

141B - SQL

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Load Libraries & make Connection

```
library(RSQLite)
library(DBI)
library(dplyr)

db = dbConnect(RSQLite(), file.path(getwd(), "data\\STA441B\\HW3\\stats_attachexchange.db")
```

Data Exploration:

Here we print out the schema of tables and their columns, since it's different than the website schema.

#! let all tables for easy viewing

dbListTables(db)

```
## [1] "BadgeCategory" "Badges" "ClassroomSetup"
## [4] "Comments" "LinkTypeMap" "PostHistory"
## [7] "PostHistoryPayload" "PostLinks" "PostTypeMap"
## [10] "Posts" "TagHistory" "Users"
## [13] "VoteTypeMap" "Votes"
```

```
db_summary = as.data.frame(dbListFields(db), function(x) dbListFields(db, x)[1:22]))
colnames(db_summary) = dbListFields(db)
```

```
db_summary

## BadgeCategory Badges ClassroomSetup Comments LinkTypeMap
## 1 id id id id id id
## 2 value value value value value value
## 3 name name name name name name
## 4 name name name name name name
## 5 class class class class class class
## 6 tagname tagname tagname tagname tagname tagname
## 7 class class class class class class
## 8 class class class class class class
## 9 class class class class class class
## 10 class class class class class class
## 11 class class class class class class
## 12 class class class class class class
## 13 class class class class class class
## 14 class class class class class class
## 15 class class class class class class
## 16 class class class class class class
## 17 class class class class class class
## 18 class class class class class class
## 19 class class class class class class
## 20 class class class class class class
## 21 class class class class class class
## 22 class class class class class class
## PostHistoryPayload PostHistoryPayload PostHistoryPayload
## 1 id id id id id id
## 2 PostHistoryPayload PostHistoryPayload PostHistoryPayload PostHistoryPayload PostHistoryPayload
## 3 PostId Description PostId PostId PostId
## 4 PostHistoryPayload PostHistoryPayload PostHistoryPayload PostHistoryPayload PostHistoryPayload
## 5 CreationDate class LinkTypeMap class
## 6 UserId class class class class class
## 7 Text class class class class class
## 8 ContentLicense class class class class class
## 9 Comment class class class class class
## 10 UserDisplayname class class class class class
## 11 class class class class class class
## 12 class class class class class class
## 13 class class class class class class
## 14 class class class class class class
## 15 class class class class class class
## 16 class class class class class class
## 17 class class class class class class
## 18 class class class class class class
## 19 class class class class class class
## 20 class class class class class class
## 21 class class class class class class
## 22 class class class class class class
## Posts TagHistory Users VoteTypeMap Votes
## 1 id id id id id id
## 2 PostTypeMap Tag Reputation value value value
## 3 AcceptanceUserId class CreationDate class VoteTypeMap class
## 4 CreationDate class Displayname class CreationDate class
## 5 Score class LastModifiedDate class Userid class
## 6 ViewCount class Watchlist class Bodylength class
## 7 Body class Location class class
## 8 SummaryId class class class class class
## 9 LastActivityDate class Views class class
## 10 Title class Updates class class
## 11 Tags class Downvotes class class
## 12 AnswerCount class AccountId class class
## 13 CommentCount class class class class class
## 14 ContentLicense class class class class class
## 15 LastModifiedDate class class class class class
## 16 LastModifiedDate class class class class class
## 17 LastModifiedDate class class class class class
## 18 CommunityNameDate class class class class class
## 19 ParentId class class class class class
## 20 OwnerDisplayname class class class class class
## 21 CreationDate class class class class class
## 22 FavoriteCount class class class class class
```

General Note: I will occasionally leave sections of commented code out here. These are highlighting the tables I used to "build up" to the final query I used.

Answered Questions: (1,2,3,4,5,6,10,11,12,14,16,18,19,21)

QUESTION 1: How many users are there?

