Wikipedia Dataset Analysis

Revature Project 1

Christopher Chee

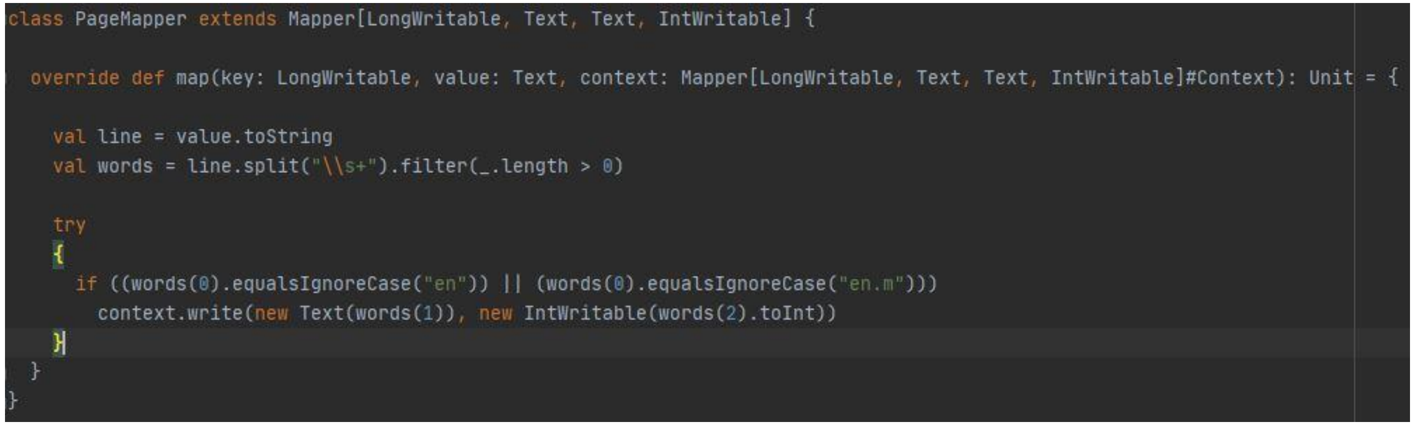
1. Which English Wikipedia article got the most traffic on October 20?

1. Which English Wikipedia article got the most traffic on October 20?

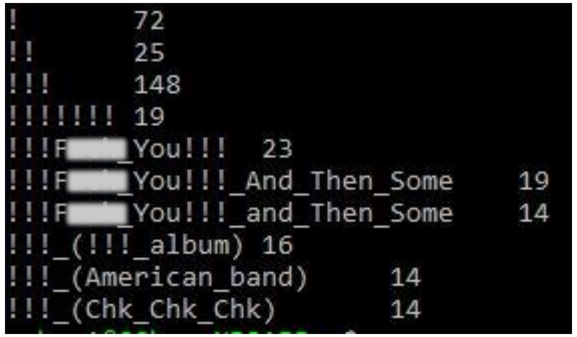
Data Used:

All Pageviews for October 20, 2020

1. Which English Wikipedia article got the most traffic on October 20?

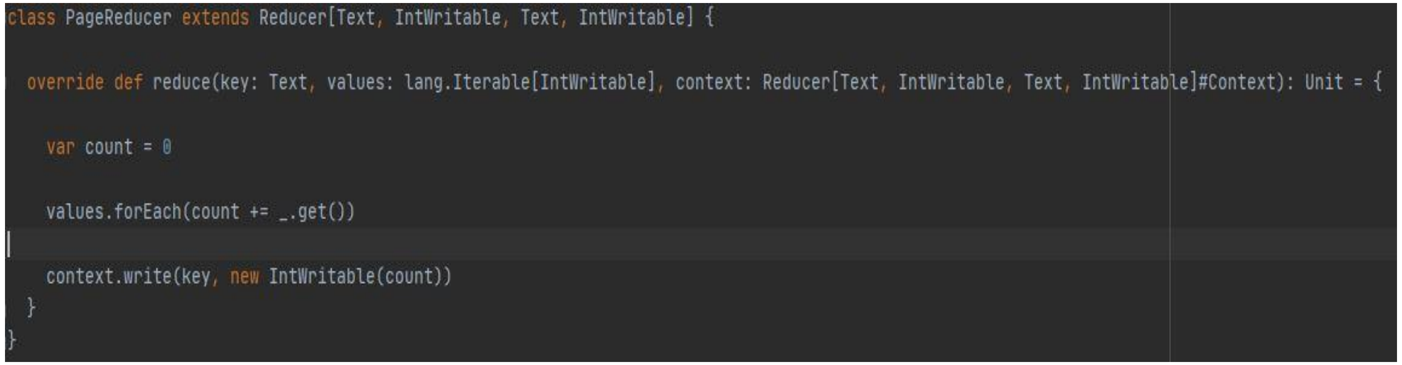


```
class PageMapper extends Mapper[LongWritable, Text, Text, IntWritable] {

  override def map(key: LongWritable, value: Text, context: Mapper[LongWritable, Text, Text, IntWritable]#Context): Unit = {

    val line = value.toString
    val words = line.split("\\s+").filter(_.length > 0)

    try
    {
      if ((words(0).equalsIgnoreCase("en")) || (words(0).equalsIgnoreCase("en.m")))
        context.write(new Text(words(1)), new IntWritable(words(2).toInt))
    }
  }
}
```



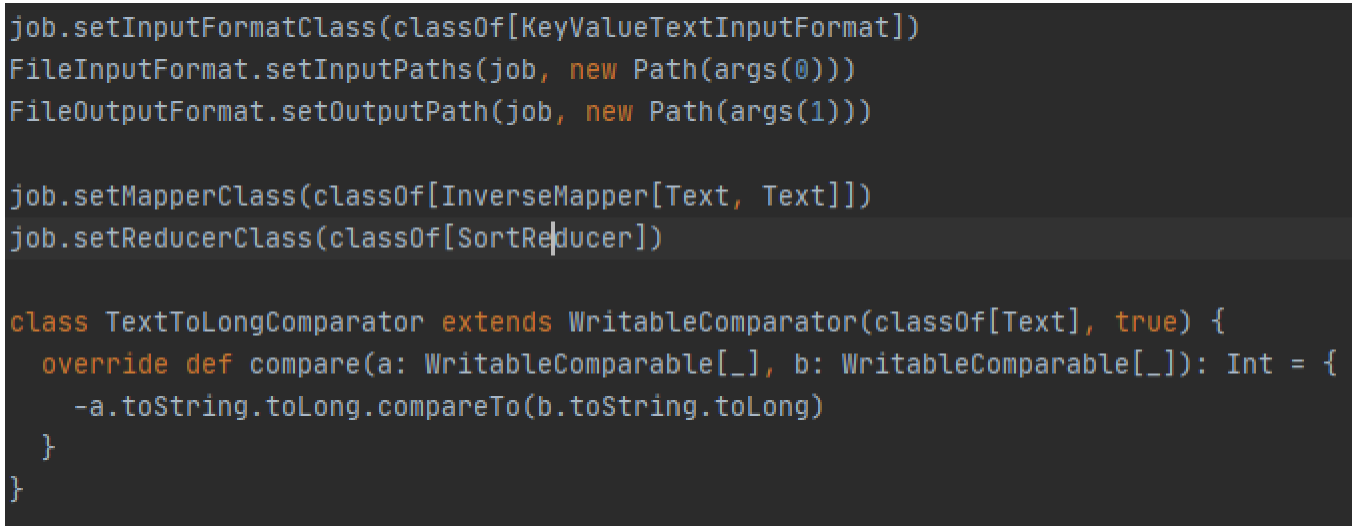
```
!       72
!!      25
!!!     148
!!!!!!! 19
!!!F[redacted]You!!!   23
!!!F[redacted]You!!!_And_Then_Some     19
!!!F[redacted]You!!!_and_Then_Some     14
!!!_(!!!_album) 16
!!!_(American_band)     14
!!!_(Chk_Chk_Chk)       14
```

Format of MapReduce output

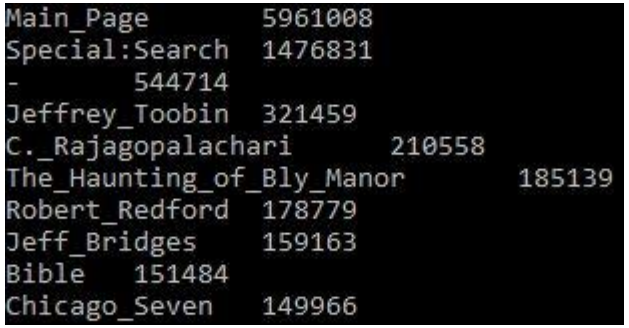


```
class PageReducer extends Reducer[Text, IntWritable, Text, IntWritable] {

  override def reduce(key: Text, values: lang.Iterable[IntWritable], context: Reducer[Text, IntWritable, Text, IntWritable]#Context): Unit = {

    var count = 0

    values.forEach(count += _.get())

    context.write(key, new IntWritable(count))
  }
}
```

1. Which English Wikipedia article got the most traffic on October 20?



```
job.setInputFormatClass(classOf[KeyValueTextInputFormat])
FileInputFormat.setInputPaths(job, new Path(args(0)))
FileOutputFormat.setOutputPath(job, new Path(args(1)))

job.setMapperClass(classOf[InverseMapper[Text, Text]])
job.setReducerClass(classOf[SortReducer])

class TextToLongComparator extends WritableComparator(classOf[Text], true) {
  override def compare(a: WritableComparable[_], b: WritableComparable[_]): Int = {
    -a.toString.toLong.compareTo(b.toString.toLong)
  }
}
```



```
Main_Page       5961008
Special:Search  1476831
-       544714
Jeffrey_Toobin  321459
C._Rajagopalachari      210558
The_Haunting_of_Bly_Manor       185139
Robert_Redford  178779
Jeff_Bridges    159163
Bible   151484
Chicago_Seven   149966
```

Top 10 viewed pages

2. What English Wikipedia article has the largest fraction of its readers follow an internal link to another Wikipedia article?

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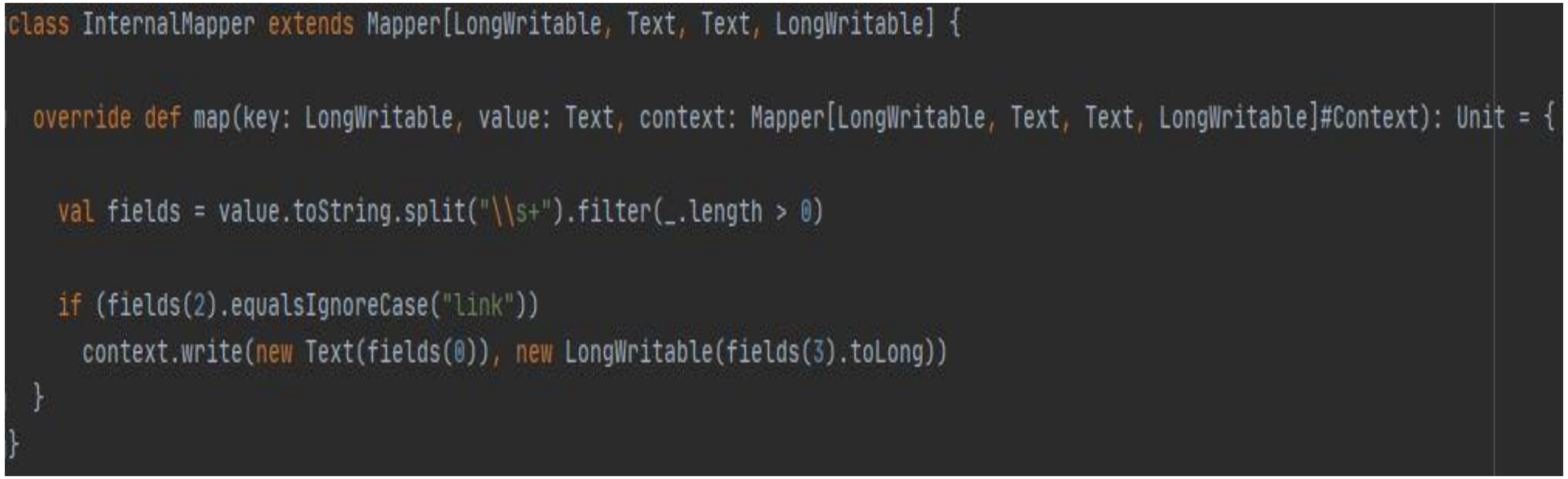
Data Used:

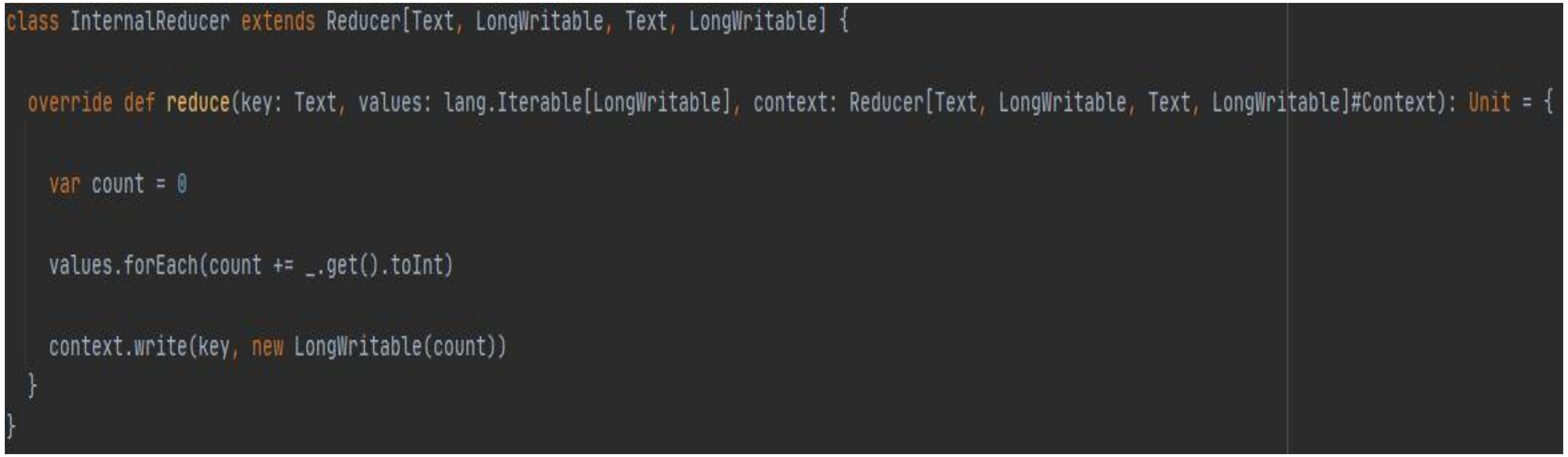
Clickstream for the month of Sept.

