

Final Report

Key Clue Database System

CPSC 471 Winter 2018

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Group 6

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Definitions:

1. Engg Week: A student organized week of events during the first week of the winter semester. Consists primarily of a series of friendly competitions between the various students' societies in the Schulich School of Engineering.
2. Key Clue: The largest Engg Week competition. Consists of solving a multitude of technical and analytical clues over five days in an attempt to be the first students' society team to find a physical key hidden somewhere within the Calgary city limits.
3. Key Masters: The individuals, typically Schulich School of Engineering alumni, who organize and run the Key Clue event.
4. ZOO: An alias for the Electrical, Computer, and Software Engineering Students' Society at the University of Calgary.

Abstract:

The main goal for this project was to develop a website or mobile app based upon a concept or idea of our choice. For this project, our group (Group 6) have chosen to develop a website to assist the ZOO team (Electrical, Computer, and Software Engineering Students' Society) in the Key Clue competition held every year during the events of Engg week at the University of Calgary. The main audience for this project would be the members of ZOO, who would use this website as a helpful advantage for future years of the Key Clue competition. The website was coded using javascript, php, and html, with the database having been created using mySQL. The final product was built onto and ran through an Apache 2.4 server. The base database was designed and created at the beginning and built upon to design and create the website, with some small tweaks here and there to improve upon the efficiency and performance of the database.

Outlined in this report will be an introduction to the concept of our project (Key Clue), an outline and explanation to the design of the project, some diagrams to show how the database was constructed for the project, information on the implementation and a user manual showing off the created website.

Introduction:

Key Clue is an event run yearly by the Schulich School of Engineering during Engg Week as an opportunity for students to test their investigative, analytical, and technical skills in an environment that is both competitive and friendly in nature. Each engineering department forms a team of students who partake in the event to decode and solve clues throughout the week. Each clue solved will take teams closer to finding a physical key hidden anywhere within Calgary city limits in an Amazing Race style competition.

Historically, many Key Clue teams have had difficulties keeping track of the clues and information they have uncovered throughout the week. Many clues are centered around very small details so even a tiny breakdown in team communication can be the difference between winning and losing. As a result, many teams have difficulty, tracking and organizing the clue information as well as As a solution to these issues, and as individuals who are all heavily involved with ZOO as an organization as well as participants in the Key Clue event,

we have developed a system, to help mitigate and alleviate any and all issues directly related to the difficulties explained above. This developed system is implemented as a website for the ZOO Key Clue team. To give a brief overview (more detail will be provided further in this report), some of the implemented features of the website are, to add/remove clues to the website, edit already added clues, to add a status to a clue (such as if it is solved, unsolved, or timed), to start a discussion with the other members of ZOO's Key Clue team, as well as support the different types of users (normal users, and administrators) and their different functionalities. To accomplish this, a complex database system with multiple schemas is used to store all system information that is integral to the system.

The format of this proposal will be divided into three primary sections. The first section is the Project design section where we discuss the users of the system, provide a complete picture of the functionality of the system, as well as showcase an updated EER diagram of the system. The next section of the report will be the implementation section where we showcase the new/updated RM model of the system while further going into detail on the database that was implemented into the system. Finally, the last section will be a user manual which will inform readers on how to use the system, as well as include images of the completed system.

Project Design:

As previously stated, this system was created solely for the Electrical and Software engineering's Key Clue team. With that being said, the main users of the system will be the members of the Electrical and Software engineering's Key Clue team which consists of mostly software/electrical engineering students (or newly graduated students), however the team may also include students of other degrees as long as they are associated with ZOO or with a member of ZOO. In terms of the actual implementation of the system, we have defined two different types of users. These users consist of administrators and "normal" users, both of which have different options/actions that can be executed in the system. In order to make an account, you have to request it using a link on the systems login page. The request will then be sent to the administrators of the system who can then approve or deny the new account. The system requires the approval of the requests, as since Key Clue is a very competitive competition among each of the engineering faculties we have to make sure that members of the other faculties teams can not access our system.

Once the system is initiated, users will be brought to the login page, where they will login with their credentials. Once their credentials are authenticated with the info on the database, users will be sent to the "select competition year page" where they can choose a competition year to interact with. If the user happens to be an administrator there will also be an option to create a new competition year (the decision to be able to access to multiple years rather than just the current year was made as sometimes keymasters re-use certain types of ciphers or clues from previous years).