It was found that there are 321,677 users, by counting the number of ids from the Users table.

```
kable(dbGetQuery(db, "SELECT COUNT(id) FROM users"), col.names = "Number of users")
```

Number of users:

321677

QUESTION 2: How many users joined since 2020? (Hint: Convert the CreationDate to a year.)

We found that 100,796 users have joined from after the first second of January 1st, 2020. This was found by counting the CreationDate from the Users table where their CreationDate was greater than the start of 2020.

```
kable(dbGetQuery(db, "SELECT COUNT(CreationDate) FROM users WHERE CAST(CreationDate AS DATE) >= '2020-01-01 00:00:00'"), col.names = "Number of users that have joined since the start of 2020")
```

Number of users that have joined since the start of 2020

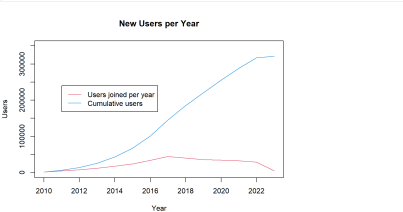
100796

QUESTION 3: How many users joined each year? Describe this with a plot, commenting on any anomalies.

The CreationDate of each Users was selected and grouped by counting how many joined each year. I calculated both the amount that joined each year and the cumulative sum so you can see the total number of users per year. I assume like the peak growth was in 2017 and has slowly been declining. I don't know enough about the statistics/algorithm/flow community to comment on why it's slowly been going down other than to guess that as the product ages less people join. As for the large dip at the end however that is the expected because we table only has data up through March 5th of 2023, so it doesn't have a full year's worth of users joining. I imagine if you added this with the data on December 31st this year there would be much less of a drastic decrease.

```
join_of = dbGetQuery(db, "SELECT strftime('%Y', CreationDate) AS yr, COUNT(*) AS yr_count FROM users GROUP BY yr")
```

```
plot(join_of, type="l", xlab = "Year", ylab = "Users", main="New Users per Year", ylim = c(0, 30000), col=2)
join_of["Cumulative users"] = cumsum(join_of$yr_count) # Cumulative users
lines(join_of$yr, join_of["Cumulative users"], col=4)
legend(40000, legend=c("New Users per Year", "Cumulative users"), col=c(2,4), bty="n", lty=c(1,1))
```



Year	New Users	Cumm. New Users
2010	1688	1688
2011	4396	6084
2012	7450	13534
2013	11946	25480
2014	17809	43169
2015	24012	67181
2016	33763	100944
2017	44416	145360
2018	40960	186320
2019	35491	221811
2020	34617	256428
2021	32765	289193
2022	28801	317994
2023	4613	321607

QUESTION 4: How many different types of posts are there in the Posts table?

According to the PostTypeMap table there are 8 kinds of posts. However here we sorted the posts by their PostTypeMap and used COUNT to count them, only 7 of the 8 are present in this data. We used a join with PostTypeMap to print their appropriate types.

```
kable(dbGetQuery(db, "SELECT PostTypeMap, COUNT(*) AS Count, PostTypeMap.value FROM Posts INNER JOIN PostTypeMap ON PostTypeMap.PostTypeMapId = Posts.PostTypeMapId GROUP BY PostTypeMap"), col.names = c("id", "Count", "value"))
```

id	Count	Value
1	204370	Question
2	107028	Answer
3	6	Orphaned tag wiki
4	1444	Tag wiki excerpt
5	1444	Tag wiki
6	23	Moderator nomination
7	5	Wiki placeholder (seems to only be the election description)

QUESTION 5: How many posted questions are there?

There are 204,370 questions asked in our data. We counted all posts where the PostTypeMap = 1, which indicates it's a question and not something like an answer. Here we demonstrate that using PostTypeMap = 1 mapped to the "Question" id from PostTypeMap gives the same results.