All Pageviews for the month of Sept.

2. What English Wikipedia article has the largest fraction of its readers follow an internal link to another Wikipedia article?

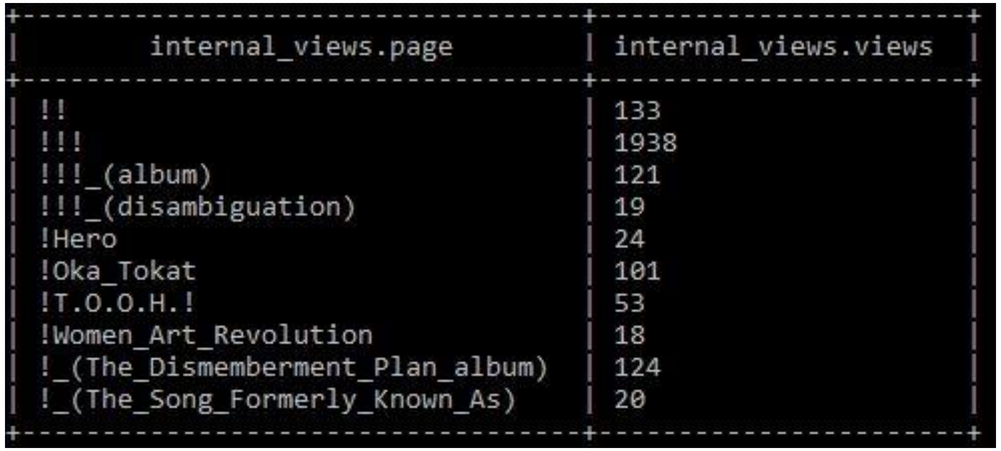


```
class InternalMapper extends Mapper[LongWritable, Text, Text, LongWritable] {

  override def map(key: LongWritable, value: Text, context: Mapper[LongWritable, Text, Text, LongWritable]#Context): Unit = {

    val fields = value.toString.split("\\s+").filter(_.length > 0)

    if (fields(2).equalsIgnoreCase("link"))
      context.write(new Text(fields(0)), new LongWritable(fields(3).toLong))
  }
}
```



```
class InternalReducer extends Reducer[Text, LongWritable, Text, LongWritable] {

  override def reduce(key: Text, values: lang.Iterable[LongWritable], context: Reducer[Text, LongWritable, Text, LongWritable]#Context): Unit = {

    var count = 0

    values.forEach(count += _.get().toInt)

    context.write(key, new LongWritable(count))
  }
}
```

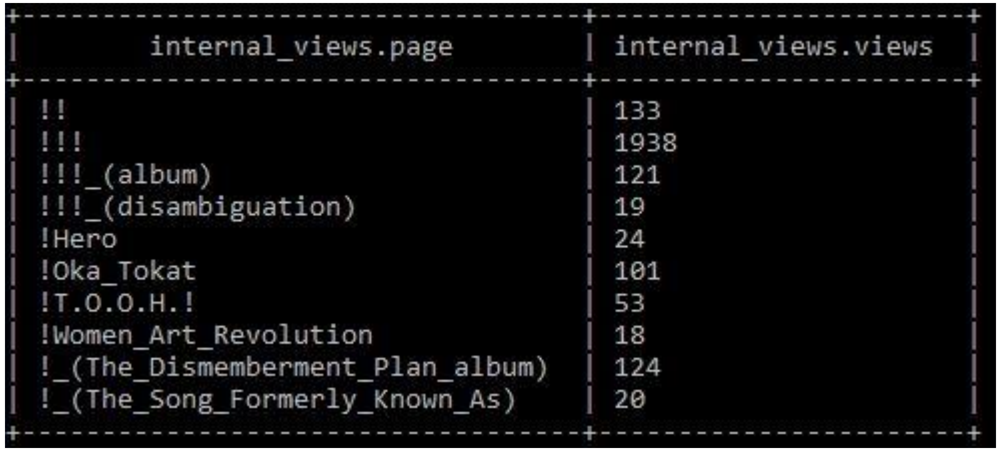
2. What English Wikipedia article has the largest fraction of its readers follow an internal link to another Wikipedia article?



```
+----------------------------------+----------------------+
|       internal_views.page        | internal_views.views |
+----------------------------------+----------------------+
| !!                               | 133                  |
| !!!                              | 1938                 |
| !!!_(album)                      | 121                  |
| !!!_(disambiguation)             | 19                   |
| !Hero                            | 24                   |
| !Oka_Tokat                       | 101                  |
| !T.O.O.H.!                       | 53                   |
| !Women_Art_Revolution            | 18                   |
| !_(The_Dismemberment_Plan_album) | 124                  |
| !_(The_Song_Formerly_Known_As)   | 20                   |
+----------------------------------+----------------------+
```

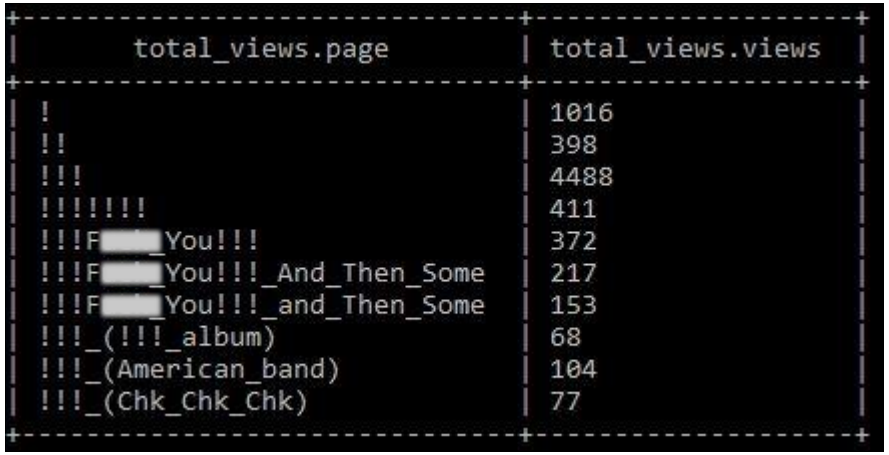
Format of MapReduce output

2. What English Wikipedia article has the largest fraction of its readers follow an internal link to another Wikipedia article?

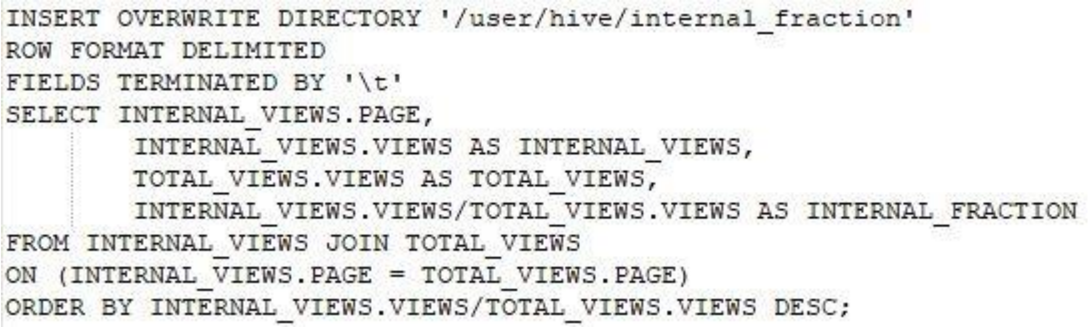


```
+-------------------------------------+----------------------+
|        internal_views.page          | internal_views.views |
+-------------------------------------+----------------------+
| !!                                  | 133                  |
| !!!                                 | 1938                 |
| !!!_(album)                         | 121                  |
| !!!_(disambiguation)                | 19                   |
| !Hero                               | 24                   |
| !Oka_Tokat                          | 101                  |
| !T.O.O.H.!                          | 53                   |
| !Women_Art_Revolution               | 18                   |
| !_(The_Dismemberment_Plan_album)    | 124                  |
| !_(The_Song_Formerly_Known_As)      | 20                   |
+-------------------------------------+----------------------+
```

JOIN

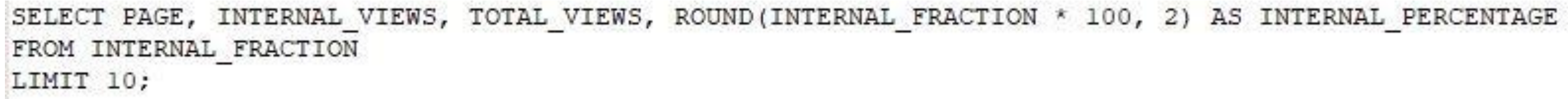


```
+-------------------------------+--------------------+
|       total_views.page        | total_views.views  |
+-------------------------------+--------------------+
| !                             | 1016               |
| !!                            | 398                |
| !!!                           | 4488               |
| !!!!!!!                       | 411                |
| !!!F[redacted]You!!!                | 372                |
| !!!F[redacted]You!!!_And_Then_Some  | 217                |
| !!!F[redacted]You!!!_and_Then_Some  | 153                |
| !!!_(!!!_album)               | 68                 |
| !!!_(American_band)           | 104                |
| !!!_(Chk_Chk_Chk)             | 77                 |
+-------------------------------+--------------------+
```

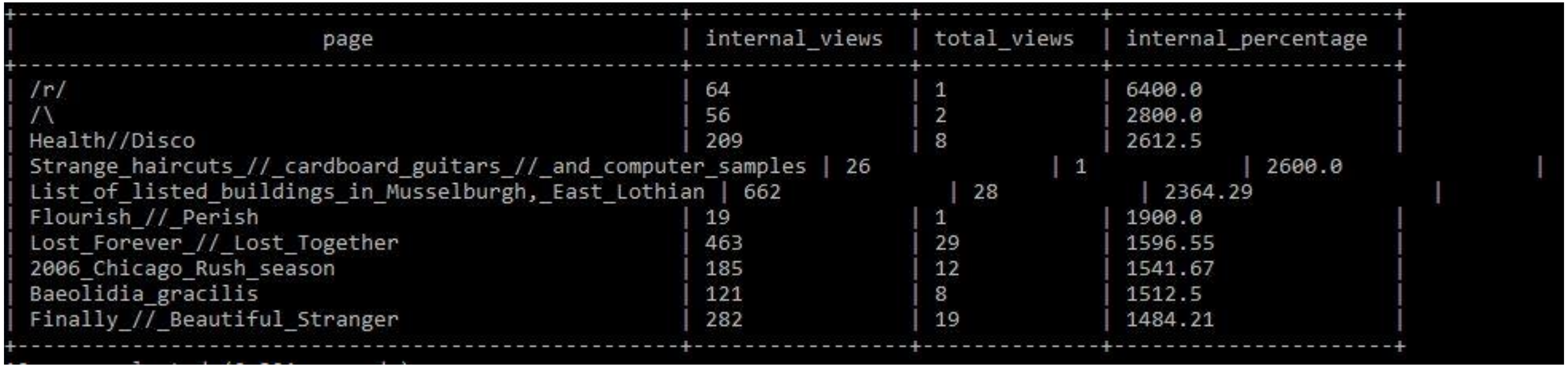


```
INSERT OVERWRITE DIRECTORY '/user/hive/internal_fraction'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY '\t'
SELECT INTERNAL_VIEWS.PAGE,
        INTERNAL_VIEWS.VIEWS AS INTERNAL_VIEWS,
        TOTAL_VIEWS.VIEWS AS TOTAL_VIEWS,
        INTERNAL_VIEWS.VIEWS/TOTAL_VIEWS.VIEWS AS INTERNAL_FRACTION
FROM INTERNAL_VIEWS JOIN TOTAL_VIEWS
ON (INTERNAL_VIEWS.PAGE = TOTAL_VIEWS.PAGE)
ORDER BY INTERNAL_VIEWS.VIEWS/TOTAL_VIEWS.VIEWS DESC;
```

2. What English Wikipedia article has the largest fraction of its readers follow an internal link to another Wikipedia article?



