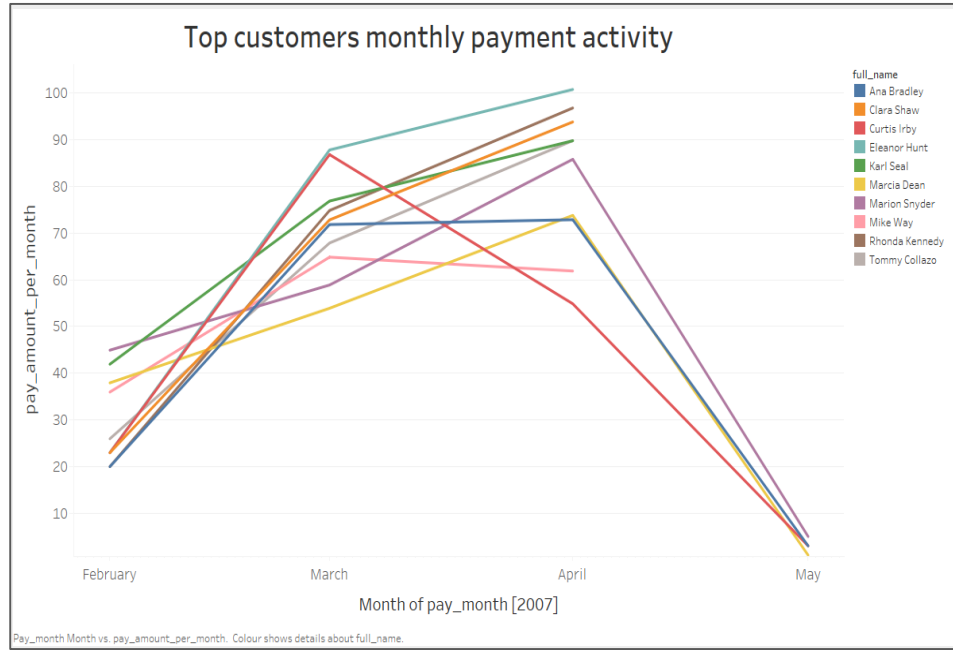


# Programming for Data Science with Python Nanodegree - Udacity

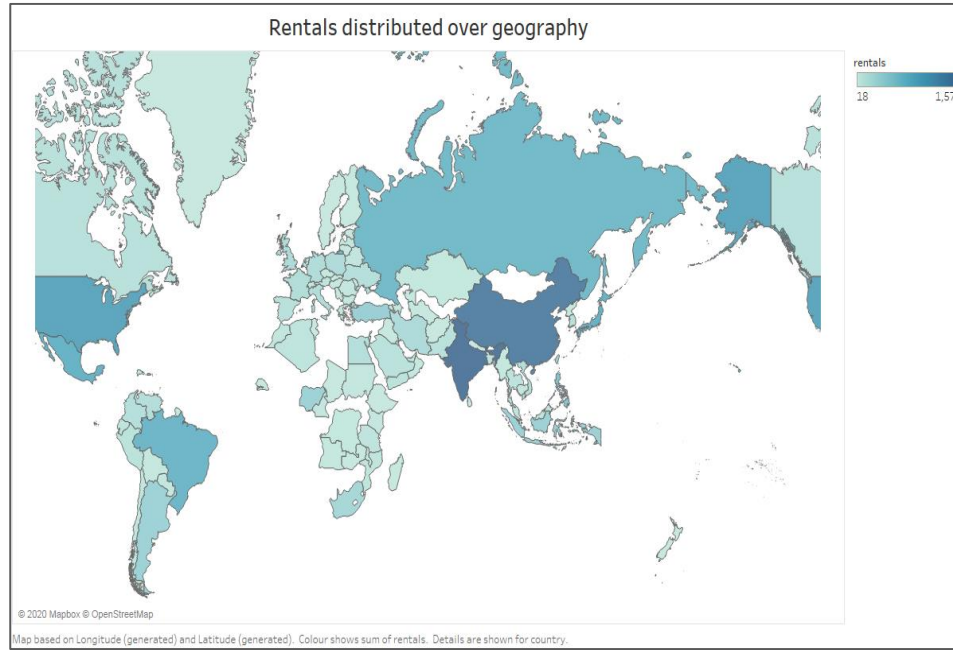
Postgre SQL Project:  
Investigate a relational database (sakila movie database)