#PostTypeId = 1 : Question Type
kable(dbrQuery(db, "SELECT COUNT(PostTypeId) FROM Posts WHERE PostTypeId = 1", col.names = "Number of Questions Asked")

Number of Questions Asked
204370

kable(dbrQuery(db, "SELECT COUNT(PostTypeId) FROM Posts WHERE PostTypeId IN (SELECT id FROM PostTypeIdMap WHERE value = 'Q
uestion')"),
col.names = "Number of Questions Asked via PostTypeIdMap")

Number of Questions Asked via PostTypeIdMap
204370

QUESTION 8: How many answers are there?

There are 197,928 answers in our data. We counted all posts where the PostTypeId = 2, which indicates it's an answer and not something like a
question.

kable(dbrQuery(db, "SELECT COUNT(PostTypeId) FROM Posts WHERE PostTypeId = 2", col.names = "Number of Answers")

Number of Answers
197928

kable(dbrQuery(db, "SELECT COUNT(PostTypeId) FROM Posts WHERE PostTypeId IN (SELECT id FROM PostTypeIdMap WHERE value = "A
nswer")"), col.names = "Number of Answers via PostTypeIdMap")

Number of Answers via PostTypeIdMap
197928

kable(dbrQuery(db, "SELECT SUM(AnswerCount) FROM Posts"), col.names = "Verifying via Summing AnswerCount of all posts")

Verifying via Summing AnswerCount of all posts
197928

QUESTION 9: What's the most recent question (by date time) in the Posts table?

URL: <https://data.stackexchange.com/questions/608405> (<https://data.stackexchange.com/questions/608405>)

ALT URL: <https://data.stackexchange.com/questions/608405#new-there-any-methods-that-combine-mcmc-and-vi> (<https://data.stackexchange.com/questions/608405#new-there-any-methods-that-combine-mcmc-and-vi>)

How would we map a question to posts table to fix URL?

Normally we could expand the Post ID to <https://data.stackexchange.com/questions/7876470> (<https://data.stackexchange.com/questions/7876470>) but it seems like not all posts exist. For example, <https://data.stackexchange.com/questions/608405> (<https://data.stackexchange.com/questions/608405>) doesn't exist and actually exist. However using Google with the contents of the post I was
able to find a post that matched half of the new post and decided that would be more useful to us. You can't do much if the newest post just throws
a 404 error at you.

To find this we found the largest CreationDate to find the newest post is at 5:10:18 AM on March 3th, 2023, with ID 608405. I wasn't certain how to
link them to the URL but figured there must be a way. In fact it turns out if you type in <https://data.stackexchange.com/questions/>
(<https://data.stackexchange.com/questions/>) and then append the Post ID it will take you to that post. While this works for a lot of the Questions
IDs, I don't know for post 608405, so I just guess you + 400. Pages red 404'd error. However if you search Google using the text from the body
you can find a post that occurs later after our data set. Post #608405 which matches half of the body of Post #608405. Ultimately together these
two posts give you the newest post in our data set, with one answer clicking to the "top of the bar" and another giving an answer that is more the
"spirit of the law".

kable(dbrQuery(db, "SELECT MAX(CreationDate) FROM Posts"), col.names = "Newest Post Time")

Newest Post Time
2023-03-05T05:10:18.393

kable(dbrQuery(db, "SELECT id FROM Posts WHERE CreationDate = (SELECT MAX(CreationDate) FROM Posts)", col.names = "Newest
Post ID")

Newest Post ID
608405

dbrQuery(db, "SELECT Body FROM Posts WHERE CreationDate = '2023-03-05T05:10:18.393'")[[1]]

[1] "I share there any methods that combine VI and MCMC if it exists, why isn't it used prominently over techniques such
as MCMC or other VIs, (p-vi) or another question that just popped up in my head why is MCMC sampling parallelizable after it
is done? Is it related with some kind of sequential, best-first search?"

QUESTION 10: Top 10 Questions Posted Users: How many questions did they post, usernames, when did they join, reputation, country?

