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## Professional Self-Assessment

Over the last two years working on my computer science degree has proven to be both challenging and beneficial to my career and professional goals. The coursework that I completed throughout this program has given me a wide array of knowledge that will allow me to work within the computer science industry in a plethora of different fields. Some memorable strengths that I believe will help me be successful include my courses in agile, various programming languages, networking, and security. I believe that these courses provided the basis for many of the needed traits to enter into the IT realm. With these skills I can move forward and working as a team, collaborating with stakeholders, analyzing data structures and algorithms, software engineering, database development, and security analysis.

For this project I chose a very challenging task but I feel this was a great synopsis of what my overall program was comprised of. While challenging it provided a great way for me to exemplify the multiple skills that I have gained over the last two years. This project allowed me to utilize a programming language Java, the utilization of algorithms by ensuring that it is secure and the utilization of loops, and finally the development of a database structure and utilization of SQL. Prior to this course I had very little to no education in terms of computer science and much of the experience I had was self-taught. This program allowed me to expand my horizons and gain a formal education on the various benefits of technology and the applications that can be applied to within our culture and society. Technology is an ever-expanding industry that is evolving every year. I hope in the coming years I am able to develop a strategic path in one particular area of technology. As it stands I am interested in programming and networking with a slight interest in database administration. This project allowed me to put to test these passions

and allowed me to gain a better understanding of what I would like to work on in terms of expanding my knowledge further.

## Software Design/Engineering

### Describe

Over the past two years of attending Southern New Hampshire University, I have learnt many concepts in software development. Starting from designing, testing, and finally developing the software. Both classes and research have been the main source of my knowledge and skills in the field. Although, I have had some experience in various capacities. So far, I have created standalone and web-based software. I did this by applying skills that I have obtained that include Python API's and their integration with databases such as MySQL, and MongoDB.

Programming languages like java, python have various drivers that can be used to connect applications (desktop or web-based) to the target database as mentioned previously.

To enhance my skills in this field, I plan on building a desktop application using either python or java that will be able to store and retrieve data from a remote database. This plan will help me to become more proficient in handling CRUD processes with the help of the selected programming language and its database drive.

The artifact that I chose was a continuance on my original plan built off the precipice of my Python class that had directories and search functions within it as well as user input. I've modified this program and steered away from Java so in essence I started from scratch based on the idea from the Python course. I decided that Java was the best route to go as I have more experience when it comes to tying Java in with database structures. Additionally, I also have a better understanding of creating pop out windows and applications within Java than I do with

Python. The original Python project was created in 2018 and have definitely used some references from Git to assist me in completing this project.