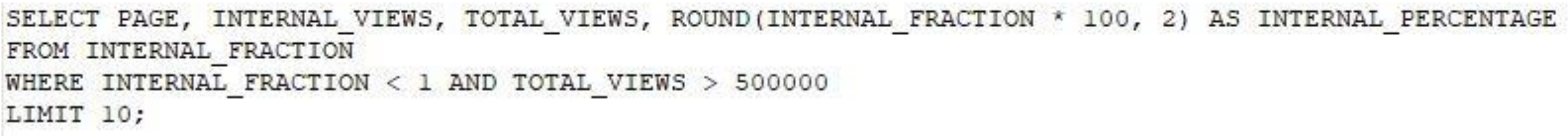
```
SELECT PAGE, INTERNAL_VIEWS, TOTAL_VIEWS, ROUND(INTERNAL_FRACTION * 100, 2) AS INTERNAL_PERCENTAGE
FROM INTERNAL_FRACTION
LIMIT 10;
```



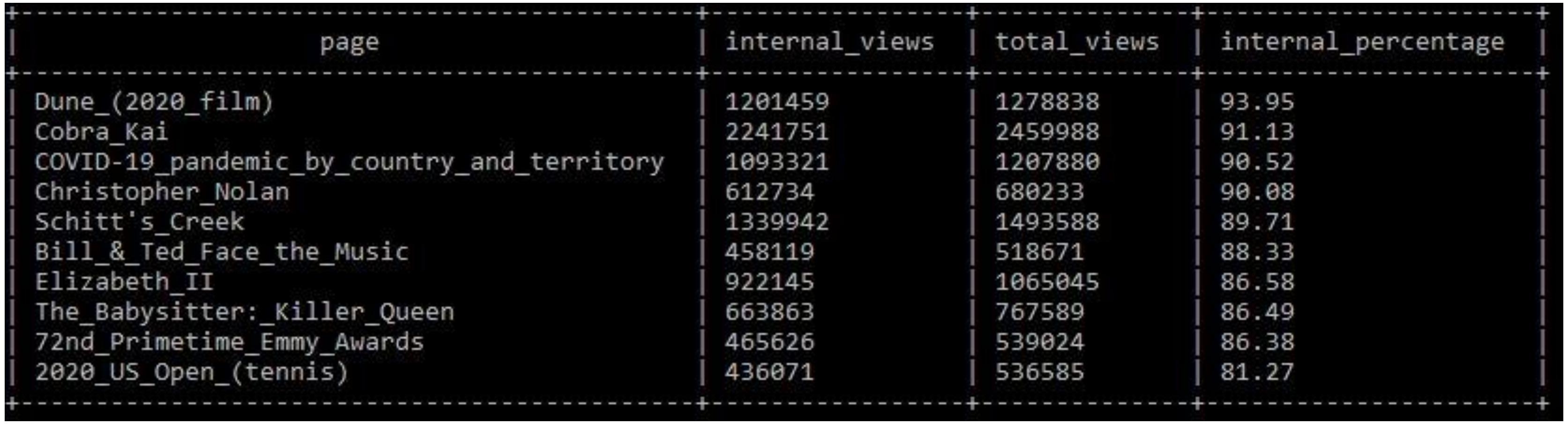
```
+-----------------------------------------------------+-----------------+--------------+-----------------------+
|                         page                        | internal_views  | total_views  | internal_percentage   |
+-----------------------------------------------------+-----------------+--------------+-----------------------+
| /r/                                                 | 64              | 1            | 6400.0                |
| /\                                                  | 56              | 2            | 2800.0                |
| Health//Disco                                       | 209             | 8            | 2612.5                |
| Strange_haircuts_//_cardboard_guitars_//_and_computer_samples | 26              | 1            | 2600.0                |
| List_of_listed_buildings_in_Musselburgh,_East_Lothian | 662             | 28           | 2364.29               |
| Flourish_//_Perish                                  | 19              | 1            | 1900.0                |
| Lost_Forever_//_Lost_Together                       | 463             | 29           | 1596.55               |
| 2006_Chicago_Rush_season                            | 185             | 12           | 1541.67               |
| Baeolidia_gracilis                                  | 121             | 8            | 1512.5                |
| Finally_//_Beautiful_Stranger                       | 282             | 19           | 1484.21               |
+-----------------------------------------------------+-----------------+--------------+-----------------------+
```

Invalid results

2. What English Wikipedia article has the largest fraction of its readers follow an internal link to another Wikipedia article?



```
SELECT PAGE, INTERNAL_VIEWS, TOTAL_VIEWS, ROUND(INTERNAL_FRACTION * 100, 2) AS INTERNAL_PERCENTAGE
FROM INTERNAL_FRACTION
WHERE INTERNAL_FRACTION < 1 AND TOTAL_VIEWS > 500000
LIMIT 10;
```



```
+---------------------------------------------+-----------------+-------------+---------------------+
|                    page                     | internal_views  | total_views | internal_percentage |
+---------------------------------------------+-----------------+-------------+---------------------+
| Dune_(2020_film)                            | 1201459         | 1278838     | 93.95               |
| Cobra_Kai                                   | 2241751         | 2459988     | 91.13               |
| COVID-19_pandemic_by_country_and_territory  | 1093321         | 1207880     | 90.52               |
| Christopher_Nolan                           | 612734          | 680233      | 90.08               |
| Schitt's_Creek                              | 1339942         | 1493588     | 89.71               |
| Bill_&_Ted_Face_the_Music                   | 458119          | 518671      | 88.33               |
| Elizabeth_II                                | 922145          | 1065045     | 86.58               |
| The_Babysitter:_Killer_Queen                | 663863          | 767589      | 86.49               |
| 72nd_Primetime_Emmy_Awards                  | 465626          | 539024      | 86.38               |
| 2020_US_Open_(tennis)                       | 436071          | 536585      | 81.27               |
+---------------------------------------------+-----------------+-------------+---------------------+
```

Filtered results

3. What series of Wikipedia articles, starting with Hotel California, keeps the largest fraction of its readers clicking on internal links?

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Clickstream for the month of Sept.

All Pageviews for the month of Sept.

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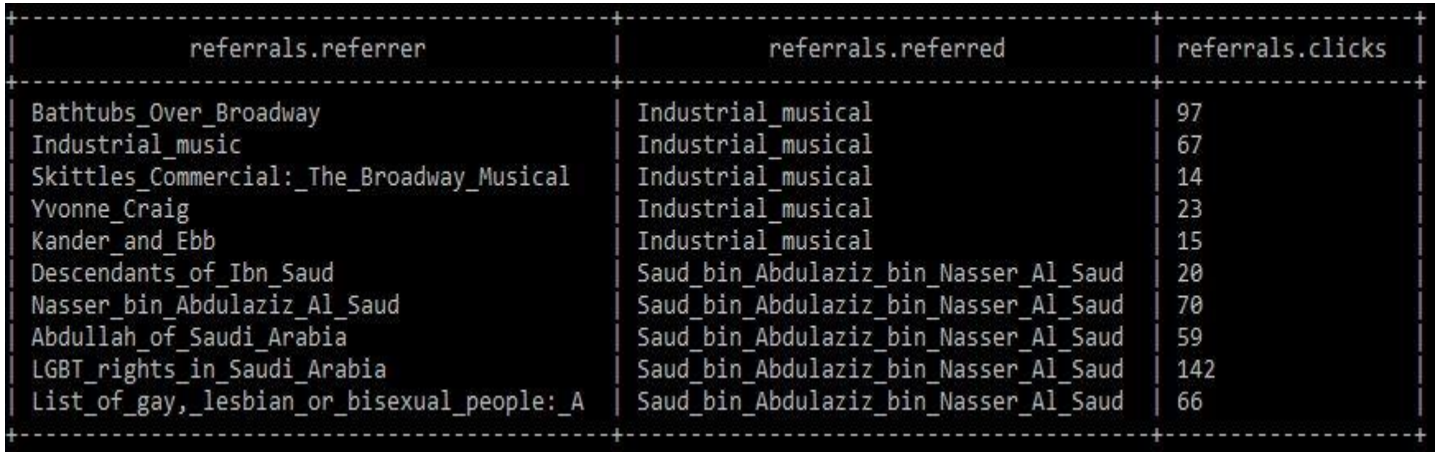
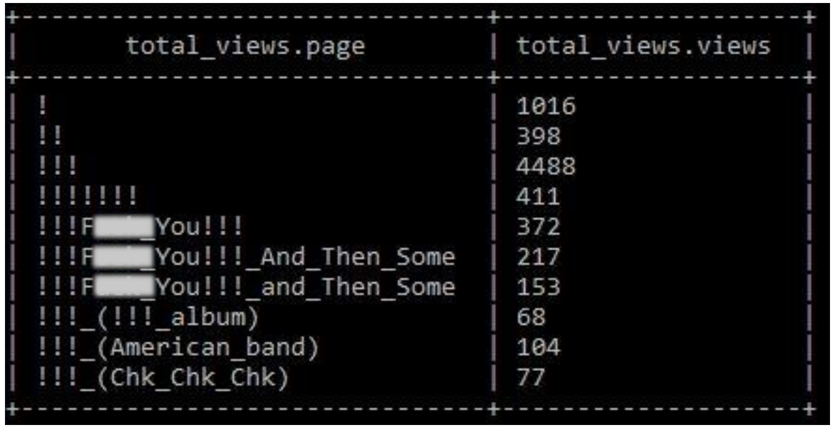
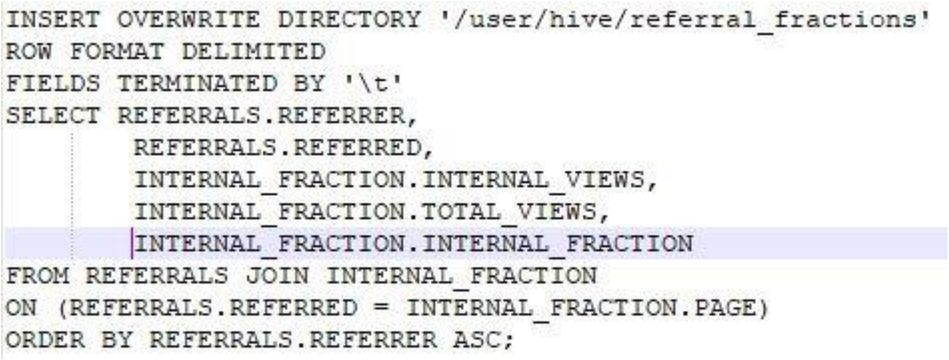


```
+----------------------------------------------+-------------------------------------------+--------------------+
|              referrals.referrer              |             referrals.referred            | referrals.clicks   |
+----------------------------------------------+-------------------------------------------+--------------------+
| Bathtubs_Over_Broadway                       | Industrial_musical                        | 97                 |
| Industrial_music                             | Industrial_musical                        | 67                 |
| Skittles_Commercial:_The_Broadway_Musical    | Industrial_musical                        | 14                 |
| Yvonne_Craig                                 | Industrial_musical                        | 23                 |
| Kander_and_Ebb                               | Industrial_musical                        | 15                 |
| Descendants_of_Ibn_Saud                      | Saud_bin_Abdulaziz_bin_Nasser_Al_Saud     | 20                 |
| Nasser_bin_Abdulaziz_Al_Saud                 | Saud_bin_Abdulaziz_bin_Nasser_Al_Saud     | 70                 |
| Abdullah_of_Saudi_Arabia                     | Saud_bin_Abdulaziz_bin_Nasser_Al_Saud     | 59                 |
| LGBT_rights_in_Saudi_Arabia                  | Saud_bin_Abdulaziz_bin_Nasser_Al_Saud     | 142                |
| List_of_gay,_lesbian_or_bisexual_people:_A   | Saud_bin_Abdulaziz_bin_Nasser_Al_Saud     | 66                 |
+----------------------------------------------+-------------------------------------------+--------------------+
```

JOIN

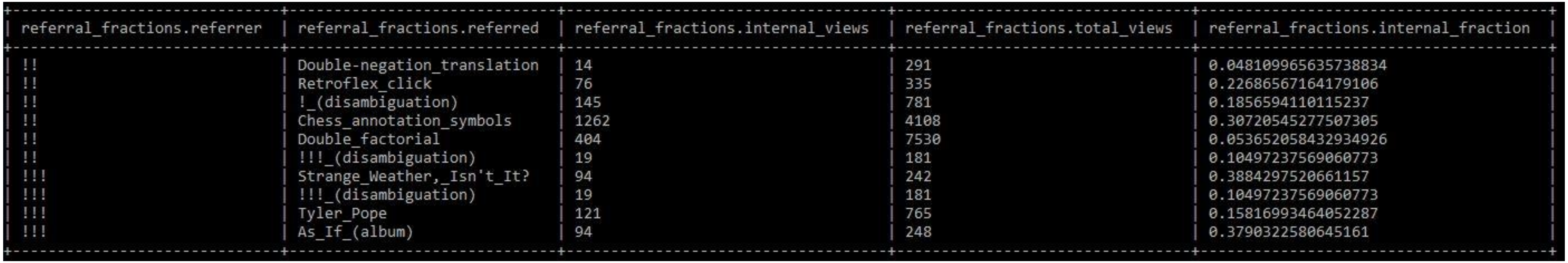


```
+-------------------------------------+-------------------+
|           total_views.page          | total_views.views |
+-------------------------------------+-------------------+
| !                                   | 1016              |
| !!                                  | 398               |
| !!!                                 | 4488              |
| !!!!!!!                             | 411               |
| !!!F[redacted]You!!!                | 372               |
| !!!F[redacted]You!!!_And_Then_Some  | 217               |
| !!!F[redacted]You!!!_and_Then_Some  | 153               |
| !!!_(!!!_album)                     | 68                |
| !!!_(American_band)                 | 104               |
| !!!_(Chk_Chk_Chk)                   | 77                |
+-------------------------------------+-------------------+
```



```
INSERT OVERWRITE DIRECTORY '/user/hive/referral_fractions'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY '\t'
SELECT REFERRALS.REFERRER,
        REFERRALS.REFERRED,
        INTERNAL_FRACTION.INTERNAL_VIEWS,
        INTERNAL_FRACTION.TOTAL_VIEWS,
        INTERNAL_FRACTION.INTERNAL_FRACTION
FROM REFERRALS JOIN INTERNAL_FRACTION
ON (REFERRALS.REFERRED = INTERNAL_FRACTION.PAGE)
ORDER BY REFERRALS.REFERRER ASC;
```

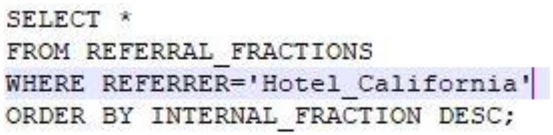
3. What series of Wikipedia articles, starting with Hotel California, keeps the largest fraction of its readers clicking on internal links?