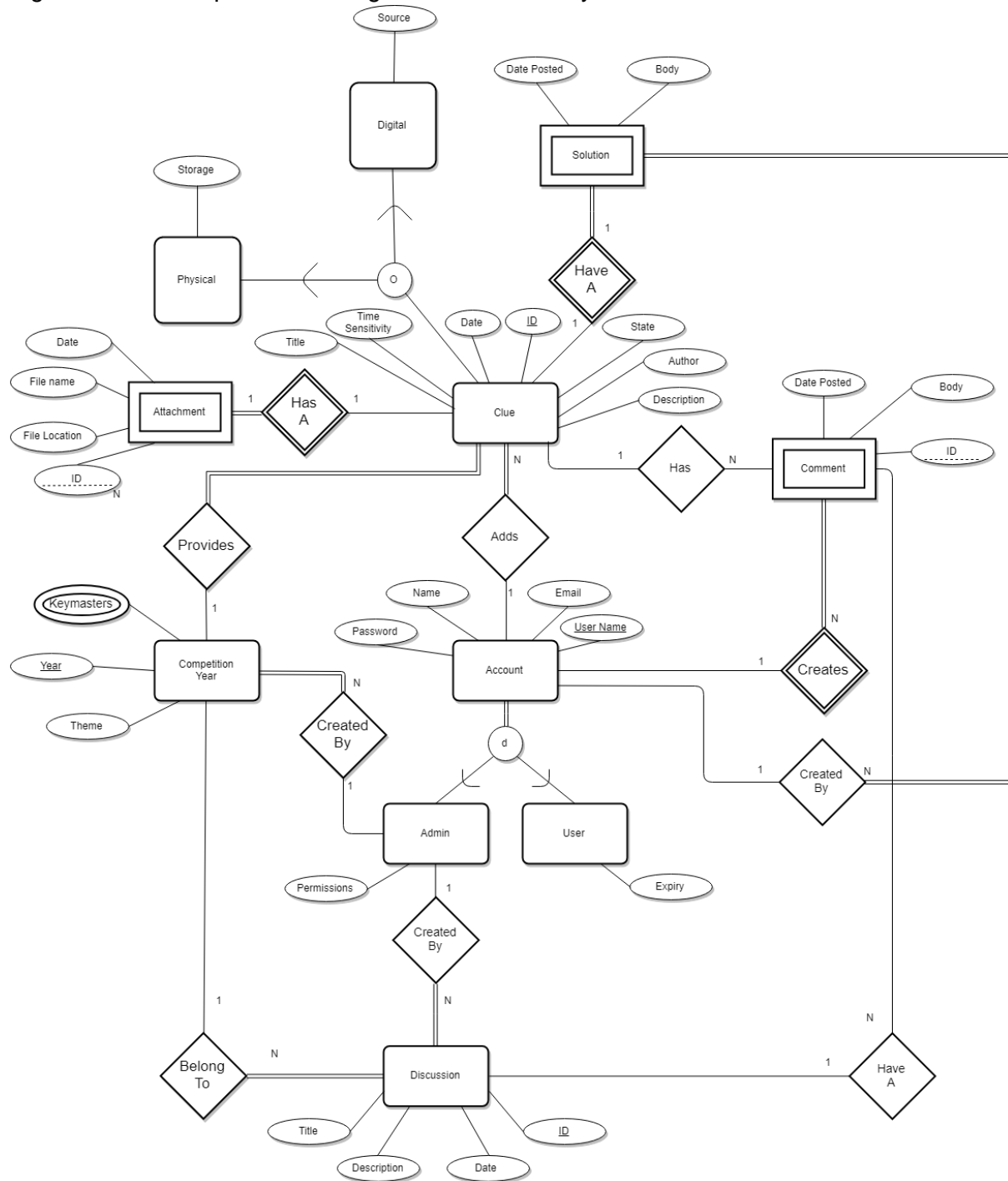
Next, users will be sent to the main page for the selected competition year (Which serves as the main page of the user experience and links users to all other interactive pages in the site). On this page, all clues and discussions can be seen in separate lists (which users can sort by name, date posted, etc.). On this page, users will be able to see all clues and some basic info on each clue (such as the topic, poster, status, original poster, and creation date). The clues status can be in-progress (if it has not been solved yet), solved (if

the solution has been posted), or timed (if the clue is to be completed before a certain date, and will have a countdown timer). On the main page, clues are divided by status. For instance, timed clues will show up in their own section at the top, while unsolved and solved clues will be in their own sections under the timed clues. This page allows users to select a clue which will send them to a new page that includes the clue itself, any associated attachments as well as any comments on the clue made by other team members. On this clue info page, users are also able to add their own comment to the clue. Now back on the main competition year page, users will also be able to see any active discussions and the discussions basic info (such as its name, topic, original poster, as well as its creation date). Similarly to how user access clues, users may also access discussions by simply clicking on the discussion. This will send users to a new discussion info page where they can see the original discussion post, any comments on the post, as well as add their own comments to the discussion. If the logged in user happens to be an administrator, they will have access to all the same features that were explained above, and further have the ability to edit any clues and delete any clue or discussion.

As was explained above, the system was designed to be very intuitive and easy to use, while having a very user centric and logical user interface (In order to better visualize the system, please see the user manual below which contains screenshots of each page on the system). The user interface was made to be as simple as possible to account for the lack of sleep that the team members might have during the competition, as well as to allow users to use the system without training as the Key Clue event is very fast paced and often leaves minimal time for things such as system training.

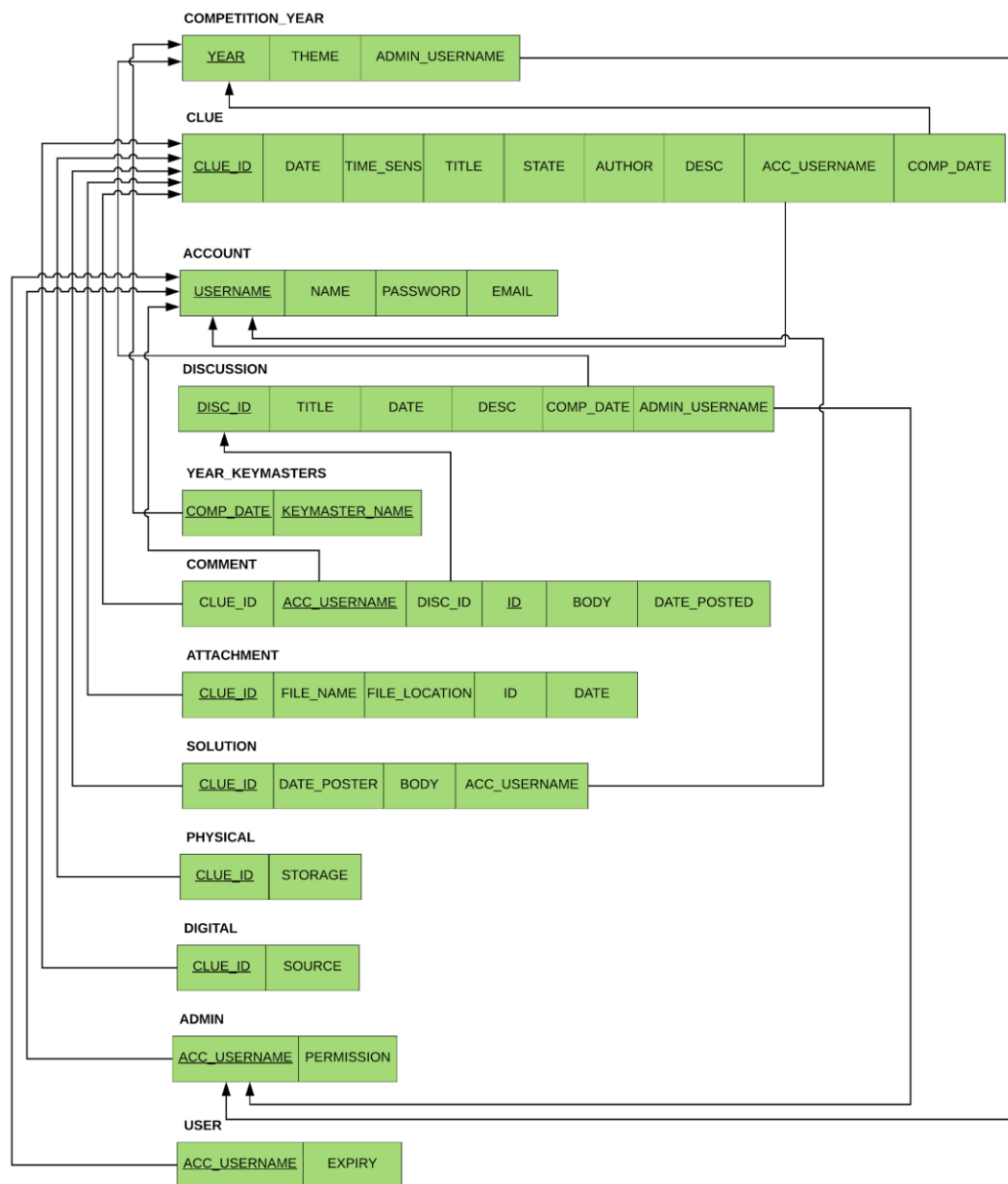
Below in figure 1 our final EER diagram for the system can be seen. This EER diagram is very similar to our original EER diagram, however through the process of creating the program, the EER diagram has encountered a few changes so that it accurately represents the final system. Some of the changes that we made are, added the email attribute to the account entity, got rid of the attachment size attribute from the attachment entity (as it served no actual purpose to the system), removed the author from comment and discussion (as since it is a weak entity it's identifying relationship with account means it inherits the username of the comment maker), removing the author and status attributes from solution (as the state is already apart of the clue entity and the name is inherited from the comment entity), remove the relationship between clue and account (as we realized the relationship was not needed), remove the relationship between competition year and account (as we also realized that the relationship was not needed), and finally created the relation between account and solution as well as the relation between competition year and admin (as we realised these relationships were needed due to the aforementioned changes).