### Justify

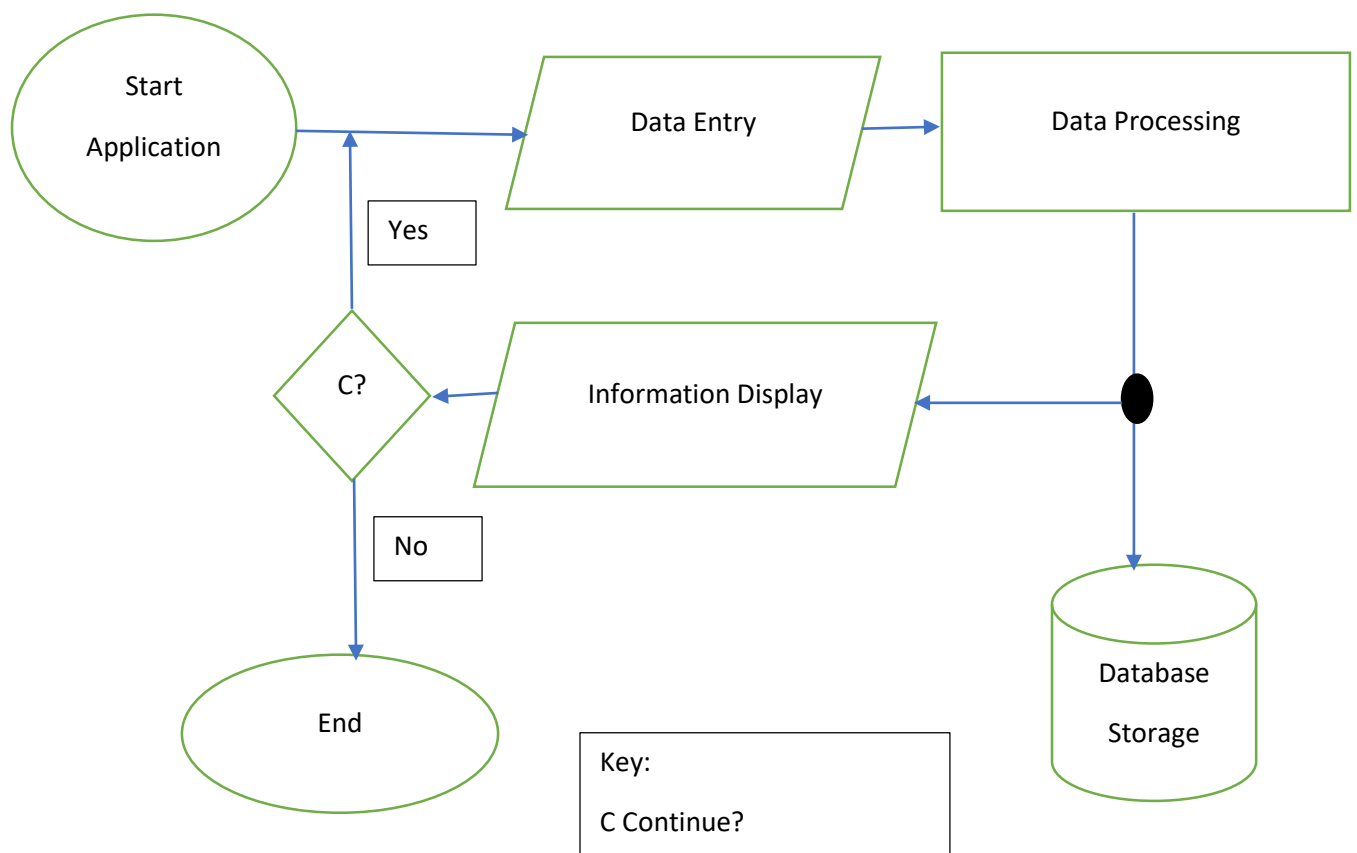
Including this artifact in my ePortfolio I believe gives people view of my depth and breadth in terms of programming skills. This project is by no means easy and has been something that I've had to do research on. I selected this item because I felt that it encompasses all criteria needed as a final project for my computer science program. For this iteration of the project I started by laying out the various import classifications laying out the resources needed for the creation of the box that the questions will lie in as I mentioned previously though be a register the login button there will also be an ad delete view and update field as well. I've set the primary JavaScript to be able to sync with this SQL database that I'm still working on developing but it will still utilize that crud model and give people the ability to make changes. Also within this artifact I added a class for adding users there will be additional resources needed to verify what type of users there will be but for now I am putting this placeholder end to show that there will be fields for user types. Additionally, I added the main piece of my search program which is referencing the resources themselves being a string looking at it price resource type connection to the SQL database and then out more than likely be adding additional ones I'm as we progress to the course.

### Refelct

For this artifact I believe I laid the groundwork for the coming modules. I laid out word like the application to look like in the functionality that I wanted to have. The next steps are to get it to function correctly and to be able to integrate the various parts that I said I would integrate based on the plan that I presented in module one.

I believe that I met the course objective that I plan to meet with this enhancement I did choose a language which is Java and I did incorporate the beginnings of a type of database which will be SQL rather than Mungo DB. I am still a little concerned with the database functionality of it but I believe I am on course and will continue to work towards that goal as the course progresses.

When reflecting on the enhancements for this artifact I would say that I learned that it can be very intricate and take time to figure out how everything fits and functions together. I remember one of my first courses was developing pseudocode and I can see now the importance of that because I need to have an understanding of how everything is going to function together rather than jumping in and trying to code.



## Data Structures and Algorithms

### Describe

Throughout my education I have learned much more skills in Data Structures and algorithms, which is important seeing as it is a major key in software development. I enjoy data structures and algorithms as they are more helpful when it come to developing methods to solve search programs. Through research and course content, I have been able to also learn more about search algorithms, both linear and binary. In both instances they determine the time taken to search or retrieve data depending on the size of the supplied input. Some know algorithms are more reliable and can take little time to search and retrieve while others can take much longer. With linear search, it means if we have 100 items, then the search involves moving to each item with the specified item. For binary, it can be much different. The input can be split into two parts and the search begins on the divided input until the item is found. To enhance my skills on data structures and algorithms, I can develop a module within my previously mentioned project and the module can act as a “search engine”, a place where the user will enter a hint and the program will use a known search algorithm like DFS or BFS to retrieve from storage locations. This program will enable me to apply my skills of both binary search and linear search in real life situations.