For Username we use Users.DisplayName, for their join date we use Users.CreationDate, for their reputation we use Users.Reputation and for
country we use Users.Location (not all people list a country, but many do. As there's no Country value this seemed most appropriate.)

We make a table with the top 10 users and how many posts they make, using an inner Join with the Users table to filter to only having the top 10
question posters.

#Double Checking the way we select the number of posts per user is correct
ct = dbrQuery(db, "SELECT UserDisplayName, UserAvatarId, COUNT(*) FROM Posts GROUP BY UserAvatarId")

Warning: Column 'UserAvatarId': mixed type, first seen values of type 'integer',
coercing other values of type 'string'

#There are 485228 posts, and we have that many here!
sum(ct\$COUNT)*1

[1] 485228

We ignore user28 since they have no ID so we can't look up any results on them
dbrQuery(db, "SELECT UserDisplayName, UserAvatarId, COUNT(*) FROM Posts WHERE UserAvatarId <="" GROUP BY UserAvatarId ORDER
BY COUNT(UserAvatarId) DESC LIMIT 30;")

UserDisplayName UserAvatarId COUNT(*)
1 805 485228
2 620 3152
3 686 3089
4 2698 2761
5 13887 2638
6 35989 2546
7 173862 2337
8 1312 2138
9 85663 2139
10 7298 1987

#dbrQuery(db, "SELECT id, DisplayName, CreationDate, Reputation, Location FROM Users WHERE id IN (SELECT UserAvatarId FROM
Posts WHERE UserAvatarId <="" GROUP BY UserAvatarId ORDER BY COUNT(UserAvatarId) DESC LIMIT 30;")

kable(dbrQuery(db, "SELECT id, DisplayName, CreationDate, Reputation, Location, freq
FROM Users
INNER JOIN (SELECT UserAvatarId, COUNT(*) as freq FROM Posts WHERE UserAvatarId <="" GROUP BY UserAvatarId OR
der BY COUNT(UserAvatarId) DESC LIMIT 30) AS Table2 ON Table2.UserAvatarId = Users.id
WHERE id IN (SELECT UserAvatarId FROM Posts WHERE UserAvatarId <="" GROUP BY UserAvatarId ORDER BY COUNT(User
AvatarId) DESC LIMIT 30;")
col.names = c("id", "Username", "Join Date", "Reputation", "Location", "Post Count")

id Username Join Date Reputation Location Post Count
805 Chen_b 2010-08-07T08:40:07.287 268986 I'm right here 4850
919 whuber 2010-08-13T15:26:47.140 304878 3152
686 Peter Flom 2010-08-03T19:42:40.907 97091 New York, NY 3080
26900 Ekmf 2013-07-26T15:11:03.380 79431 2761
13887 Aggelos Kalivas 2013-08-06T22:52:37.473 76169 Berlin 2638
35989 Tim 2013-12-10T21:19:08.223 126510 Warsaw, Poland 2546
173082 Ben 2017-08-10T03:27:26.793 108435 Canberra, Australia 2337
1352 Stephan Kolassa 2010-09-18T10:55:08.240 107005 Switzerland 2228
85665 BruceET 2015-08-11T17:22:01.590 53074 San Francisco Bay Area 2190
7290 gang - Rainalds Monica 2011-11-03T04:43:15.613 138909 Kingdom of Zhao 1907

QUESTION 11: Following from the previous questions, for the 10 users who posted the most questions, how many gold, silver and bronze badges
does each of these 10 individuals have?