Figure 1: The Complete EER Diagram of Our Final System



Implementation:

Figure 2: The Complete Relational Model of Our Final System



When creating the relational model no unusual decisions were made. For the system itself, we created the database in MySQL for a few reasons. First, we had experience with MySQL from previous courses. Next, MySQL is very stable and has a big community that helps maintain, debug, and upgrade it. Finally, MySQL is the most widely used database software so anyone who wants to run the program will most likely have MySQL and therefore have no problems doing so.

SQL Transactions:

SELECT STATEMENTS

```
SELECT A.Username, A.Password, AD.Permissions, U.Expiry
      FROM account AS A LEFT JOIN admin AS AD
        ON (A.Username = AD.Account_Username) LEFT JOIN user AS U
        ON (A.Username = U.Account_Username)
      WHERE A.Username = ?;
```

```
SELECT CY.Year, CY.Theme, YK.Keymaster_Name
      FROM competition_year AS CY LEFT JOIN year_keymaster AS YK
        ON (CY.Year = YK.Comp_Date)
      WHERE CY.Year = ?;
```

```
SELECT Y.Year
      FROM competition_year AS Y
      WHERE Y.Year = ?;
```

```
SELECT C.ID, C.Date, C.Time_Sensitivity, C.Title, C.State, C.Author,
      C.Acc_Username, P.Storage, D.Source
      FROM clue AS C LEFT JOIN physical AS P
        ON (C.ID = P.Clue_ID) LEFT JOIN digital AS D
        ON (C.ID = D.Clue_ID)
      WHERE C.Comp_Date = ?
        AND C.Time_Sensitivity IS NOT NULL
        AND C.State = 0
      ORDER BY C.ID;
```

```
SELECT C.ID, C.Date, C.Title, C.State, C.Author, C.Acc_Username, P.Storage,
      D.Source
      FROM clue AS C LEFT JOIN physical AS P
        ON (C.ID = P.Clue_ID) LEFT JOIN digital AS D
        ON (C.ID = D.Clue_ID)
      WHERE C.Comp_Date = ?
        AND (C.Time_Sensitivity IS NULL
        OR C.State = 1)
      ORDER BY C.ID;
```

```
SELECT D.ID, D.Date, D.Title, D.Admin_Username
      FROM discussion AS D
      WHERE D.Competition_Date = ?
      ORDER BY D.ID;
```

```
SELECT CY.Year, CY.Theme, YK.Keymaster_Name
      FROM COMPETITION_YEAR AS CY LEFT JOIN year_keymaster AS YK
        ON (CY.Year = YK.Comp_Date)
      ORDER BY CY.Year DESC;
```

```
SELECT D.Title, D.Description
      FROM discussion AS D
      WHERE D.ID = ?;
```

```
SELECT D.Title, D.Date, D.Description, D.Admin_Username
      FROM discussion AS D
      WHERE D.ID = ?;
```

```
SELECT C.Body, C.Date_Posted, C.Account_Username
      FROM comment AS C
      WHERE C.Disc_ID = ?
      ORDER BY C.Date_Posted;
```

```
SELECT C.Title, C.Description, C.Author, C.Time_Sensitivity, P.Storage, D.Source
      FROM clue AS C LEFT JOIN physical AS P
      ON (C.ID = P.Clue_ID) LEFT JOIN digital AS D
      ON (C.ID = D.Clue_ID)
      WHERE C.ID = ?;
```

```
SELECT C.Title, C.Date, C.Description, C.Acc_Username, C.Time_Sensitivity,
C.State, C.Author, P.Storage, D.Source, A.File_Name, A.File_Location
      FROM clue AS C LEFT JOIN physical AS P
      ON (C.ID = P.Clue_ID) LEFT JOIN digital AS D
      ON (C.ID = D.Clue_ID) LEFT JOIN attachment AS A
      ON (A.Clue_ID = C.ID)
      WHERE C.ID = ?;
```

```
SELECT S.Body, S.Date, S.Account_Username
      FROM solution AS S
      WHERE S.Clue_ID = ?;
```

```
SELECT C.Body, C.Date_Posted, C.Account_Username
      FROM comment AS C
      WHERE C.Clue_ID = ?
      ORDER BY C.Date_Posted;
```

```
SELECT Username
      FROM account
      WHERE Username = ?;
```