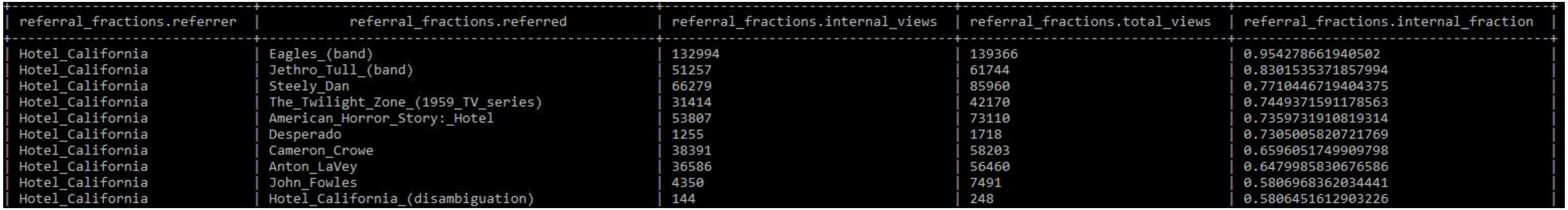
```
+------------------------------+------------------------------+------------------------------------+---------------------------------+---------------------------------------+
| referral_fractions.referrer  | referral_fractions.referred  | referral_fractions.internal_views  | referral_fractions.total_views  | referral_fractions.internal_fraction  |
+------------------------------+------------------------------+------------------------------------+---------------------------------+---------------------------------------+
| !!                           | Double-negation_translation  | 14                                 | 291                             | 0.048109965635738834                  |
| !!                           | Retroflex_click              | 76                                 | 335                             | 0.22686567164179106                   |
| !!                           | !_(disambiguation)           | 145                                | 781                             | 0.1856594110115237                    |
| !!                           | Chess_annotation_symbols     | 1262                               | 4108                            | 0.30720545277507305                   |
| !!                           | Double_factorial             | 404                                | 7530                            | 0.053652058432934926                  |
| !!                           | !!!_(disambiguation)         | 19                                 | 181                             | 0.10497237569060773                   |
| !!!                          | Strange_Weather,_Isn't_It?   | 94                                 | 242                             | 0.3884297520661157                    |
| !!!                          | !!!_(disambiguation)         | 19                                 | 181                             | 0.10497237569060773                   |
| !!!                          | Tyler_Pope                   | 121                                | 765                             | 0.15816993464052287                   |
| !!!                          | As_If_(album)                | 94                                 | 248                             | 0.3790322580645161                    |
+------------------------------+------------------------------+------------------------------------+---------------------------------+---------------------------------------+
```

Resulting table from join

3. What series of Wikipedia articles, starting with Hotel California, keeps the largest fraction of its readers clicking on internal links?



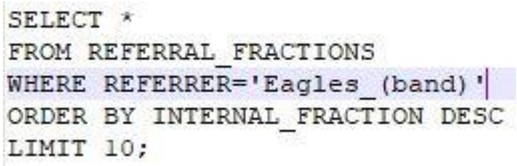
```
SELECT *
FROM REFERRAL_FRACTIONS
WHERE REFERRER='Hotel_California'
ORDER BY INTERNAL_FRACTION DESC;
```



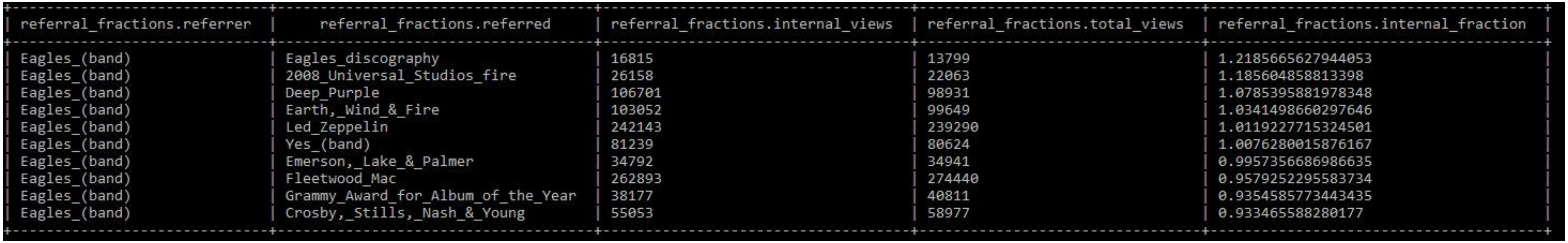
```
+--------------------------------+----------------------------------------------------+--------------------------------------+-----------------------------------+----------------------------------------+
| referral_fractions.referrer    |            referral_fractions.referred             | referral_fractions.internal_views    | referral_fractions.total_views    | referral_fractions.internal_fraction  |
+--------------------------------+----------------------------------------------------+--------------------------------------+-----------------------------------+----------------------------------------+
| Hotel_California               | Eagles_(band)                                      | 132994                               | 139366                            | 0.954278661940502                      |
| Hotel_California               | Jethro_Tull_(band)                                 | 51257                                | 61744                             | 0.8301535371857994                     |
| Hotel_California               | Steely_Dan                                         | 66279                                | 85960                             | 0.7710446719404375                     |
| Hotel_California               | The_Twilight_Zone_(1959_TV_series)                 | 31414                                | 42170                             | 0.7449371591178563                     |
| Hotel_California               | American_Horror_Story:_Hotel                       | 53807                                | 73110                             | 0.7359731910819314                     |
| Hotel_California               | Desperado                                          | 1255                                 | 1718                              | 0.7305005820721769                     |
| Hotel_California               | Cameron_Crowe                                      | 38391                                | 58203                             | 0.6596051749909798                     |
| Hotel_California               | Anton_LaVey                                        | 36586                                | 56460                             | 0.6479985830676586                     |
| Hotel_California               | John_Fowles                                        | 4350                                 | 7491                              | 0.5806968362034441                     |
| Hotel_California               | Hotel_California_(disambiguation)                  | 144                                  | 248                               | 0.5806451612903226                     |
```

Hotel_California -> Eagles_(band) (95.4%)

3. What series of Wikipedia articles, starting with Hotel California, keeps the largest fraction of its readers clicking on internal links?



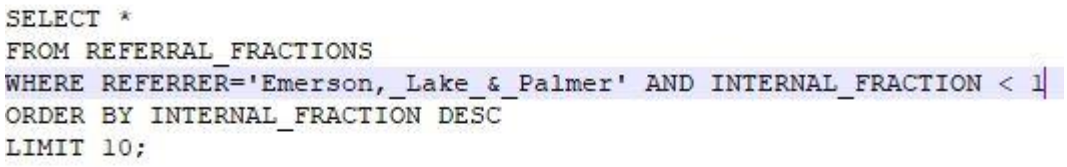
```
SELECT *
FROM REFERRAL_FRACTIONS
WHERE REFERRER='Eagles_(band)'
ORDER BY INTERNAL_FRACTION DESC
LIMIT 10;
```



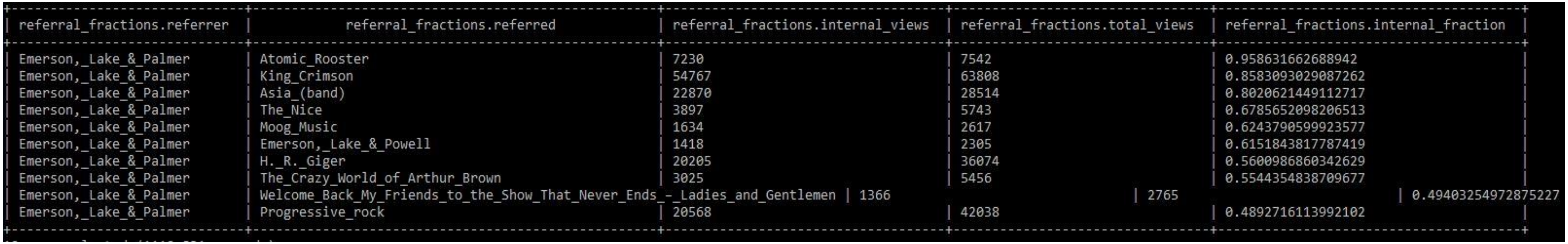
```
+-----------------------------+------------------------------------+-----------------------------------+--------------------------------+--------------------------------------+
| referral_fractions.referrer |    referral_fractions.referred     | referral_fractions.internal_views | referral_fractions.total_views | referral_fractions.internal_fraction |
+-----------------------------+------------------------------------+-----------------------------------+--------------------------------+--------------------------------------+
| Eagles_(band)               | Eagles_discography                 | 16815                             | 13799                          | 1.2185665627944053                   |
| Eagles_(band)               | 2008_Universal_Studios_fire        | 26158                             | 22063                          | 1.185604858813398                    |
| Eagles_(band)               | Deep_Purple                        | 106701                            | 98931                          | 1.0785395881978348                   |
| Eagles_(band)               | Earth,_Wind_&_Fire                 | 103052                            | 99649                          | 1.0341498660297646                   |
| Eagles_(band)               | Led_Zeppelin                       | 242143                            | 239290                         | 1.0119227715324501                   |
| Eagles_(band)               | Yes_(band)                         | 81239                             | 80624                          | 1.0076280015876167                   |
| Eagles_(band)               | Emerson,_Lake_&_Palmer             | 34792                             | 34941                          | 0.9957356686986635                   |
| Eagles_(band)               | Fleetwood_Mac                      | 262893                            | 274440                         | 0.9579252295583734                   |
| Eagles_(band)               | Grammy_Award_for_Album_of_the_Year | 38177                             | 40811                          | 0.9354585773443435                   |
| Eagles_(band)               | Crosby,_Stills,_Nash_&_Young       | 55053                             | 58977                          | 0.933465588280177                    |
+-----------------------------+------------------------------------+-----------------------------------+--------------------------------+--------------------------------------+
```

Hotel_California -> Eagles_(band) (95.4%) -> Emerson,_Lake_&_Palmer (99.6%)

3. What series of Wikipedia articles, starting with Hotel California, keeps the largest fraction of its readers clicking on internal links?