# Q1: When does top customers paid most amount?



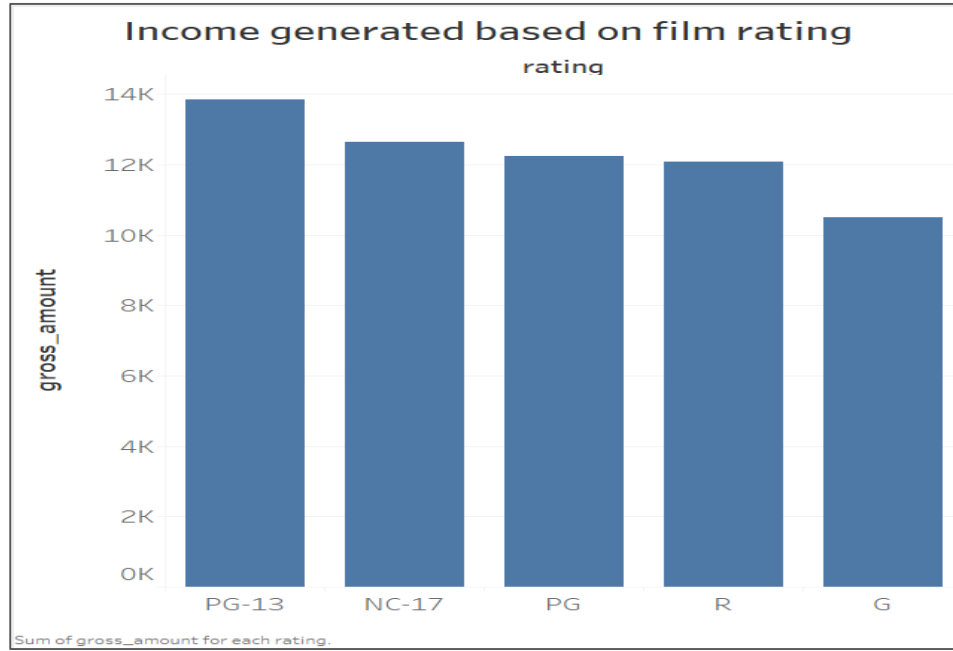
The highest payments from top customers are received in April, 2007 followed by March, 2007. However there is a significant drop in the payments after March, 2007. This might be the result of either excess payments from customers or lack of resources that meet the customers taste.