INSERT STATEMENTS

```
INSERT INTO competition_year
      (Year, Theme, Admin_Username) VALUES (?, ?, ?);
```

```
INSERT INTO year_keymaster
      (Comp_Date, Keymaster_Name) VALUES (?, ?);
```

```
INSERT INTO year_keymaster
      (Comp_Date, Keymaster_Name) VALUES (?, ?);
```

```
INSERT INTO discussion
      (Title, Date, Description, Competition_Date, Admin_Username) VALUES (?,
?, ?, ?, ?);
```

```
INSERT INTO comment
```



```

(Account_Username, Disc_ID, Body, Date_Posted) VALUES (?, ?, ?, ?);

INSERT INTO clue
    (Title, Date, Time_Sensitivity, State, Author, Description,
    Acc_Username, Comp_Date) VALUES (?, ?, ?, ?, ?, ?, ?, ?);

INSERT INTO physical
    (Clue_ID, Storage) VALUES (?, ?);

INSERT INTO digital
    (Clue_ID, Source) VALUES (?, ?);

INSERT INTO attachment
    (Clue_ID, File_Name, File_Location, Date) VALUES (?, ?, ?, ?);

INSERT INTO physical
    (Clue_ID, Storage) VALUES (?, ?);

INSERT INTO digital
    (Clue_ID, Source) VALUES (?, ?);

INSERT INTO attachment
    (Clue_ID, File_Name, File_Location, Date) VALUES (?, ?, ?, ?);

INSERT INTO solution
    (Account_Username, Clue_ID, Body, Date) VALUES (?, ?, ?, ?);

INSERT INTO comment
    (Account_Username, Clue_ID, Body, Date_Posted) VALUES (?, ?, ?, ?);

INSERT INTO account
    (Username, Password, Name, Email) VALUES (?, ?, ?, ?);

INSERT INTO admin
    (Account_Username, Permissions) VALUES (?, ?);

INSERT INTO user
    (Account_Username, Expiry) VALUES (?, ?);

```

UPDATE STATEMENTS

```

UPDATE competition_year
    SET Theme = ?, Admin_Username = ?
    WHERE Year = ?;

UPDATE discussion
    SET Title = ?, Date = ?, Description = ?, Competition_Date = ?,
    Admin_Username = ?
    WHERE ID = ?;

UPDATE clue
    SET State = 0

```

```
WHERE ID = ?;
```

```
UPDATE clue
```

```
    SET Title = ?, Date = ?, Time_Sensitivity = ?, Author = ?, Description =  
    ?, Acc_Username = ?  
    WHERE ID = ?;
```

```
UPDATE attachment
```

```
    SET File_Name = ?, File_Location = ?, Date = ?  
    WHERE Clue_ID = ?;
```

```
UPDATE clue
```

```
    SET State = 1  
    WHERE ID = ?;
```

```
UPDATE account
```

```
    SET Password = ?  
    WHERE Username = ?;
```

DELETE STATEMENTS

```
DELETE
```

```
    FROM clue  
    WHERE ID = ?;
```

```
DELETE
```

```
    FROM discussion  
    WHERE ID = ?;
```

```
DELETE
```

```
    FROM competition_year  
    WHERE Year = ?;
```

```
DELETE
```

```
    FROM year_keymaster  
    WHERE Comp_Date = ?;
```

```
DELETE
```

```
    FROM solution  
    WHERE Clue_ID = ?;
```

```
DELETE
```

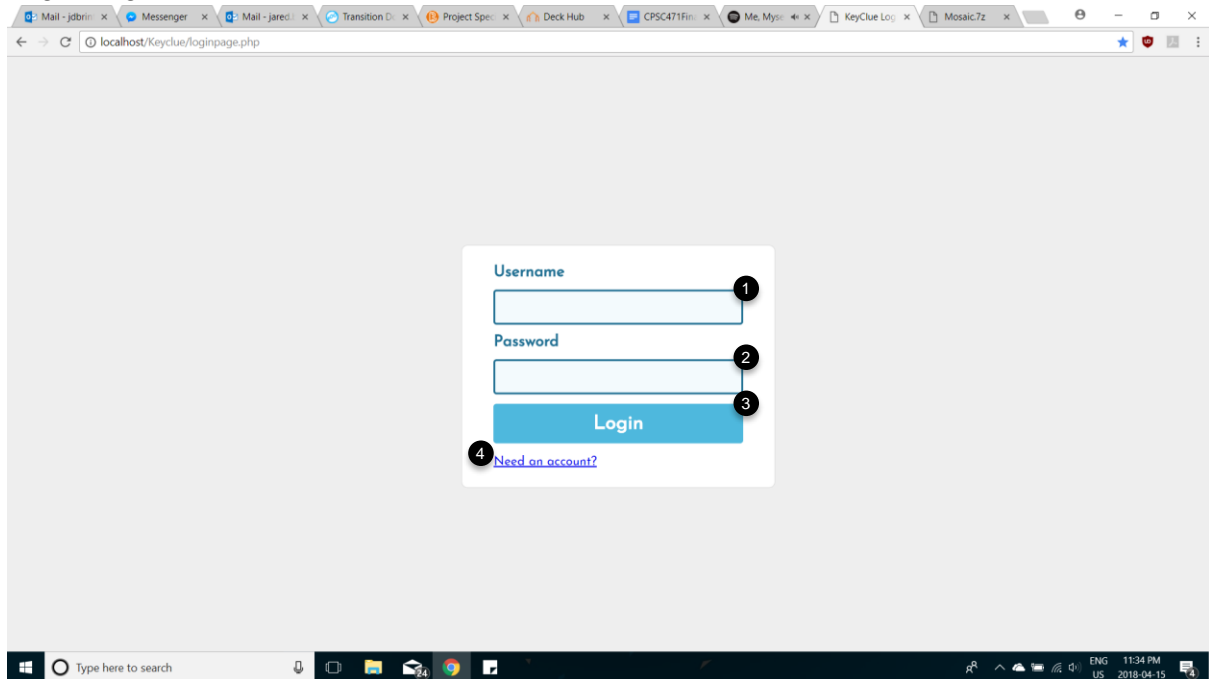
```
    FROM physical  
    WHERE Clue_ID = ?;
```

```
DELETE
```

```
    FROM digital  
    WHERE Clue_ID = ?;
```