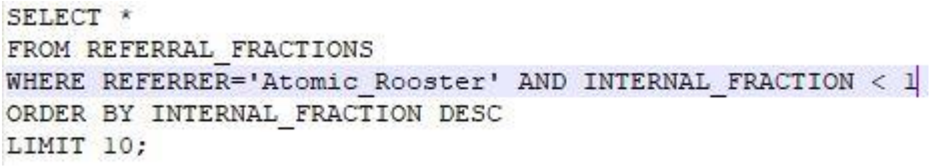
```
SELECT *
FROM REFERRAL_FRACTIONS
WHERE REFERRER='Emerson,_Lake_&_Palmer' AND INTERNAL_FRACTION < 1
ORDER BY INTERNAL_FRACTION DESC
LIMIT 10;
```



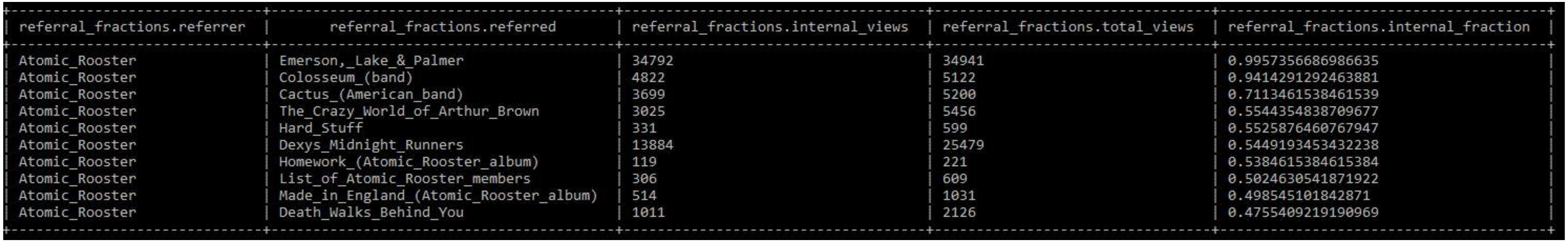
```
+-----------------------------+-----------------------------------------------------+-----------------------------------+--------------------------------+-----------------------------------------+
| referral_fractions.referrer |              referral_fractions.referred            | referral_fractions.internal_views | referral_fractions.total_views | referral_fractions.internal_fraction  |
+-----------------------------+-----------------------------------------------------+-----------------------------------+--------------------------------+-----------------------------------------+
| Emerson,_Lake_&_Palmer      | Atomic_Rooster                                      | 7230                              | 7542                           | 0.958631662688942                       |
| Emerson,_Lake_&_Palmer      | King_Crimson                                        | 54767                             | 63808                          | 0.8583093029087262                      |
| Emerson,_Lake_&_Palmer      | Asia_(band)                                         | 22870                             | 28514                          | 0.8020621449112717                      |
| Emerson,_Lake_&_Palmer      | The_Nice                                            | 3897                              | 5743                           | 0.6785652098206513                      |
| Emerson,_Lake_&_Palmer      | Moog_Music                                          | 1634                              | 2617                           | 0.6243790599923577                      |
| Emerson,_Lake_&_Palmer      | Emerson,_Lake_&_Powell                              | 1418                              | 2305                           | 0.6151843817787419                      |
| Emerson,_Lake_&_Palmer      | H._R._Giger                                         | 20205                             | 36074                          | 0.5600986860342629                      |
| Emerson,_Lake_&_Palmer      | The_Crazy_World_of_Arthur_Brown                     | 3025                              | 5456                           | 0.5544354838709677                      |
| Emerson,_Lake_&_Palmer      | Welcome_Back_My_Friends_to_the_Show_That_Never_Ends_-_Ladies_and_Gentlemen | 1366                              | 2765                           | 0.49403254972875227 |
| Emerson,_Lake_&_Palmer      | Progressive_rock                                    | 20568                             | 42038                          | 0.4892716113992102                      |
+-----------------------------+-----------------------------------------------------+-----------------------------------+--------------------------------+-----------------------------------------+
```

Hotel_California -> Eagles_(band) (95.4%) -> Emerson,_Lake_&_Palmer (99.6%) -> Atomic_Rooster (95.9%)

3. What series of Wikipedia articles, starting with Hotel California, keeps the largest fraction of its readers clicking on internal links?



```
SELECT *
FROM REFERRAL_FRACTIONS
WHERE REFERRER='Atomic_Rooster' AND INTERNAL_FRACTION < 1
ORDER BY INTERNAL_FRACTION DESC
LIMIT 10;
```



```
+-------------------------------+----------------------------------------+-----------------------------------+--------------------------------+--------------------------------------+
| referral_fractions.referrer   |      referral_fractions.referred       | referral_fractions.internal_views | referral_fractions.total_views | referral_fractions.internal_fraction |
+-------------------------------+----------------------------------------+-----------------------------------+--------------------------------+--------------------------------------+
| Atomic_Rooster                | Emerson,_Lake_&_Palmer                 | 34792                             | 34941                          | 0.9957356686986635                   |
| Atomic_Rooster                | Colosseum_(band)                       | 4822                              | 5122                           | 0.9414291292463881                   |
| Atomic_Rooster                | Cactus_(American_band)                 | 3699                              | 5200                           | 0.7113461538461539                   |
| Atomic_Rooster                | The_Crazy_World_of_Arthur_Brown        | 3025                              | 5456                           | 0.5544354838709677                   |
| Atomic_Rooster                | Hard_Stuff                             | 331                               | 599                            | 0.5525876460767947                   |
| Atomic_Rooster                | Dexys_Midnight_Runners                 | 13884                             | 25479                          | 0.5449193453432238                   |
| Atomic_Rooster                | Homework_(Atomic_Rooster_album)        | 119                               | 221                            | 0.5384615384615384                   |
| Atomic_Rooster                | List_of_Atomic_Rooster_members         | 306                               | 609                            | 0.5024630541871922                   |
| Atomic_Rooster                | Made_in_England_(Atomic_Rooster_album) | 514                               | 1031                           | 0.498545101842871                    |
| Atomic_Rooster                | Death_Walks_Behind_You                 | 1011                              | 2126                           | 0.4755409219190969                   |
+-------------------------------+----------------------------------------+-----------------------------------+--------------------------------+--------------------------------------+
```

Hotel_California -> Eagles_(band) (95.4%) -> Emerson,_Lake_&_Palmer (99.6%) -> Atomic_Rooster (95.9%) -> Emerson,_Lake_&_Palmer

4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.

4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.

Data Used:

Pageviews during peak internet traffic hours

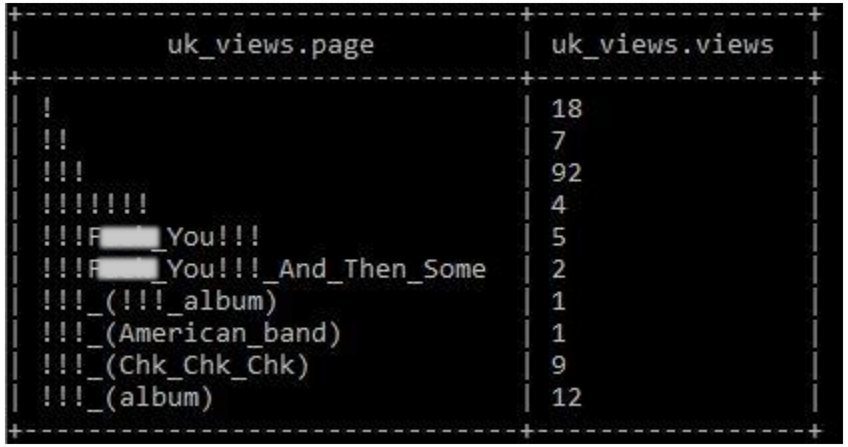
Used 1 week of pageview data from Sept. 21 - 25 (Mon – Fri)

Assumptions:

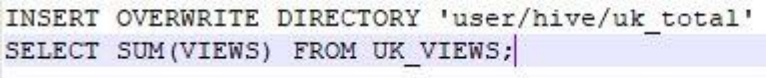
Traffic during peak hours is representative of traffic all the time

Wikipedia traffic during peak hours is representative as well

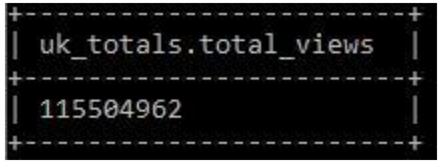
4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.



```
+-----------------------------+-----------------+
|        uk_views.page        | uk_views.views  |
+-----------------------------+-----------------+
| !                           | 18              |
| !!                          | 7               |
| !!!                         | 92              |
| !!!!!!!                     | 4               |
| !!!F[redacted]_You!!!              | 5               |
| !!!F[redacted]_You!!!_And_Then_Some | 2               |
| !!!_(!!!_album)             | 1               |
| !!!_(American_band)         | 1               |
| !!!_(Chk_Chk_Chk)           | 9               |
| !!!_(album)                 | 12              |
+-----------------------------+-----------------+
```



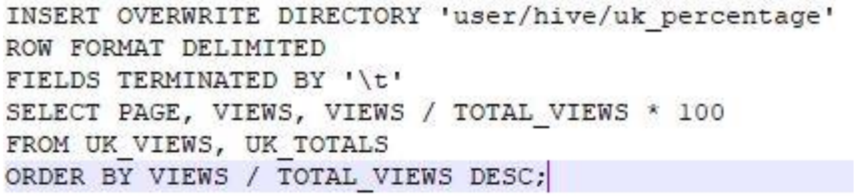
```
INSERT OVERWRITE DIRECTORY 'user/hive/uk_total'
SELECT SUM(VIEWS) FROM UK_VIEWS;
```



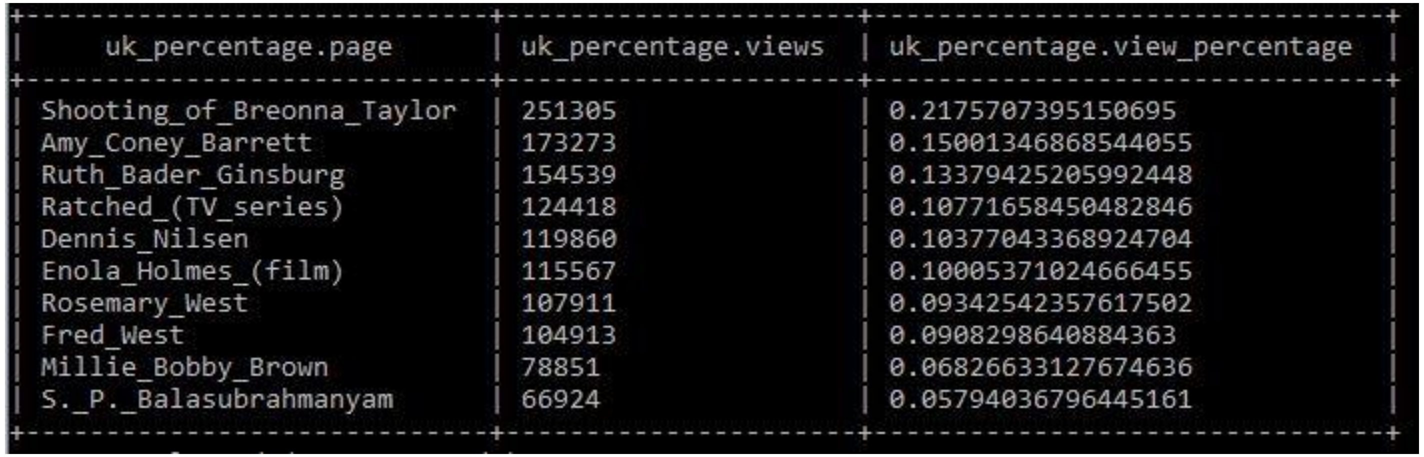
```
+-----------------------+
| uk_totals.total_views |
+-----------------------+
| 115504962             |
+-----------------------+
```

Sum of views during UK peak hours

4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.



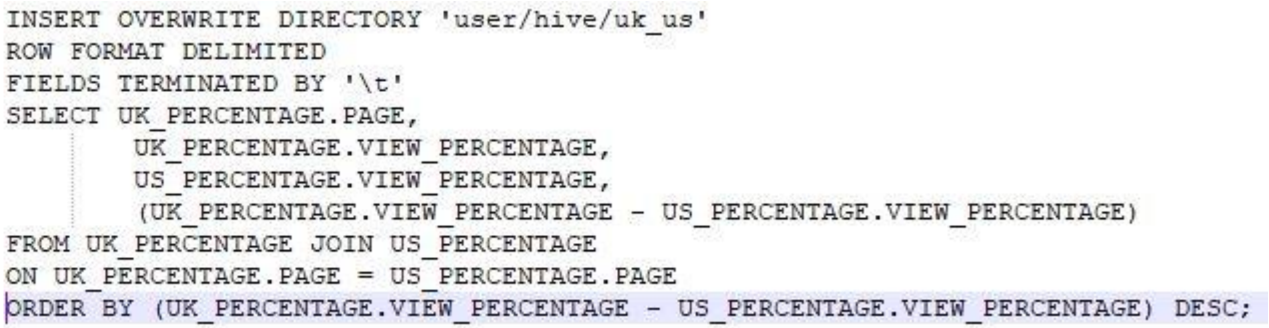
```
INSERT OVERWRITE DIRECTORY 'user/hive/uk_percentage'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY '\t'
SELECT PAGE, VIEWS, VIEWS / TOTAL_VIEWS * 100
FROM UK_VIEWS, UK_TOTALS
ORDER BY VIEWS / TOTAL_VIEWS DESC;
```