Here we made an inner Join between Badges/UserId and the id of the top 10 users, as we found them in the previous question. We group by their
UserId and the Medal Classes to give our table, and use Count() to see how many of each they have.

kable(dbrQuery(db, "SELECT UserId, Class, COUNT(*)
FROM Badges
INNER JOIN (SELECT UserAvatarId, COUNT(*) as freq FROM Posts WHERE UserAvatarId <="" GROUP BY UserAvatarId OR
der BY COUNT(UserAvatarId) DESC LIMIT 30) AS Table3 ON Table3.UserId = Table3.UserId
GROUP BY UserId, Class"), col.names = c("User ID", "Medal Class", "Frequency"))

User ID Medal Class Frequency
686 1 35
686 2 153
686 3 203
805 1 38
805 2 587
805 3 952
919 1 55
919 2 693
919 3 1193
1352 1 17
1352 2 215
1352 3 406
7290 1 85
7290 2 919
7290 3 676
11887 1 30
11887 2 160
11887 3 522
26900 1 9
26900 2 79
26900 3 200
35989 1 21
35989 2 240
35989 3 456
85665 1 2
85665 2 32
85665 3 88
173862 1 4
173862 2 193
173862 3 452

QUESTION 12: For each of the following terms, how many questions contain that term: Regression, ANOVA, Data Mining, Machine Learning,
Deep Learning, Neural Network.

There are 54587 questions with these terms, either in the body or title. Here we use the LIKE term to look for how many posts contain the above
key terms. The set of 4 questions is found in Posts.Body, and the 9th via Posts.Title and we filter only using questions by only look at posts where
PostTypeId = 1, marking it as a question.

```
#PostTypeId = 1 indicates that it is a question
kable(dbGetQuery(db, "SELECT COUNT(*) body)
FROM Posts
WHERE (
  Body LIKE '%Regression%' OR Body LIKE '%ANNOUNCE%' OR Body LIKE '%Data Mining%' OR Body LIKE '%Machine
Learning%' OR Body LIKE '%Deep Learning%' OR Body LIKE '%Neural Network%'
) OR
  (Title LIKE '%Regression%' OR Title LIKE '%ANNOUNCE%' OR Title LIKE '%Data Mining%' OR Title LIKE '%Mach
ine Learning%' OR Title LIKE '%Deep Learning%' OR Title LIKE '%Neural Network%')
AND Posts.PostTypeId = 1",
col.names = "Number of Questions Containing the terms")
```

Number of Questions Containing the terms
58567

QUESTION 14: What is the date range for the questions and answers in this database?
Here we use MIN and MAX to find all the oldest and newest questions in our database, filtering by PostTypeId as appropriate. Because we are using JULIANDAY to calculate this, our differences are given in Days.

```
#Questions
kable(dbGetQuery(db, "SELECT MAX(createdDate) FROM Posts WHERE PostTypeId = 1", col.names = "Newest Question Time")
Newest Question Time
2023-03-05T05:10:18.393
```

```
kable(dbGetQuery(db, "SELECT MIN(createdDate) FROM Posts WHERE PostTypeId = 1", col.names = "Oldest Question Time")
Oldest Question Time
2009-02-03T14:21:12.103
```

```
#Answers
kable(dbGetQuery(db, "SELECT MAX(createdDate) FROM Posts WHERE PostTypeId = 2", col.names = "Newest Answer Time")
Newest Answer Time
2023-03-05T04:48:34.883
```

```
kable(dbGetQuery(db, "SELECT MIN(createdDate) FROM Posts WHERE PostTypeId = 1", col.names = "Oldest Answer Time")
Oldest Answer Time
2009-02-03T14:21:12.103
```

```
#Difference [2]
kable(dbGetQuery(db, "SELECT JULIANDAY(MAX(createdDate)) - JULIANDAY(MIN(createdDate)) FROM Posts WHERE PostTypeId = 1",
col.names = "Number of days between oldest and newest question")
Number of days between oldest and newest question
5143.817
```

```
kable(dbGetQuery(db, "SELECT JULIANDAY(MAX(createdDate)) - JULIANDAY(MIN(createdDate)) FROM Posts WHERE PostTypeId = 2",
col.names = "Number of days between oldest and newest answer")
Number of days between oldest and newest answer
5143.8
```