User Manual:

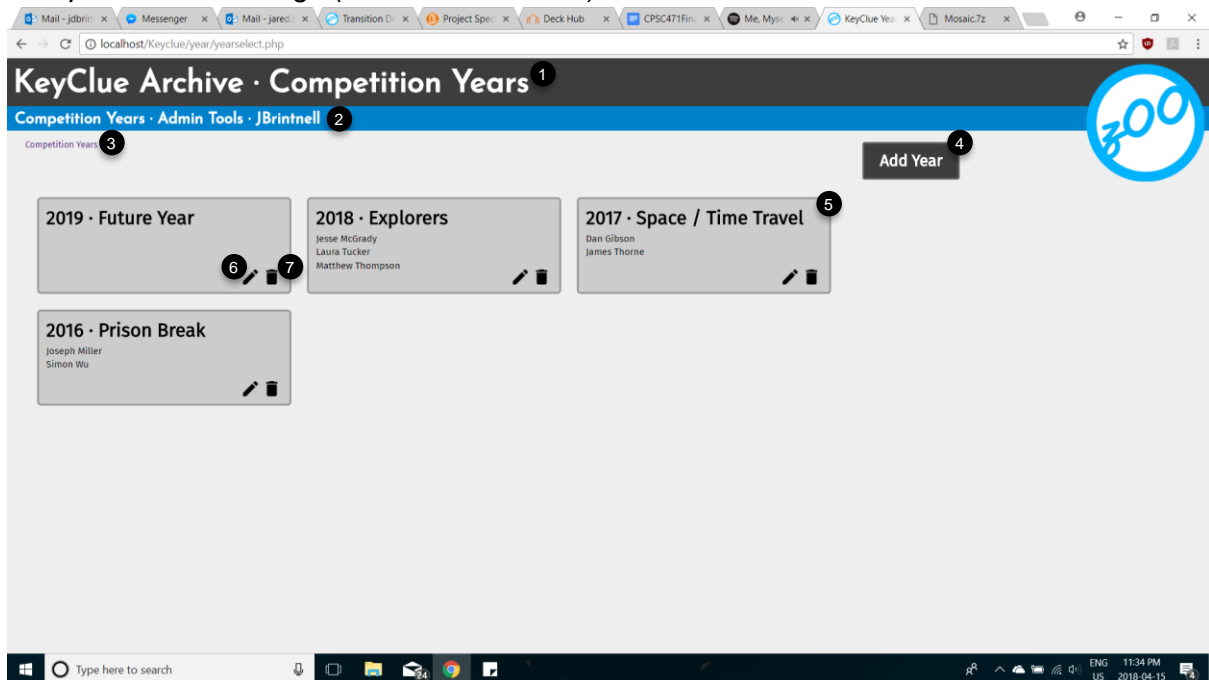
Login Page:



Notes: This page is loaded every time a user tries to access a page without logging in first.

1. The username field.
2. The password field.
3. The login button.
4. A link to email an administrator to get an account created for you.

Competition Years Page (Administrator View):

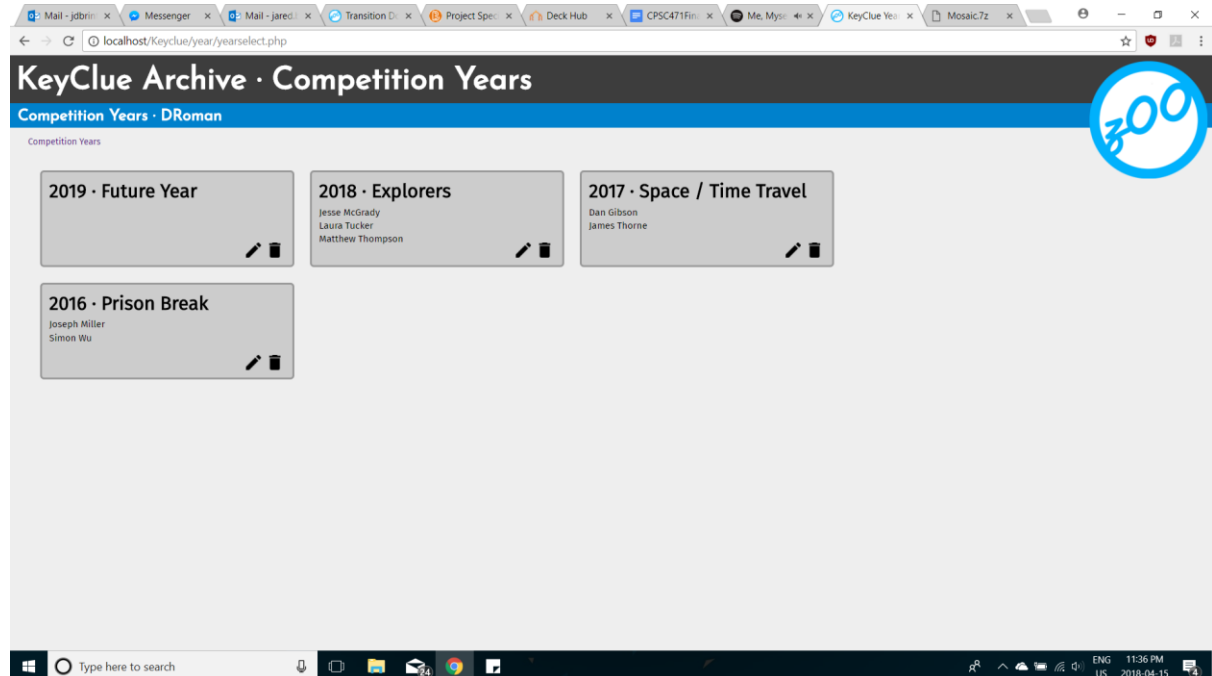


Notes: This page is initially loaded whenever a user logs in. This image shows the competition years view for an administrator. To see the competition years view for a normal user see "Competition Years Page (User View)" below.