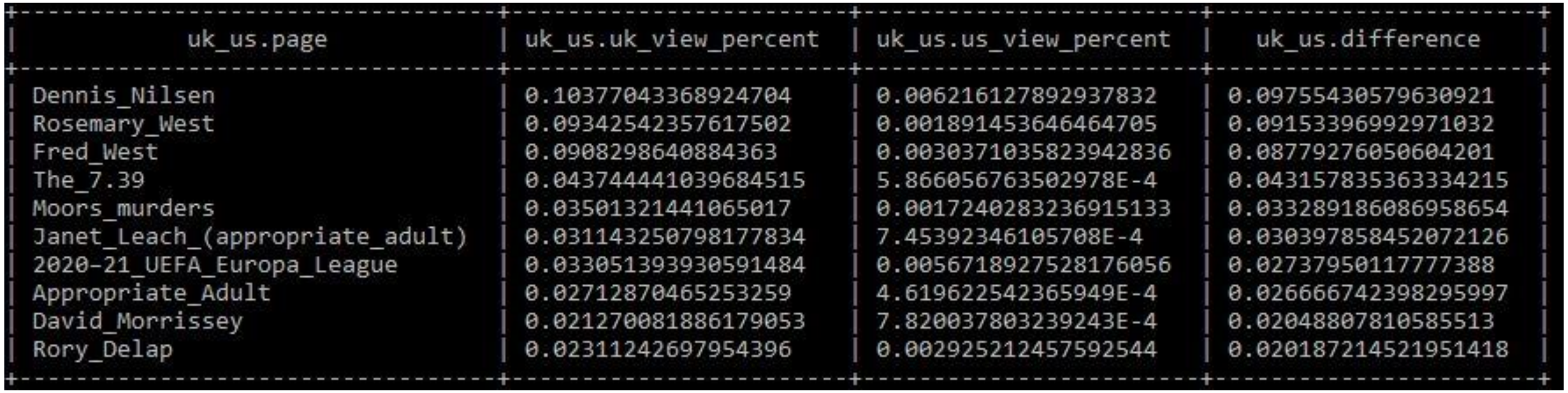
```
+------------------------------+----------------------+---------------------------------+
|     uk_percentage.page       | uk_percentage.views  | uk_percentage.view_percentage   |
+------------------------------+----------------------+---------------------------------+
| Shooting_of_Breonna_Taylor   | 251305               | 0.2175707395150695              |
| Amy_Coney_Barrett            | 173273               | 0.15001346868544055             |
| Ruth_Bader_Ginsburg          | 154539               | 0.13379425205992448             |
| Ratched_(TV_series)          | 124418               | 0.10771658450482846             |
| Dennis_Nilsen                | 119860               | 0.10377043368924704             |
| Enola_Holmes_(film)          | 115567               | 0.10005371024666455             |
| Rosemary_West                | 107911               | 0.09342542357617502             |
| Fred_West                    | 104913               | 0.0908298640884363              |
| Millie_Bobby_Brown           | 78851                | 0.06826633127674636             |
| S._P._Balasubrahmanyam       | 66924                | 0.05794036796445161             |
+------------------------------+----------------------+---------------------------------+
```

Percentage of total views per article

4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.



```
INSERT OVERWRITE DIRECTORY 'user/hive/uk_us'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY '\t'
SELECT UK_PERCENTAGE.PAGE,
        UK_PERCENTAGE.VIEW_PERCENTAGE,
        US_PERCENTAGE.VIEW_PERCENTAGE,
        (UK_PERCENTAGE.VIEW_PERCENTAGE - US_PERCENTAGE.VIEW_PERCENTAGE)
FROM UK_PERCENTAGE JOIN US_PERCENTAGE
ON UK_PERCENTAGE.PAGE = US_PERCENTAGE.PAGE
ORDER BY (UK_PERCENTAGE.VIEW_PERCENTAGE - US_PERCENTAGE.VIEW_PERCENTAGE) DESC;
```



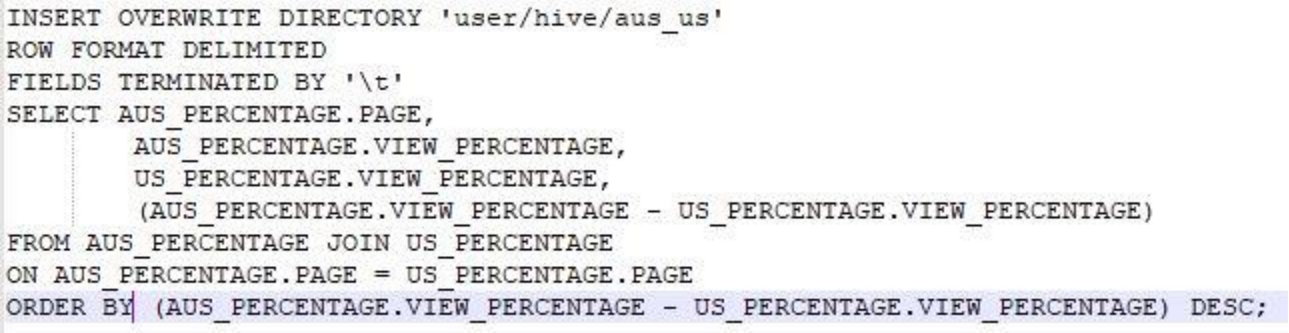
```
+-----------------------------------+------------------------+------------------------+------------------------+
|            uk_us.page             | uk_us.uk_view_percent  | uk_us.us_view_percent  |    uk_us.difference    |
+-----------------------------------+------------------------+------------------------+------------------------+
| Dennis_Nilsen                     | 0.10377043368924704    | 0.006216127892937832   | 0.09755430579630921    |
| Rosemary_West                     | 0.09342542357617502    | 0.001891453646464705   | 0.09153396992971032    |
| Fred_West                         | 0.0908298640884363     | 0.0030371035823942836  | 0.08779276050604201    |
| The_7.39                          | 0.043744441039684515   | 5.866056763502978E-4   | 0.043157835363334215   |
| Moors_murders                     | 0.03501321441065017    | 0.0017240283236915133  | 0.033289186086958654   |
| Janet_Leach_(appropriate_adult)   | 0.031143250798177834   | 7.45392346105708E-4    | 0.030397858452072126   |
| 2020-21_UEFA_Europa_League        | 0.033051393930591484   | 0.0056718927528176056  | 0.02737950117777388    |
| Appropriate_Adult                 | 0.02712870465253259    | 4.619622542365949E-4   | 0.026666742398295997   |
| David_Morrissey                   | 0.021270081886179053   | 7.820037803239243E-4   | 0.02048807810585513    |
| Rory_Delap                        | 0.02311242697954396    | 0.002925212457592544   | 0.020187214521951418   |
+-----------------------------------+------------------------+------------------------+------------------------+
```

UK Page Views vs US Page Views

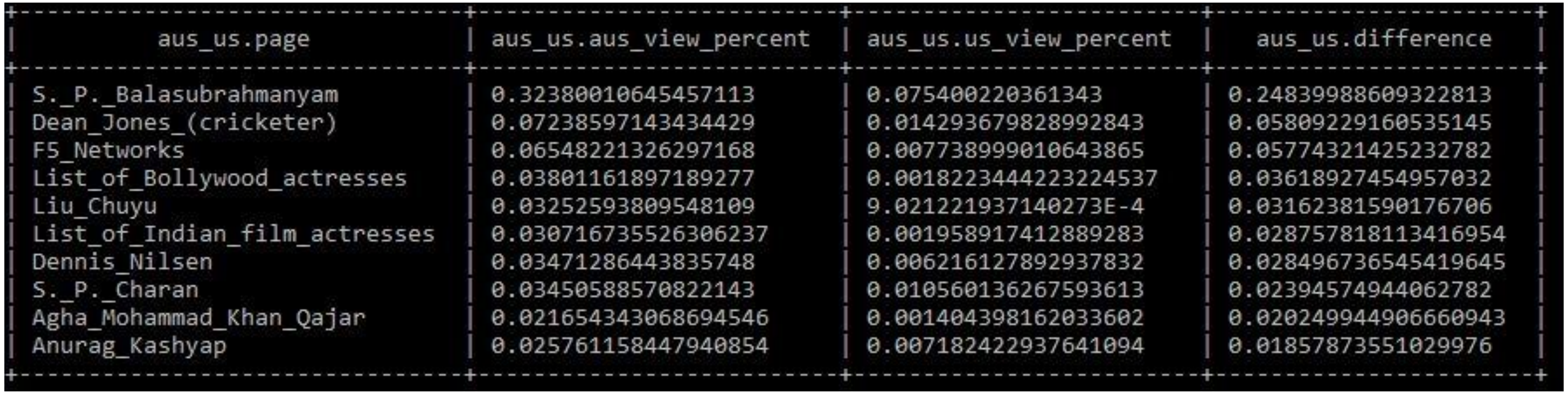
Dennis_Nilsen comparison

$$\frac{0.10377}{0.006216} = 16.694$$

4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.



```
INSERT OVERWRITE DIRECTORY 'user/hive/aus_us'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY '\t'
SELECT AUS_PERCENTAGE.PAGE,
        AUS_PERCENTAGE.VIEW_PERCENTAGE,
        US_PERCENTAGE.VIEW_PERCENTAGE,
        (AUS_PERCENTAGE.VIEW_PERCENTAGE - US_PERCENTAGE.VIEW_PERCENTAGE)
FROM AUS_PERCENTAGE JOIN US_PERCENTAGE
ON AUS_PERCENTAGE.PAGE = US_PERCENTAGE.PAGE
ORDER BY (AUS_PERCENTAGE.VIEW_PERCENTAGE - US_PERCENTAGE.VIEW_PERCENTAGE) DESC;
```



```
+-------------------------------+-------------------------+------------------------+----------------------+
|         aus_us.page           | aus_us.aus_view_percent | aus_us.us_view_percent |  aus_us.difference   |
+-------------------------------+-------------------------+------------------------+----------------------+
| S._P._Balasubrahmanyam        | 0.32380010645457113     | 0.075400220361343      | 0.24839988609322813  |
| Dean_Jones_(cricketer)        | 0.07238597143434429     | 0.014293679828992843   | 0.05809229160535145  |
| F5_Networks                   | 0.06548221326297168     | 0.007738999010643865   | 0.05774321425232782  |
| List_of_Bollywood_actresses   | 0.03801161897189277     | 0.0018223444223224537  | 0.03618927454957032  |
| Liu_Chuyu                     | 0.03252593809548109     | 9.021221937140273E-4   | 0.03162381590176706  |
| List_of_Indian_film_actresses | 0.030716735526306237    | 0.001958917412889283   | 0.028757818113416954 |
| Dennis_Nilsen                 | 0.03471286443835748     | 0.006216127892937832   | 0.028496736545419645 |
| S._P._Charan                  | 0.03450588570822143     | 0.010560136267593613   | 0.02394574944062782  |
| Agha_Mohammad_Khan_Qajar      | 0.021654343068694546    | 0.001404398162033602   | 0.020249944906660943 |
| Anurag_Kashyap                | 0.025761158447940854    | 0.007182422937641094   | 0.01857873551029976  |
+-------------------------------+-------------------------+------------------------+----------------------+
```

Australia Page Views vs US Page Views

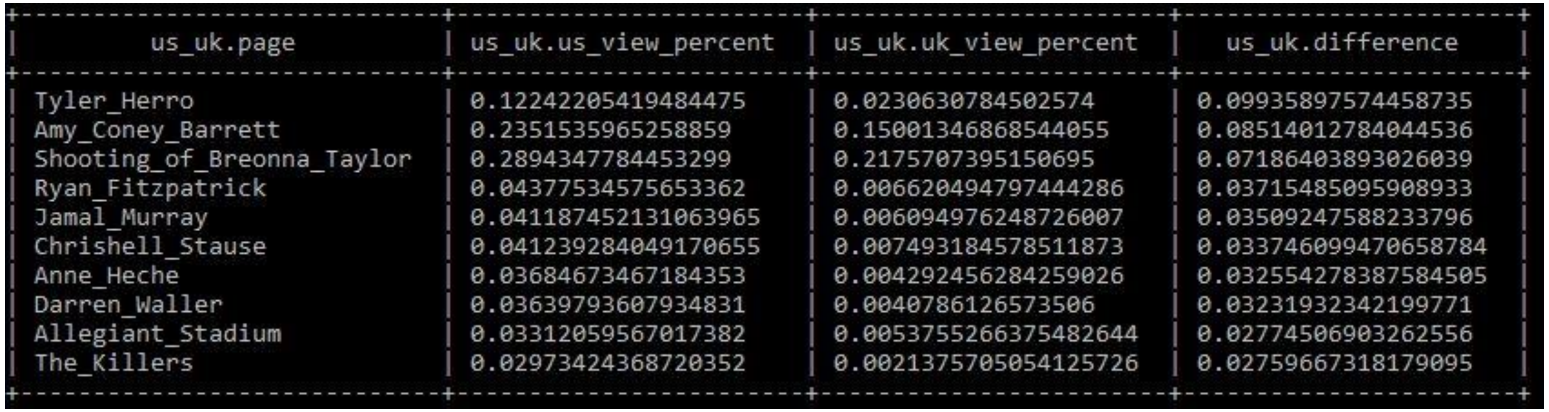
Dean_Jones_(cricketer)