## Q2: Where should the customer acquisition funds should be spent to increase the rentals?



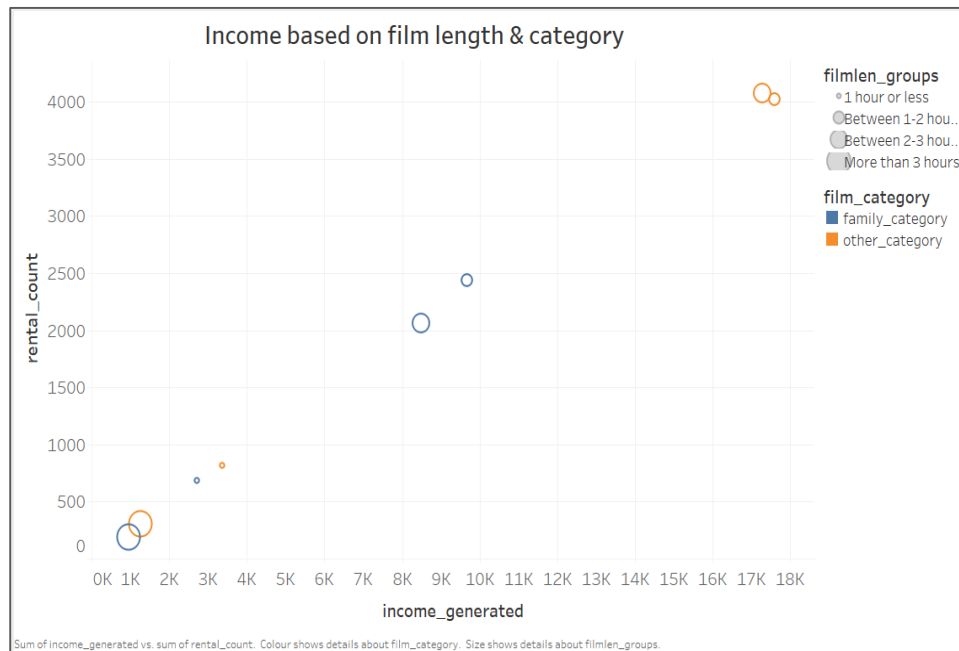
The graph depicts the geographical spread of the rentals over various countries. It can be observed that both India and China are the leading countries in terms of number of rentals, followed by Russia, United States and Brazil. Hence the customer acquisition costs must be cut in these regions and should be directed to other regions with low rentals and high population like Africa, Canada, and Europe.

## Q3: Which films generate most income based on ratings?



The films with PG-13 generated most income compared to films with different rating. However, it can be determined that the difference in income generated by films, based on the ratings are slim and can be overlooked. Since the ratings are not the most influencing factors in the income generation, other factors must have been playing a prominent role.

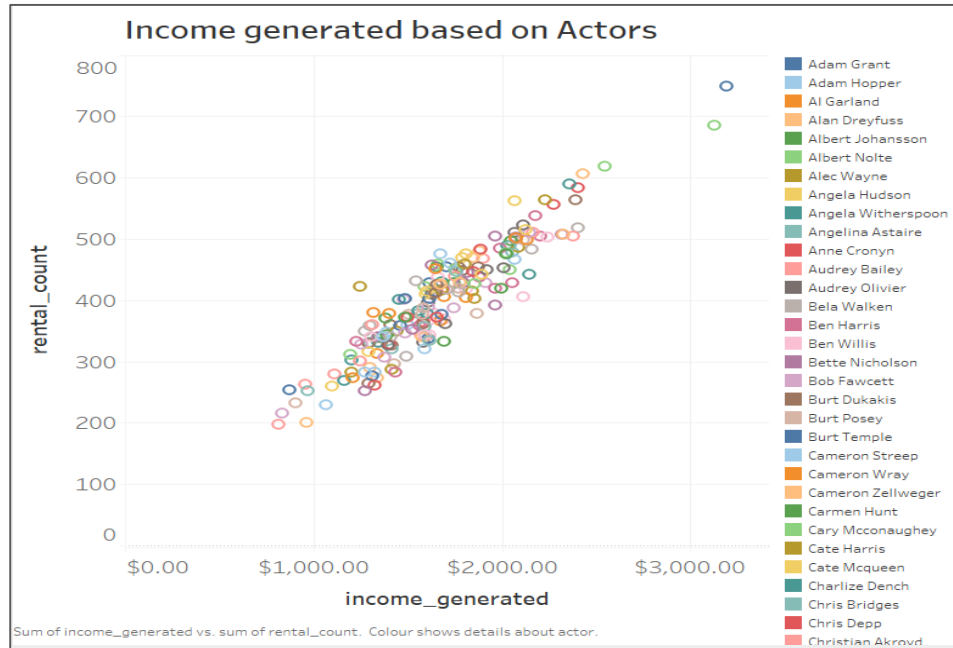
## Q4: What are the most influencing factors in income generation?



The graph depicts that the films with duration 'Between 1-2 hours' and 'Between 2-3 hours' are more likely to get rented by the customers. In turn, categories apart from 'family category', generate more income compared to 'family categories'.