1. Menu bar to show current page.

2. *Navigation menus.*
3. *Current page menu.*
4. *Add year button to add a new year to the database.*
5. *Years which have been added to the database, the year and theme are listed first, followed by keymaster names (if any). To open any year simply click anywhere on the year block.*
6. *Edit year button to edit the specific year that it is on.*
7. *Delete year button to delete the specific year that it is on.*

Competition Years Page (User View):



Notes: This page is initially loaded whenever a user logs in. This image shows the competition years view for a normal user. The features on this page are the same as "Competition Years Page (Administrator View)" with add year button, and admin tools removed. Additionally, if a user does not have permission to remove or edit a year they will be unable to do so even if they click the buttons shown above. For the remainder of this user manual, only administrator views will be shown as user views are the same with some restricted features removed.

Manage Account Page:

KeyClue Archive · Manage Account

Competition Years · Admin Tools · JBrintnell

Competition Years >

Change Password

1

2

Change Password

3

Logout

Notes: The view which opens whenever you click your own username on the navigation menu.

1. The field to enter a new password.
2. The button to confirm the changes to your password.
3. The button to logout of your account.

Admin Tools Page:

KeyClue Archive · Admin Tools

Competition Years · Admin Tools · JBrintnell

Competition Years >

Username

1

Password

2

Name

3

Email

4

5 Admin Account

6

Create Account

Notes: This page is opened whenever an administrator clicks on the admin tools button on the navigation bar. This menu is only accessible to administrators.

1. The field to enter the username for a new account.
2. The field to enter the password for a new account.
3. The name of the user who will be receiving the new account.
4. The email of the user who will be receiving the new account.

5. Checkbox to indicate if the new account is an administrator account or a normal user account.
6. The button to submit the new account to be added to the database.

Add Year Page:

KeyClue Archive · Add Year

Competition Years · Admin Tools · JBrintnell

Competition Years · Add Year

Year 1

Theme 2

Number of Keymasters 3

Update Number 4

Submit 5

Notes: The page which is opened when a user selects the add year button from the competition years page.

1. The year for which the competition is being created.
2. The theme of the keyclue competition.
3. The number of keymasters supervising the competition.
4. The button to apply the number of keymasters supervising the competition. Will create new fields dynamically to add the keymasters names. See "Add Year Page (Keymasters Updated)" below.
5. The button to submit the new year to the database.

Add Year Page (Keymasters Updated):

KeyClue Archive · Add Year

Competition Years · Admin Tools · JBrintnell

Competition Years > Add Year

Year

Theme

Number of Keymasters

3

Update Number

Keymaster 1

Keymaster 2

Keymaster 3

Submit

Notes: The add year page after a number has been entered in the number of keymasters field and the update number button has been pressed.

1. The fields to enter the keymasters names.

Edit Year Page:

KeyClue Archive · Edit Year 2017

Competition Years · Admin Tools · JBrintnell

Competition Years > Edit Year 2017

Year: 2017

Theme

Space / Time Travel

Number of New Keymasters

2

Update Number

Submit

Notes: Identical to add year page, however the year is set and cannot be changed, and the theme and number of keymasters are remembered from the year which is being edited. If keymasters are known, they **MUST** be retyped into the keymaster name fields.

Edit Year Page (Keymasters Updated):

Notes: The edit year page after a number has been entered in the number of keymasters field and the update number button has been pressed.

View Year Page:

Time Sensitive Clues

Clue ID	Title	Author	Date	Status	Time Remaining	Created By	Type	Action
83	Letter Preceding Christopher McCracken's Death	Christopher McCracken	2018-04-15 23:19:20	TIMED	1d 12h 53m 13s	DRoman	physical	👁️ ✎️ 🗑️

Clues

Clue ID	Title	Author	Date	Status	Created By	Type	Action
81	Temperature Sensitive Clay Pot with Hieroglyphics	Laura McCracken	2018-04-15 22:41:29	INCOMPLETE	JBrintnell	physical	👁️ ✎️ 🗑️
82	Historian Email	McCracken Family	2018-04-15 23:01:29	COMPLETE	MNewell	physical	👁️ ✎️ 🗑️
84	Number Box Sequence	Unknown	2018-04-15 23:23:18	INCOMPLETE	JBrintnell	unknown	👁️ ✎️ 🗑️
85	Mosaic.7z	Christopher McCracken	2018-04-15 23:26:02	INCOMPLETE	DRoman	physical/digital	👁️ ✎️ 🗑️

Discussions

Disc ID	Title	Date	Created By	Action
33	Contact Information	2018-04-15 22:48:20	JBrintnell	👁️ ✎️ 🗑️
34	KeyClue Email	2018-04-15 22:49:23	JBrintnell	👁️ ✎️ 🗑️
35	Email Correspondence with the McCrackens	2018-04-15 22:52:56	MNewell	👁️ ✎️ 🗑️

Notes: The view that appears after the a user selects a year to view details for.

1. The button to add a clue.
2. The button to add a discussion.
3. Time sensitive clues (if none exist, this menu will disappear).
4. Non-time sensitive clues (if none exist, this menu will disappear).
5. Discussions (if none exist, this menu will disappear).
6. Buttons to sort clues, clicking once will sort the contents ascending by that field, clicking again will sort by descending (if both orders are not the same).

7. *Action buttons. In order, the eye allows the user to view the clue or discussion. The pencil allows the user to edit the clue or discussion. The garbage can allows the user to delete the clue or discussion.*

Add Clue Page:

KeyClue Archive · Add Clue

Competition Years · Admin Tools · JBrintnell

300

1 Title

2 Author

3 Digital Source

4 Storage Location

5 Time Limit
yyyy-mm-dd --:-- --

6 Description

7 File
Choose File No file chosen

8 Submit

Notes: The page that opens when the add clue button is clicked.