$$\frac{0.07238}{0.01429} = 5.065$$

List of Bollywood actresses

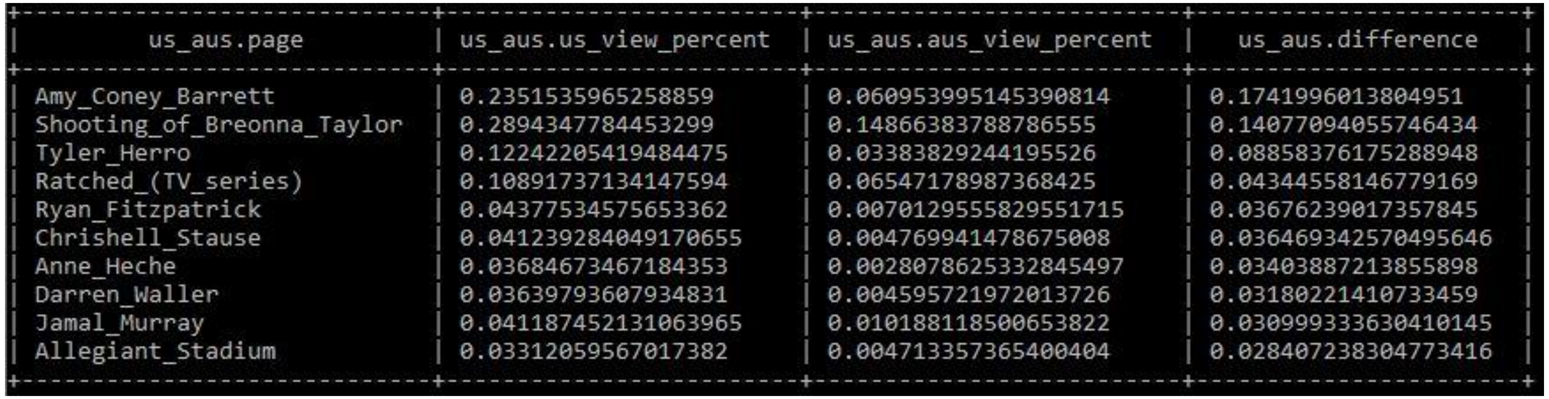
$$\frac{0.03801}{0.001822} = 20.86$$

4. Find an example of an English Wikipedia article that is relatively more popular in the UK. Find the same for the US and Australia.



```
+-----------------------------+------------------------+------------------------+------------------------+
|        us_uk.page           | us_uk.us_view_percent  | us_uk.uk_view_percent  |    us_uk.difference    |
+-----------------------------+------------------------+------------------------+------------------------+
| Tyler_Herro                 | 0.12242205419484475    | 0.0230630784502574     | 0.09935897574458735    |
| Amy_Coney_Barrett           | 0.2351535965258859     | 0.15001346868544055    | 0.08514012784044536    |
| Shooting_of_Breonna_Taylor  | 0.2894347784453299     | 0.2175707395150695     | 0.07186403893026039    |
| Ryan_Fitzpatrick            | 0.04377534575653362    | 0.006620494797444286   | 0.03715485095908933    |
| Jamal_Murray                | 0.041187452131063965   | 0.006094976248726007   | 0.03509247588233796    |
| Chrishell_Stause            | 0.041239284049170655   | 0.007493184578511873   | 0.033746099470658784   |
| Anne_Heche                  | 0.03684673467184353    | 0.004292456284259026   | 0.032554278387584505   |
| Darren_Waller               | 0.03639793607934831    | 0.0040786126573506     | 0.03231932342199771    |
| Allegiant_Stadium           | 0.03312059567017382    | 0.0053755266375482644  | 0.02774506903262556    |
| The_Killers                 | 0.02973424368720352    | 0.0021375705054125726  | 0.02759667318179095    |
+-----------------------------+------------------------+------------------------+------------------------+
```

US Page Views vs UK Page Views



```
+-----------------------------+-------------------------+-------------------------+-------------------------+
|        us_aus.page          | us_aus.us_view_percent  | us_aus.aus_view_percent |    us_aus.difference    |
+-----------------------------+-------------------------+-------------------------+-------------------------+
| Amy_Coney_Barrett           | 0.2351535965258859      | 0.060953995145390814    | 0.1741996013804951      |
| Shooting_of_Breonna_Taylor  | 0.2894347784453299      | 0.14866383788786555     | 0.14077094055746434     |
| Tyler_Herro                 | 0.12242205419484475     | 0.03383829244195526     | 0.08858376175288948     |
| Ratched_(TV_series)         | 0.10891737134147594     | 0.06547178987368425     | 0.04344558146779169     |
| Ryan_Fitzpatrick            | 0.04377534575653362     | 0.0070129555829551715   | 0.03676239017357845     |
| Chrishell_Stause            | 0.041239284049170655    | 0.004769941478675008    | 0.036469342570495646    |
| Anne_Heche                  | 0.03684673467184353     | 0.0028078625332845497   | 0.03403887213855898     |
| Darren_Waller               | 0.03639793607934831     | 0.004595721972013726    | 0.03180221410733459     |
| Jamal_Murray                | 0.041187452131063965    | 0.010188118500653822    | 0.030999333630410145    |
| Allegiant_Stadium           | 0.03312059567017382     | 0.004713357365400404    | 0.028407238304773416    |
+-----------------------------+-------------------------+-------------------------+-------------------------+
```

US Page Views vs Australia Page Views

vs UK

vs Australia
(+ India)

Tyler Herro

$$\frac{0.1224}{0.02306} = 5.307 \qquad \frac{0.1224}{0.03383} = 3.618$$

Amy Coney Barrett

$$\frac{0.2351}{0.1500} = 1.567 \qquad \frac{0.2351}{0.06095} = 3.857$$

Shooting of Breonna Taylor

$$\frac{0.2894}{0.2175} = 1.33 \qquad \frac{0.2894}{0.1486} = 1.947$$

5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.

Data used:

MediaWiki enwiki history up to October 2020

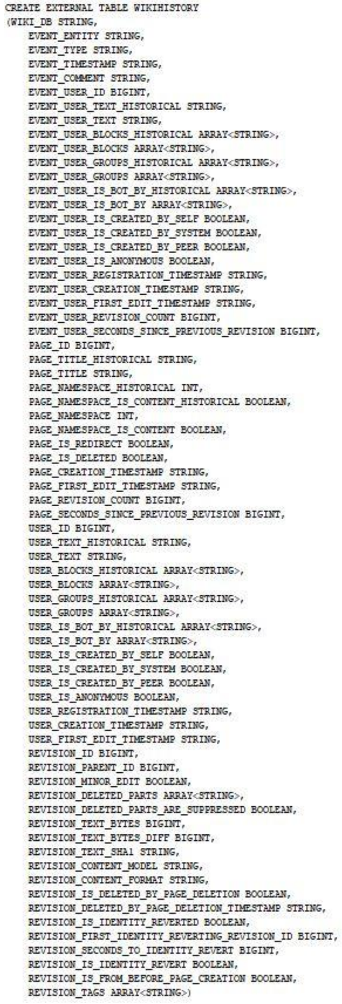
Pageviews for October 20, 2020

Assumptions:

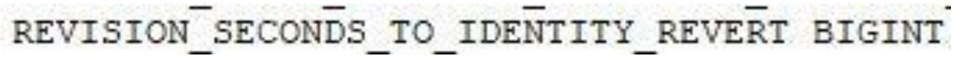
All revisions that were reverted were vandalizations

Total views over a day are representative of normal traffic

5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.

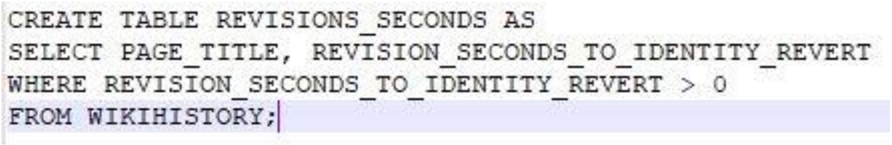


```
CREATE EXTERNAL TABLE WIKIHISTORY
(WIKI_DB STRING,
    EVENT_ENTITY STRING,
    EVENT_TYPE STRING,
    EVENT_TIMESTAMP STRING,
    EVENT_COMMENT STRING,
    EVENT_USER_ID BIGINT,
    EVENT_USER_TEXT_HISTORICAL STRING,
    EVENT_USER_TEXT STRING,
    EVENT_USER_BLOCKS_HISTORICAL ARRAY<STRING>,
    EVENT_USER_BLOCKS ARRAY<STRING>,
    EVENT_USER_GROUPS_HISTORICAL ARRAY<STRING>,
    EVENT_USER_GROUPS ARRAY<STRING>,
    EVENT_USER_IS_BOT_BY_HISTORICAL ARRAY<STRING>,
    EVENT_USER_IS_BOT_BY ARRAY<STRING>,
    EVENT_USER_IS_CREATED_BY_SELF BOOLEAN,
    EVENT_USER_IS_CREATED_BY_SYSTEM BOOLEAN,
    EVENT_USER_IS_CREATED_BY_PEER BOOLEAN,
    EVENT_USER_IS_ANONYMOUS BOOLEAN,
    EVENT_USER_REGISTRATION_TIMESTAMP STRING,
    EVENT_USER_CREATION_TIMESTAMP STRING,
    EVENT_USER_FIRST_EDIT_TIMESTAMP STRING,
    EVENT_USER_REVISION_COUNT BIGINT,
    EVENT_USER_SECONDS_SINCE_PREVIOUS_REVISION BIGINT,
    PAGE_ID BIGINT,
    PAGE_TITLE_HISTORICAL STRING,
    PAGE_TITLE STRING,
    PAGE_NAMESPACE_HISTORICAL INT,
    PAGE_NAMESPACE_IS_CONTENT_HISTORICAL BOOLEAN,
    PAGE_NAMESPACE INT,
    PAGE_NAMESPACE_IS_CONTENT BOOLEAN,
    PAGE_IS_REDIRECT BOOLEAN,
    PAGE_IS_DELETED BOOLEAN,
    PAGE_CREATION_TIMESTAMP STRING,
    PAGE_FIRST_EDIT_TIMESTAMP STRING,
    PAGE_REVISION_COUNT BIGINT,
    PAGE_SECONDS_SINCE_PREVIOUS_REVISION BIGINT,
    USER_ID BIGINT,
    USER_TEXT_HISTORICAL STRING,
    USER_TEXT STRING,
    USER_BLOCKS_HISTORICAL ARRAY<STRING>,
    USER_BLOCKS ARRAY<STRING>,
    USER_GROUPS_HISTORICAL ARRAY<STRING>,
    USER_GROUPS ARRAY<STRING>,
    USER_IS_BOT_BY_HISTORICAL ARRAY<STRING>,
    USER_IS_BOT_BY ARRAY<STRING>,
    USER_IS_CREATED_BY_SELF BOOLEAN,
    USER_IS_CREATED_BY_SYSTEM BOOLEAN,
    USER_IS_CREATED_BY_PEER BOOLEAN,
    USER_IS_ANONYMOUS BOOLEAN,
    USER_REGISTRATION_TIMESTAMP STRING,
    USER_CREATION_TIMESTAMP STRING,
    USER_FIRST_EDIT_TIMESTAMP STRING,
    REVISION_ID BIGINT,
    REVISION_PARENT_ID BIGINT,
    REVISION_MINOR_EDIT BOOLEAN,
    REVISION_DELETED_PARTS ARRAY<STRING>,
    REVISION_DELETED_PARTS_ARE_SUPPRESSED BOOLEAN,
    REVISION_TEXT_BYTES BIGINT,
    REVISION_TEXT_BYTES_DIFF BIGINT,
    REVISION_TEXT_SHA1 STRING,
    REVISION_CONTENT_MODEL STRING,
    REVISION_CONTENT_FORMAT STRING,
    REVISION_IS_DELETED_BY_PAGE_DELETION BOOLEAN,
    REVISION_DELETED_BY_PAGE_DELETION_TIMESTAMP STRING,
    REVISION_IS_IDENTITY_REVERTED BOOLEAN,
    REVISION_FIRST_IDENTITY_REVERTING_REVISION_ID BIGINT,
    REVISION_SECONDS_TO_IDENTITY_REVERT BIGINT,
    REVISION_IS_IDENTITY_REVERT BOOLEAN,
    REVISION_IS_FROM_BEFORE_PAGE_CREATION BOOLEAN,
    REVISION_TAGS ARRAY<STRING>)
```

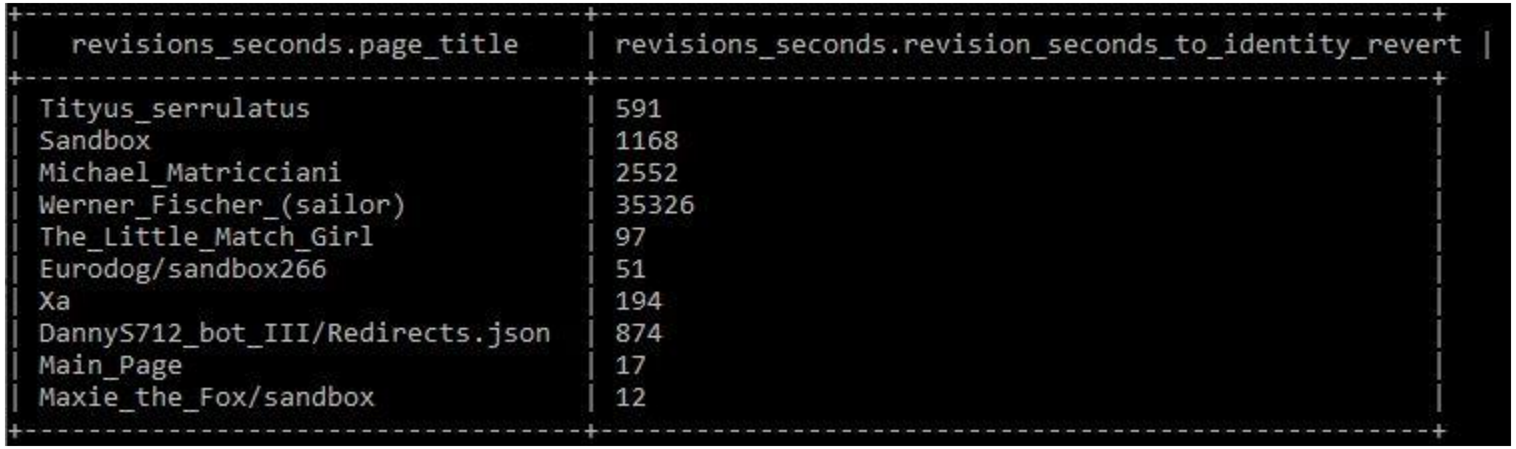


```
REVISION_SECONDS_TO_IDENTITY_REVERT BIGINT
```

5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.