This concludes that the film category and its duration plays a prominent role in income generation.

## Q5: What influences the income generated by any actor?



The graph reflects that the relation between, the number of times a dvd has been rented and income generated from it is a clear linear equation with a positive slope. This evaluates to the conclusion that the income generated by each actor is directly proportional to his popularity in having his films rented more frequent. This can be observed in the graph that some actors generate more income compared to less popular actors.

# Q6: Who are the actors that generate most income ?

| Data Output |                    | Explain                | Messages                    | Notifications |
|-------------|--------------------|------------------------|-----------------------------|---------------|
|             | actor<br>text      | rental_count<br>bigint | income_generated<br>numeric |               |
| 1           | Susan Davis        | 750                    | 3193.49                     |               |
| 2           | Gina Degeneres     | 685                    | 3129.17                     |               |
| 3           | Matthew Carrey     | 619                    | 2543.78                     |               |
| 4           | Mary Keitel        | 607                    | 2426.92                     |               |
| 5           | Scarlett Damon     | 519                    | 2403.81                     |               |
| 6           | Walter Torn        | 584                    | 2403.18                     |               |
| 7           | Henry Berry        | 564                    | 2392.36                     |               |
| 8           | Christian Akroyd   | 504                    | 2378.97                     |               |
| 9           | Angela Witherspoon | 589                    | 2357.11                     |               |
| 10          | Cameron Zellweger  | 507                    | 2322.94                     |               |

The resulting table is the list of top 10 actors that generate most income compared to other actors. Among them Susan Degeneres is the most popular actor generating a highest income of 3193.49 dollars. It can also be observed that some actors generate more income even when their films are rented comparatively less frequent. Scarlett Damon and Christian Akroyd are a good example for this occurrence.

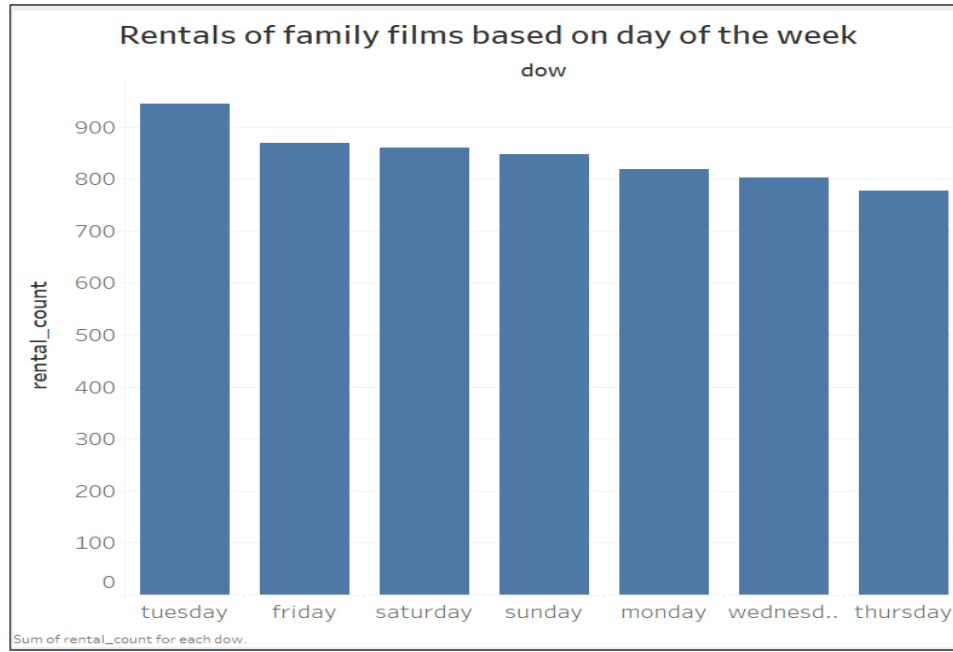
# Q7: Are there any overdues from the existing customers?