1. The field to enter the clue title.
2. The field to enter the theoretical author of the clue (ie. who emailed the clue, who wrote the clue in the context of the theme).
3. The field for the digital source of the clue (if any).
4. The field for the physical storage location of the clue (if any).
5. The field for the time limit to complete the clue (if any).
6. The field for the description of the clue.
7. Upload section to upload a file for the clue (if any).
8. The button to submit the clue.

Edit Clue Page:

localhost/KeyClue/archive/editclue.php?clue_ID=83&year=2018

KeyClue Archive · Edit Clue #83

Competition Years · Admin Tools · JBrintnell

Competition Years > Edit Clue#83

Title
Letter Preceding Christopher McCracken's Death

Author
Christopher McCracken

Digital Source

Storage Location
ZOOoffice

Time Limit
yyyy-mm-dd --:--:--

Description
Letter written by Christopher McCracken before he died is attached. We have reason to believe this clue must be completed before April 17 at 12:30pm.

File
Choose File No file chosen

Submit

Notes: The page that opens when the edit clue pencil is clicked. Is identical to the add clue page, however the fields contain information from the clue which is being edited.

Add Discussion Page:

localhost/KeyClue/discussion/adddiscussion.php?year=2018

KeyClue Archive · Add Discussion

Competition Years · Admin Tools · JBrintnell

Competition Years > Add Discussion

Title 1

Description 2

Submit 3

Notes: The page that opens when the add discussion button is clicked.

1. The field to enter the discussion title.
2. The field to enter the discussion description.
3. The button to submit the discussion.

Edit Discussion Page:

Mail - jdbri... Messenger Mail - jared... Transition D... Project Spe... Deck Hub CPSC471Fin... Games C... KeyClue Ed... Mosaic7z

localhost/Keyclue/discussion/editdiscussion.php?ID=33&year=2018

KeyClue Archive · Edit Discussion #33

Competition Years · Admin Tools · JBrintnell

Competition Years · Edit Discussion #33

Title

Contact Information

Description

For anyone new to the ZOO KeyClue team, feel free to post your contact info here for others to get in touch with you.

Submit

Type here to search

ENG US 11:37 PM 2018-04-15

Notes: The page that opens when the edit discussion pencil is clicked. Is identical to the add discussion page, however the fields contain information from the discussion which is being edited.

View Clue Page:

KeyClue Archive · Clue #85

Competition Years · Admin Tools · JBrintnell

Competition Years

Mosaic.7z

Contents of unlocked Mosaic.7z folder:

1523856362_Mosaic.7z.0

Currently Stored: ZOO Homeroom · Clue Source: Day-1 USP

INCOMPLETE · Author: Christopher McRacken

8 DRoman 2018-04-15 23:26:02

9

10 I have a possible solution for puzzle 2 and an updated key on paper in ZOO homeroom if someone wants to look at it.

MNewell 2018-04-15 23:28:03

Got solution for all logic puzzles: <https://imgur.com/a/xmEbg>

JBrintnell 2018-04-15 23:29:27

Added a filled in key: <https://imgur.com/a/xmEbg>

JBrintnell 2018-04-15 23:30:04

The key maps a sequence of 3 colors to a character. Purple yellow cyan to 0, for line 1. Go through each pixel of the mosaic image and we should get a string.

DRoman 2018-04-15 23:30:42

Decoded Mosaic: 1000908011160910009080111 0009080111609100090801116 2010043160A08011100321003
2080471003216090801108011 1000916091000916091000916 2008053080121609100320804
0162710039160908011080110 8011160908011100091609100 4310010100091003210032100
3208047162708011080110801 1160908011080110801110009 1004308012100090801108047
0804710009100090801110009 1609100091000916090805310 0100801108011080400804710
0390801116090801116090801 1100090801116091628100100 8011080110804010032162716
2710009080110801116090801 1080111609100430801208011 0801110032100321003210039
1627160916091000910009160 91609080111628160A0801110 0091609100391627080111003
2160908011100091609160910 0091628100101000916090801 1100321627100391000910009
0801116090801116090801110 0431001016091609100091620 1003210039162710009100091
0009160908040100430805310 0431628162808053162810010 1000916091000910032100321
0032162716270804708047100 3908047162716270804710039 0804710039100391627080471
0039080400805308012160916 0908011080401628100431628 1628100431628080530805308
0530805308053100431004310 0431628100430805310043162 8100101000916091620162816
2808053080530801116091000 9100091003216200804710010 1003210043080531004310043
1004310043080531004310043 1000910009100091000908011 1620080401627160A08011100
0916090801108011080111000 9100321620162708012080111 0009080110801110009160916
09100321003208047160A0801 1100091000908011160908011 1000916200804008047160A10
0091000916091000916091000 9080110804010032080471001 0160910009160908011100090
8011160908040080400804710 0101609100091609160916091 6091609100321620100390801
2100091000908011080110801 1080110801108040162016270 8012100090801110009080111
6091000910009100321003216 2710010100091609080111000 9100090801116091003216200
8047080120801108011080111 0009160910009080111003210 0320804708012100091609160
9080111609080111000916200 8040162708012080111000916 0916091000916090801110032
1620162710010100090801110 0090801108011100091609162 016201627

DRoman 2018-04-15 23:32:59

New Comment

11

12 Solution

Submit

13

Notes: The page that opens when the view clue eye is clicked. If a solution has been added for the clue, the solution will appear immediately after the clue header, but before comments start.

1. The title of the clue.
2. The description of the clue.
3. The attachment of the clue (if any).
4. The storage location of the clue (if any).
5. The digital source of the clue (if any).
6. The completion status of the clue.
7. The author of the clue.
8. The account who created the clue.
9. The date the clue was created.
10. Comments on the clue.
11. The field to type a new comment.

12. The checkbox to notify that the comment added is the solution to the clue (if the solution already exists, then this box will disappear).
13. The button to add the comment.

View Discussion Page:

The screenshot shows a web browser window displaying the 'KeyClue Archive · Discussion #33' page. The browser's address bar shows the URL 'localhost/Keyclue/discussion/readdiscussion.php?ID=33&year=2018'. The page has a dark header with the title 'KeyClue Archive · Discussion #33' and a blue navigation bar with links for 'Competition Years', 'Admin Tools', and 'JBrintnell'. A blue circular logo with the number '300' is in the top right corner. The main content area is light gray and contains several sections: a 'Contact Information' box with a title (1) and a description (2); a comment by 'JBrintnell' (3) with a timestamp (4); a comment by 'Jared Brintnell' (5) with a timestamp; a comment by 'Davis Roman' with a timestamp; a 'New Comment' text input field (6); and a blue 'Submit' button (7). The Windows taskbar is visible at the bottom with the search bar and various application icons.