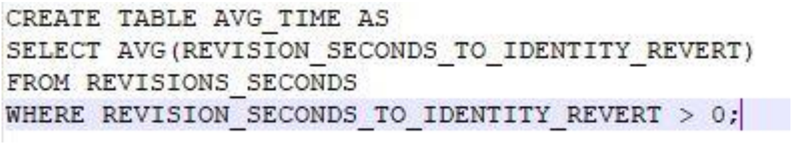
```
CREATE TABLE REVISIONS_SECONDS AS
SELECT PAGE_TITLE, REVISION_SECONDS_TO_IDENTITY_REVERT
WHERE REVISION_SECONDS_TO_IDENTITY_REVERT > 0
FROM WIKIHISTORY;
```



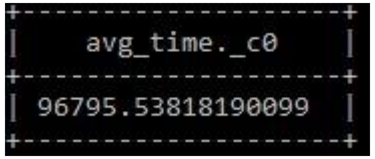
```
+------------------------------------+----------------------------------------------------+
|   revisions_seconds.page_title     | revisions_seconds.revision_seconds_to_identity_revert |
+------------------------------------+----------------------------------------------------+
| Tityus_serrulatus                  | 591                                                |
| Sandbox                            | 1168                                               |
| Michael_Matricciani                | 2552                                               |
| Werner_Fischer_(sailor)            | 35326                                              |
| The_Little_Match_Girl              | 97                                                 |
| Eurodog/sandbox266                 | 51                                                 |
| Xa                                 | 194                                                |
| DannyS712_bot_III/Redirects.json   | 874                                                |
| Main_Page                          | 17                                                 |
| Maxie_the_Fox/sandbox              | 12                                                 |
+------------------------------------+----------------------------------------------------+
```

Time (in seconds) before reverting change on page

5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.



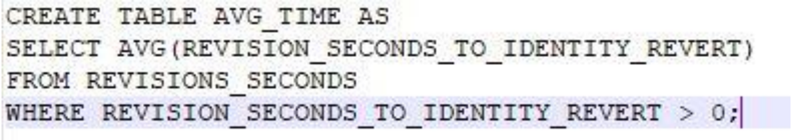
```
CREATE TABLE AVG_TIME AS
SELECT AVG(REVISION_SECONDS_TO_IDENTITY_REVERT)
FROM REVISIONS_SECONDS
WHERE REVISION_SECONDS_TO_IDENTITY_REVERT > 0;
```



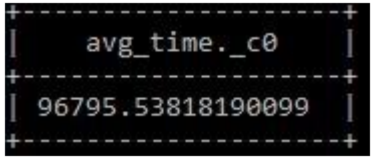
```
+--------------------+
|    avg_time._c0    |
+--------------------+
| 96795.53818190099  |
+--------------------+
```

Average time before vandalization is reverted

5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.

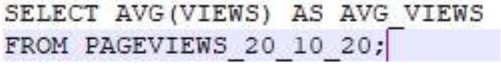


```
CREATE TABLE AVG_TIME AS
SELECT AVG(REVISION_SECONDS_TO_IDENTITY_REVERT)
FROM REVISIONS_SECONDS
WHERE REVISION_SECONDS_TO_IDENTITY_REVERT > 0;
```

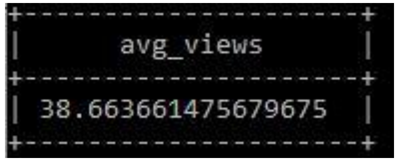


```
+-------------------+
|    avg_time._c0   |
+-------------------+
| 96795.53818190099 |
+-------------------+
```

Average time before vandalization is reverted



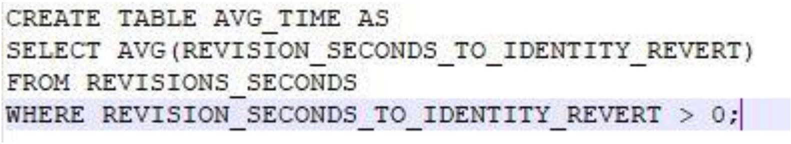
```
SELECT AVG(VIEWS) AS AVG_VIEWS
FROM PAGEVIEWS_20_10_20;
```



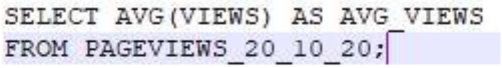
```
+--------------------+
|      avg_views     |
+--------------------+
| 38.663661475679675 |
+--------------------+
```

Average views an article receives per day

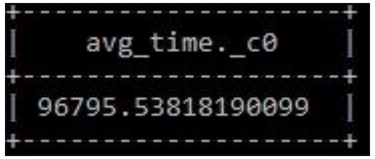
5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.



```
CREATE TABLE AVG_TIME AS
SELECT AVG(REVISION_SECONDS_TO_IDENTITY_REVERT)
FROM REVISIONS_SECONDS
WHERE REVISION_SECONDS_TO_IDENTITY_REVERT > 0;
```

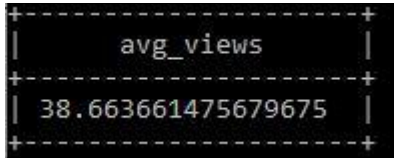


```
SELECT AVG(VIEWS) AS AVG_VIEWS
FROM PAGEVIEWS_20_10_20;
```



```
+--------------------+
|   avg_time._c0     |
+--------------------+
| 96795.53818190099  |
+--------------------+
```

Average time before vandalization is reverted

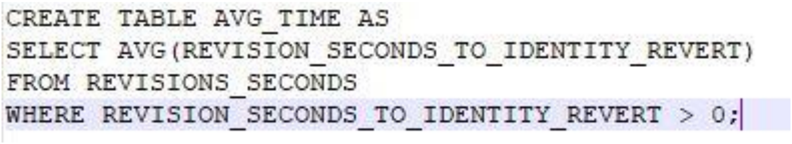


```
+--------------------+
|     avg_views      |
+--------------------+
| 38.663661475679675 |
+--------------------+
```

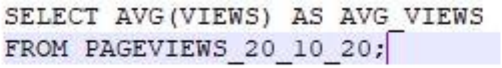
Average views an article receives per day

$$\frac{96795.538\ seconds}{revert}\ x\ \frac{1\ minute}{60\ seconds}\ x\ \frac{1\ hour}{60\ minutes}\ x\ \frac{1\ day}{24\ hours} = \frac{1.12\ days}{revert}$$

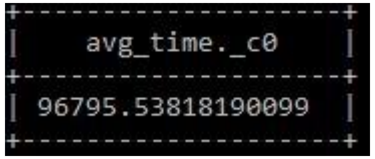
5. Analyze how many users will see the average vandalized Wikipedia page before the offending edit is reversed.



```
CREATE TABLE AVG_TIME AS
SELECT AVG(REVISION_SECONDS_TO_IDENTITY_REVERT)
FROM REVISIONS_SECONDS
WHERE REVISION_SECONDS_TO_IDENTITY_REVERT > 0;
```

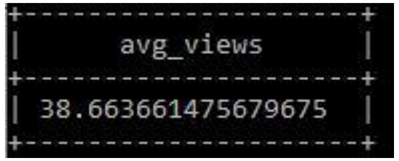


```
SELECT AVG(VIEWS) AS AVG_VIEWS
FROM PAGEVIEWS_20_10_20;
```



```
+--------------------+
|    avg_time._c0    |
+--------------------+
| 96795.53818190099  |
+--------------------+
```

Average time before vandalization is reverted



```
+--------------------+
|     avg_views      |
+--------------------+
| 38.663661475679675 |
+--------------------+
```

Average views an article receives per day

$$\frac{96795.538\ seconds}{revert}\ x\ \frac{1\ minute}{60\ seconds}\ x\ \frac{1\ hour}{60\ minutes}\ x\ \frac{1\ day}{24\ hours} = \frac{1.12\ days}{revert}$$

$$\frac{1.12\ days}{revert}\ x\ \frac{38.663\ views}{day} = \frac{43.303\ views}{revert}$$

6. Which popular English Wikipedia pages have the lowest percentage of people click an internal link?

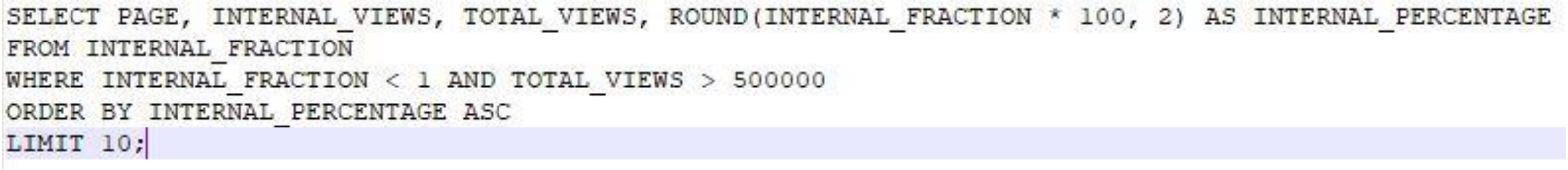
6. Which popular English Wikipedia pages have the lowest percentage of people click an internal link?

Data Used:

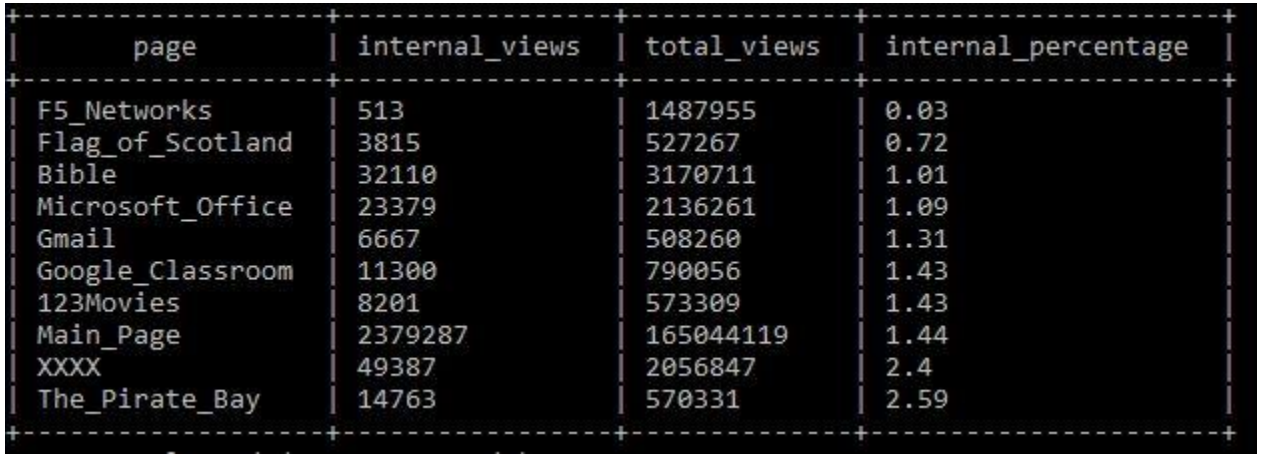
Clickstream for the month of Sept.

All Pageviews for the month of Sept.

6. Which popular English Wikipedia pages have the lowest percentage of people click an internal link?



```
SELECT PAGE, INTERNAL_VIEWS, TOTAL_VIEWS, ROUND(INTERNAL_FRACTION * 100, 2) AS INTERNAL_PERCENTAGE
FROM INTERNAL_FRACTION
WHERE INTERNAL_FRACTION < 1 AND TOTAL_VIEWS > 500000
ORDER BY INTERNAL_PERCENTAGE ASC
LIMIT 10;
```



```
+--------------------+------------------+--------------+------------------------+
|        page        | internal_views   | total_views  | internal_percentage    |
+--------------------+------------------+--------------+------------------------+
| F5_Networks        | 513              | 1487955      | 0.03                   |
| Flag_of_Scotland   | 3815             | 527267       | 0.72                   |
| Bible              | 32110            | 3170711      | 1.01                   |
| Microsoft_Office   | 23379            | 2136261      | 1.09                   |
| Gmail              | 6667             | 508260       | 1.31                   |
| Google_Classroom   | 11300            | 790056       | 1.43                   |
| 123Movies          | 8201             | 573309       | 1.43                   |
| Main_Page          | 2379287          | 165044119    | 1.44                   |
| XXXX               | 49387            | 2056847      | 2.4                    |
| The_Pirate_Bay     | 14763            | 570331       | 2.59                   |
+--------------------+------------------+--------------+------------------------+
```

10 popular pages with lowest percentage

Questions?