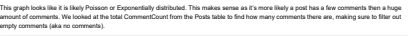
QUESTION 15: What Question has the most comments associated with it? How many answers are there?
Here we look at the Post (4088852) with the MAX CommentCount associated with it. We do a small amount of fiddling in R to make our Answer Count display as 0 below rather than NA, as this post has no answer.

```
q1 = dbGetQuery(db, "SELECT Id, CommentCount, AnswerCount FROM Posts WHERE CommentCount = (SELECT MAX(CommentCount) FROM Po
sts)")
#formatting:
df = as11[,1] == "" | isNLE[1] = 0
df$AnswerCount = as.numeric(df$AnswerCount)
kable(df, col.names = c("Post Id", "Comment Count", "Answer Count"))
Post Id Comment Count Answer Count
388852 66 0
```

QUESTION 16: How many comments are there across all posts? How many posts have a comment? What is the distribution of comments per question?
This graph looks like it is fairly Poisson or Exponentially distributed. This makes sense as it's more likely a post has a few comments than a huge amount of comments. We looked at the total CommentCount from the Posts table to find how many comments there are, making sure to filter out empty comments (aka no comments).

```
kable(dbGetQuery(db, "SELECT SUM(CommentCount) FROM Posts WHERE CommentCount IS NOT NULL", col.names = "Total Comments")
Total Comments
768069
kable(dbGetQuery(db, "SELECT COUNT(PostId) FROM Comments", col.names = "Total Comments via Comment Table")
Total Comments via Comment Table
768069
kable(dbGetQuery(db, "SELECT COUNT(CommentCount) FROM Posts WHERE CommentCount IS NOT NULL", col.names = "Total Posts with
1+ Comment(s)")
Total Posts with 1+ Comment(s)
405220
```

```
plot(dbGetQuery(db, "SELECT CommentCount, COUNT(CommentCount) FROM Posts WHERE CommentCount IS NOT NULL GROUP BY CommentCoun
t"), xlab = "# of Comments", ylab= "Frequency", main="Distribution of # of Comments")
Distribution of # of Comments
```



=== REQUIRE QUESTIONS ===
QUESTION 21: Compile the table that contains: Question, Username of poster, when that user joined, their location, the date the question was first posted, accepted answer, when accepted answer was posted, name of the user who posted accepted answer

For this question we had to combine several variables together to create our table. Here is a summary of what I values I thought we'd need: -
Posts.Title ->OwnerDisplayName ->Users.CreationDate ->Users.Location ->CreationDate ->AcceptedAnswerId ->Posts.Body ->AcceptedAnswerId
-> CreationDate ->AcceptedAnswerId -> OwnerDisplayName

NOTE: Due to the size of table I used head() here to limit the size and allow my computer to actually load the file. The query will work without it though if you want to see the whole table!

```
#Title, OwnerDisplayName, Users.CreationDate, Users.Location, CreationDate, AcceptedAnswerId ->Posts.Body, AcceptedAnswerId
-->CreationDate, AcceptedAnswerId ->OwnerDisplayName
# dbGetQuery(db, "SELECT p1.OwnerId, p1wer.Id, p1.AcceptedAnswerId, ans.Id, ans.OwnerId, Answer.Id
# FROM Posts as p1
# INNER JOIN Users As POwner ON p1.OwnerId = POwner.Id
# INNER JOIN Users As Answer ON ans.OwnerId = Answer.Id
# INNER JOIN Posts As ans ON p1.AcceptedAnswerId = ans.Id
# ")
head(dbGetQuery(db, "SELECT p1.Title, POwner.DisplayName As PosterUsername, POwner.CreationDate As PosterJoinDate, POwner.Locat
ion As PosterLocation, p1.CreationDate As PostDate, ans.Body As Answer, ans.CreationDate As AnswerDate, Answer.DisplayName As
AnswerUsername
FROM Posts as p1
INNER JOIN Users As POwner ON p1.OwnerId = POwner.Id
INNER JOIN Users As Answer ON ans.OwnerId = Answer.Id
INNER JOIN Posts As ans ON p1.AcceptedAnswerId = ans.Id
ORDER BY PostDate
")
```