| Customer data with overdues |                             |              |                       |                 |             |                           |
|-----------------------------|-----------------------------|--------------|-----------------------|-----------------|-------------|---------------------------|
| customer_name               | email                       | phone        | movie                 | Year of rent... | return_date | overdue                   |
| Adrian Clary                | adrian.clary@sakilacusto..  | 182059202712 | Shock Cabin           | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Albert Crouse               | albert.crouse@sakilacust..  | 256546485220 | Varsity Trip          | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Alberto Henning             | alberto.henning@sakilac..   | 618156722572 | Vanishing Rocky       | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Alicia Mills                | alicia.mills@sakilacustom.. | 761379480249 | Sleepless Monsoon     | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Allan Cornish               | allan.cornish@sakilacust..  | 50898428626  | Sundance Invasion     | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Allen Butterfield           | allen.butterfield@sakilac.. | 129953030512 | Mulan Moon            | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Allison Stanley             | allison.stanley@sakilacus.. | 594319417514 | Cyclone Family        | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Ana Bradley                 | ana.bradley@sakilacusto..   | 72136330362  | Grapes Fury           | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Andy Vanhorn                | andy.vanhorn@sakilacust..   | 995527378381 | Happiness United      | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Angela Hernandez            | angela.hernandez@sakila..   | 18461860151  | Tuxedo Mile           | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Anna Hill                   | anna.hill@sakilacustomer..  | 911872220378 | Canyon Stock          | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Annette Olson               | annette.olson@sakilacus..   | 230250973122 | Boulevard Mob         | 2006            | Null        | 5075 days 04-24-29.2688.. |
| April Burns                 | april.burns@sakilacusto..   | 581174211853 | Deer Virginian        | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Barry Lovelace              | barry.lovelace@sakilacus..  | 689681677428 | Pirates Roxanne       | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Becky Miles                 | becky.miles@sakilacusto..   | 648482415405 | Outfield Massacre     | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Bernard Colby               | bernard.colby@sakilacus..   | 82088937724  | Creatures Shakespeare | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Beth Franklin               | beth.franklin@sakilacust..  | 470884141195 | Virginian Pluto       | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Betty White                 | betty.white@sakilacusto..   | 517338314235 | Queen Luke            | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Beverly Brooks              | beverly.brooks@sakilacu..   | 427454485876 | Baked Cleopatra       | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Bill Gavin                  | bill.gavin@sakilacustome..  | 924663855568 | Groundhog Uncut       | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Brandon Huey                | brandon.huey@sakilacust..   | 99883471275  | Shrek License         | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Brent Harkins               | brent.harkins@sakilacust..  | 854259976812 | Cleopatra Devil       | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Carmen Owens                | carmen.owens@sakilacus..    | 272234298332 | Gleaming Jawbreaker   | 2006            | Null        | 5075 days 04-24-29.2688.. |
| Carolyn Perez               | carolyn.perez@sakilacust..  | 471675840679 | Ace Goldfinger        | 2006            | Null        | 5075 days 04-24-29.2688.. |
|                             |                             |              | Lord Arizona          | 2006            | Null        | 5075 days 04-24-29.2688.. |
|                             |                             |              | Affair Prejudice      | 2006            | Null        | 5075 days 04-24-29.2688.. |
|                             |                             |              | River Outlaw          | 2006            | Null        | 5075 days 04-24-29.2688.. |
|                             |                             |              | Torque Bound          | 2006            | Null        | 5075 days 04-24-29.2688.. |

A total of 180 overdues were detected from the existing customers. The graph displays the list of customers with overdues along with their contact information and data related to their rentals as in the film rented, rental date and overdue count in days. The contact information of the customers is highly useful in the retrieval of the rented dvd's.



## Q8: When does the family films rented most based on the day of the week?



(Family films include below categories : Animation, Children, Classics, Comedy, Family and Music)

From the graph, it can be observed that the rentals of family films increase at the beginning of weekend and decline as the days go by. It can also be observed that the most rentals occur on the Tuesday despite not being the weekend.

## CREDIT:

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