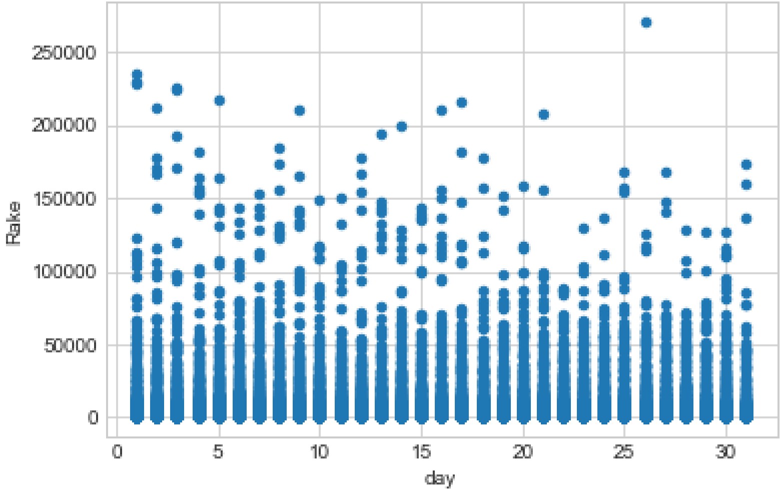
```
# analysis by days of the month
# number of cash games played by users per day.
plt.figure(figsize=(20,18))
df.plot(kind='scatter', x='day', y='User Cash Game Count');
plt.title("Number of cash games played by users per day")
plt.show()
```

```
<matplotlib.figure.Figure at 0x3cf2079198>
```



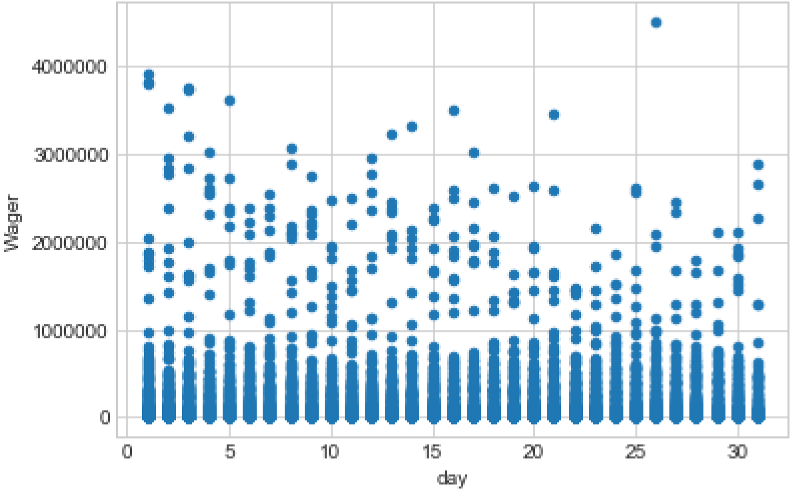
In [117]:

```
# Revenue earned by users in days of month

df.plot(kind='scatter', x='day', y='Rake');
plt.title("Number of cash games played by users per day")
plt.show()
```



In [118]:

```
# Amount spent by user every day of the month.

df.plot(kind='scatter', x='day', y='Wager');
plt.show()
```



Conclusion and Observation:

1. Entry Fee: Firstly, maximum number of people spend 100 Rs to enter the game.
2. Seat: At maximum 6 players can sit on a table, among them 3 players plays most of the time.
3. Cut%: In most cases 15% of the amount is deducted per user.
4. No of Users: In a day 112 players play atleast a table game per day mostly.
5. User cash game: In most cases 212 players play table game in a day.
6. Rake: Per day company earns Rs 3195 in an average.
7. Wager: Per day users spends Rs 24000 in an average.
8. We observed that most of the users pay less than Rs 1000 to play a game.
9. It is observed that the number of sales in the month of January is high as compared to other months. As the months progressed the number of sales decreased.
10. We observe that number of sales in the first five days of the month is high as compared to other months.
11. We observe that number of users gradually increased as the days progressed. But May month had significant high user engagement from preceeding months.
12. We see that May month had very high revenue generation by the company.
13. We had observed that every day of the month shown uniform revenue generation by the company.
14. Overall we observed that month of May had been best for the company's profitability. It had shown significant growth in the same. Whereas month of february was little bit odd for the company in terms profitability.