5/19/2023, 1:20 PM

5/19/2023, 1:20 PM

5/19/2023, 1:20 PM

5/19/2023, 1:20 PM

5/19/2023, 1:20 PM

5/19/2023, 1:20 PM

[illegible]

21912	Dimitris Rizopoulos	2018-08-28T03:43:20.267	Rutterdam, Netherlands	58	Teacher, Editor, Audiobookographer, Commentator, Informant, Supporter, Critic, Organizer, Enthusiast, Custodian, Explainer, Reviewer, Tenacious, mixed model, Encourager, Analyst, Inevitable, Nice Answerer, Enlightened, Shure & White, Refiner, gmm, generalized-linear model, regression, Varying-random-effects-model, Citizen Patrol, logistic, Caesarus, Constructive, Good Answer	2018-08-29T03:24:59.473	2023-02-09T13:40:21.213	ma mo me mi tu we th fr sa su
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249135	Thomas Lumley	2019-05-26T21:58:47-913	New Zealand	131	Teacher, Editor, Reviewer, Autobiographer, Supporter, Yearling, Commentator, Moderator, Board, Customizer, Critic, Nice Answer: Neuroscience, Enthusiast, Explainer, Student, Excavator / Enlightened, Profound, Good Answer: Data, Informal, Reviewer, Generalist, distributions, regression, probability, Populist, Citizen, Patient, mathematical-statistics, Promoter, Disciplined, hypothesis-testing	2019-05-29T00:15:48-097	2023-03-04T07:45:01-590	1
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QUESTION 24: How many questions received no answers (accepted or unaccepted)? How many questions had no accepted answer?

For this question I used the AnswerCount to check which questions had no answers. Answers without an accepted answer was rather easy. I just checked which posts had no AcceptedAnswerId.

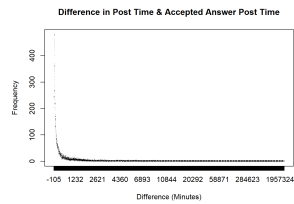
```
#Verification:
answerc = dbQuery(db, "SELECT p.p_id, COUNT(*) AS f
FROM Posts AS p
JOIN Users AS u ON p.u_id = u.p_userid
WHERE p.posttype = 2 AND p.postlength > 1
GROUP BY p.p_id
HAVING f > 0
")
alpha = dbQuery(db, "SELECT id FROM Posts WHERE postlength > 1")
print("The Number of no answer posts, without using AnswerCount: ", len(alpha) - len(answer))

# [1] "The Number of no answer posts, without using AnswerCount: 66076"

kale(dbQuery(db, "SELECT COUNT(acceptedAnswerID) FROM Posts WHERE acceptedAnswerID <''"), col_name = "Questions with no
accepted answer")
```

Note that we have some negative times in Question vs Accepted Answer. I went into the database to confirm this, and it seems like there are two posts where the answer is noted before the actual post somehow (Post 129091->129077 and Post 108295->109065)

```
q26a_table = as.data.frame(table(q26a$AnsDif))
plot(q26a_table$Var1, q26a_table$Freq, xlab = "Difference (Minutes)", ylab = "Frequency", main = "Difference in Post Time & Accepted Answer Post Time")
```



Note that we have many posts here with negative post to answer times. I'm wondering if this is due to editing or something