Notes: The page that opens when the view discussion eye is clicked.

1. The title of the discussion.
2. The description of the discussion.
3. The account who created the discussion.
4. The date the discussion was created.
5. Comments on the discussion.
6. The field to type a new comment.
7. The button to add the comment.

References:

Elmasri, R., & Navathe, S. B. (2017). *Fundamentals of database systems*. Hoboken, NJ: Pearson.

Appendix A – Sample Data:

Account:

	Username	Name	Password	Email
	DRoman	Davis Roman	\$2v\$10\$c40bow/...	davis.roman@ucalgarv.ca
	JBrintnell	Jared Brintnell	\$2v\$10\$NZbtJ/8N...	idbrintnell@outlook.com
	JDoe	John Doe	\$2v\$10\$mXdHBoC...	idoe@gmail.com
	MNewell	Mitchell Newell	\$2v\$10\$b5EUdOV...	mitchell.newell@ucalgarv.ca
	NULL	NULL	NULL	NULL

Admin:

	Account_Username	Permissions
	JBrintnell	admin
	MNewell	admin
	NULL	NULL

Attachment:

ID	Clue_ID	File_Name	File_Location	Date
23	82	1523854889 HistorianEmails.ico	../files/2018/04/16/	2018-04-15 23:01:29
24	83	1523855960 DeathNote.ico	../files/2018/04/16/	2018-04-15 23:19:20
25	84	1523856198 attachment.txt	../files/2018/04/16/	2018-04-15 23:23:18
26	85	1523856362 Mosaic.7z.zip	../files/2018/04/16/	2018-04-15 23:26:02
NULL	NULL	NULL	NULL	NULL

Clue:

[illegible]

Comment:

	ID	Account_Username	Clue_ID	Disc_ID	Body	Date_Posted
	50	JBrintnell	NULL	33	Jared Brintnell Phone: 403-111-2222 Email: iare...	2018-04-15 22:50:19
	51	MNewell	NULL	35	"ZOO" (What an odd name!). Thank you so mu...	2018-04-15 22:53:27
	52	MNewell	82	NULL	On first run-through I am getting: harlev.warn...	2018-04-15 23:02:12
	53	DRoman	82	NULL	Ran through it a second time and also got: harl...	2018-04-15 23:04:00
	54	JBrintnell	82	NULL	KM's confirmed this is the answer by email	2018-04-15 23:05:29
	55	JBrintnell	82	NULL	Email to Harlev has been sent!	2018-04-15 23:06:14
	56	JBrintnell	NULL	35	Team Zoo. After an excellent holiday season wi...	2018-04-15 23:07:00
	57	JBrintnell	NULL	35	Team Zoo. We would like to meet a few repres...	2018-04-15 23:07:11
	58	DRoman	NULL	35	Team Zoo. I've spoken with Matt and Laura an...	2018-04-15 23:07:59
	59	DRoman	NULL	35	Team Zoo. Due to today's less than conspicuo...	2018-04-15 23:08:39
	60	DRoman	NULL	33	Davis Roman Phone: 403-222-3333 Email: davis...	2018-04-15 23:12:28
	61	DRoman	NULL	34	Can you send us the password separately?	2018-04-15 23:13:13
	62	JBrintnell	83	NULL	Transcribed: November 20, 2017 Mv Colleau...	2018-04-15 23:20:13
	63	JBrintnell	83	NULL	Still working on a solution.	2018-04-15 23:20:32
	64	MNewell	85	NULL	I have a possible solution for puzzle 2 and an u...	2018-04-15 23:28:03
	65	JBrintnell	85	NULL	Got solution for all logic puzzles: https://imour.c...	2018-04-15 23:29:27
	66	JBrintnell	85	NULL	Added a filled in key: https://imour.com/a/xmEba	2018-04-15 23:30:04
	67	DRoman	85	NULL	The key maps a sequence of 3 colors to a chara...	2018-04-15 23:30:42
	69	DRoman	85	NULL	Decoded Mosaic: 100090801116091000908011...	2018-04-15 23:32:59
	NULL	NULL	NULL	NULL	NULL	NULL

Competition_Year:

	Year	Theme	Admin_Username
	2016	Prison Break	JBrintnell
	2017	Space / Time Travel	JBrintnell
	2018	Explorers	JBrintnell
	2019	Future Year	JBrintnell
	NULL	NULL	NULL

Digital:

	Clue_ID	Source
	85	Dav-1 USB
	NULL	NULL

Discussion:

	ID	Title	Date	Description	Competition_Date	Admin_Username
	33	Contact Information	2018-04-15 22:48:20	For anyone new to the ZOO KevClue team, feel...	2018	JBrintnell
	34	KevClue Email	2018-04-15 22:49:23	The KevClue email is: kevclue@zoocoo.ca It c...	2018	JBrintnell
	35	Email Correspondence with the McCrackens	2018-04-15 22:52:56	Post any emails from the McCrackens here!	2018	MNewell
	NULL	NULL	NULL	NULL	NULL	NULL

Physical:

	Clue_ID	Storage
	81	ZOO Homeroom Fridae
	82	ZOO fice
	83	ZOO fice
	85	ZOO Homeroom
	NULL	NULL

Solution:

	Clue_ID	Date	Body	Account_Username
	82	2018-04-15 23:04:15	harlev.warner48@gmail.com	DRoman
	NULL	NULL	NULL	NULL

User:

	Account_Username	Expiry
	DRoman	2019-04-16
	JDoe	2019-04-16
	NULL	NULL

Year_Keymaster:

	Comp_Date	Keymaster_Name
	2016	Joseph Miller
	2016	Simon Wu
	2017	Dan Gibson
	2017	James Thorne
	2018	Jesse McGradv
	2018	Laura Tucker
	2018	Matthew Thompson
	NULL	NULL