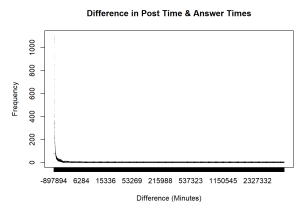
```
q1p = dbGetQuery(db, "SELECT p1.Id, p2.ParentId, p1.Id, p1.CreationDate, p2.CreationDate, (strftime('h', p2.CreationDate) - strftime('h', p1.CreationDate))%60 as MinDiff
FROM Posts as p1
WHERE p1.PostTypeId = 2
ORDER BY p1.ParentId = p1.Id
ORDER BY Answer")

head(q1p)

##      Id ParentId  Id      CreationDate      CreationDate
## 1 114611 114611 45861 2014-08-10T12:04:29.958 2012-11-07T21:52:18.377
## 2 114611 114611 45861 2014-08-10T12:04:29.958 2012-11-04T11:00:31.843
## 3 130021 100021 893 2013-10-12T08:14:52.288 2008-07-28T12:40:14.033
## 4 100021 100021 894 2013-10-12T08:14:52.288 2008-07-28T12:40:31.798
## 5 110841 130840 17883 2014-09-20T21:09:58.467 2013-11-10T21:11:01.027
## 6 110841 130841 18043 2014-09-20T21:10:16.487 2010-01-11T11:10:11.797
##      MinDiff
## 1 -897864
## 2 -897865
## 3 -115488
## 4 -105467
## 5 -107705
## 6 -393125

q1p_table = as.data.frame(table(q1p$MinDiff))

plot(q1p_table$Var1, q1p_table$Freq, xlab = "Difference (Minutes)", ylab = "Frequency", main = "Difference in Post Time & Answer Times")
```



QUESTION 27: How many answers are typically received before the accepted answer?

Here I used the seconds to calculate the difference, as allowing it to all be in the same unit allows for easy math. I used lots of verification using DB Browser for SQLite and comparing to the actual posts themselves.

```
q27 = dbGetQuery(db, "SELECT p1.Id, p1.Id as EarlyPost, (strftime('h', p1.CreationDate) - strftime('h', p2.CreationDate) * 60) as Diff, COUNT(*) as Freq
FROM Posts as p1
LEFT JOIN Posts as p2 ON p1.Id = p2.ParentId
LEFT JOIN Posts as p3 ON p1.AcceptedAnswerId = p3.Id
WHERE (strftime('h', p1.CreationDate) - strftime('h', p2.CreationDate))%60 > 0
GROUP BY p1.Id")

head(q27)

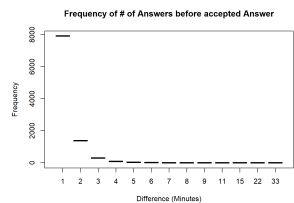
##      Id EarlyPost  Diff Freq
## 1 2      36      36  1
## 2 4      133      4  1
## 3 7      13  5  1
## 4 30     155 4388  2
## 5 35     41  11  2
## 6 35     38  10  1

q27_table = as.data.frame(table(q27$Freq))

head(q27_table)

## Var1 Freq
## 1 1 7690
## 2 2 1380
## 3 3 293
## 4 4 30
## 5 5 20
## 6 6 11

plot(q27_table$Var1, q27_table$Freq, xlab = "Difference (Minutes)", ylab = "Frequency", main = "Frequency of # of Answers before accepted Answer")
```



[1] <https://ranged.com/stackoverflow/how-to-calculate-the-difference-between-two-timestamps-in-sqlite/> (<https://ranged.com/stackoverflow/how-to-calculate-the-difference-between-two-timestamps-in-sqlite/>)

[2] <https://everyday.wordpress.com/2016/11/17/create-a-cumulative-sum-column-in-c/> (<https://everyday.wordpress.com/2016/11/17/create-a-cumulative-sum-column-in-c/>)

[3] https://www.sqltutorial.net/sqlite-group_concat/ (https://www.sqltutorial.net/sqlite-group_concat/)

[4] <https://www.sqltutorial.net/sqlite-distinct/> (<https://www.sqltutorial.net/sqlite-distinct/>)