The artifact for this enhancement was created in 2020 and is an additional add-on from a previous build in the last module. This is a search type program that will reference various resources in a database built on Java and SQL. For this artifact I chose to add the security piece that will reference a password and also a search piece that will help from user inputs.

### Justify

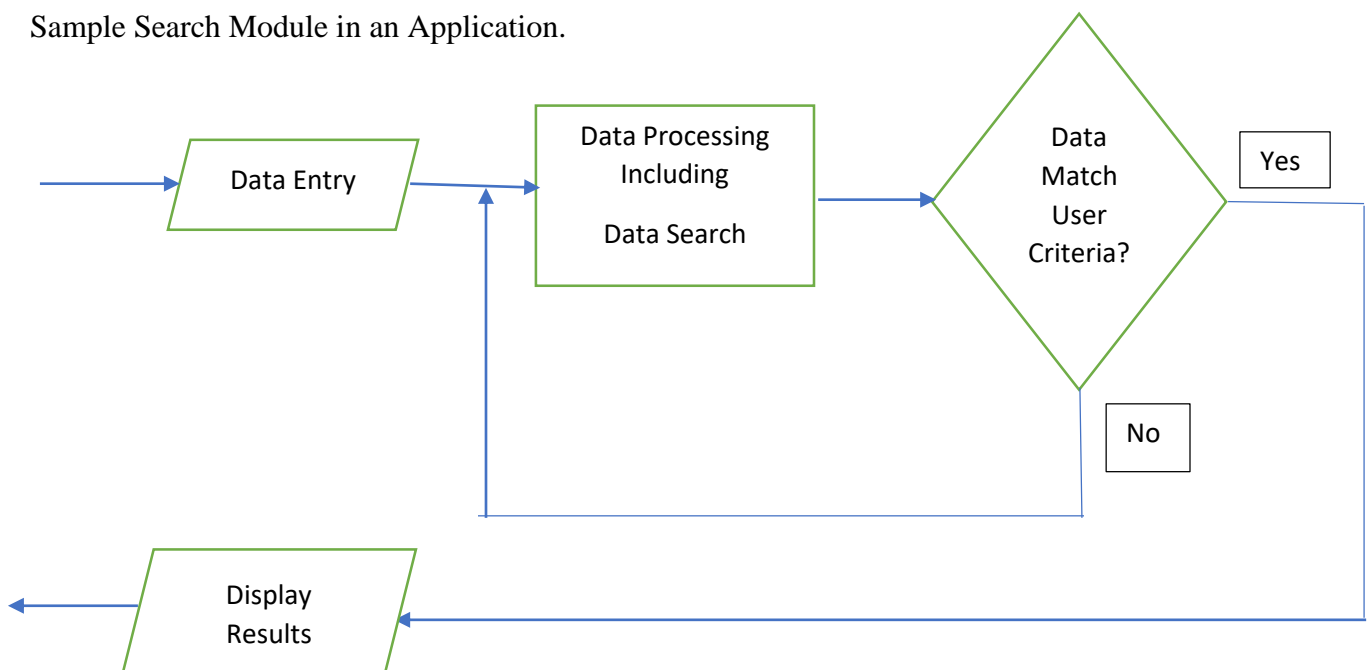
I believe that adding this inclusion in my ePortfolio will show off my ability to work with algorithms which isn't my strongest suit. The artifact is improved by adding in the security

features that reference a password and username as well as adding in the search function and being able to search for information. I believe I met the course objective based on my plan that I presented in module one. However, I am still having a struggle with the implementation of the program and there are still some issues with the running the software is presented. I have high hopes that I will be able to implement this project by the conclusion of the course.

### Reflect

The enhancement process for this was challenging I've done other projects before that utilized passwords and usernames as well as algorithms to determine where the pull information from. I struggled to create the application without errors and am still working to get bugs worked out for the functioning program. I believe there was a little bit of a misunderstanding on my part again keep going back and forth where I thought that this was supposed to be one concurrent program throughout the course with the conclusion being our capstone. But as I read it appears like I should've chosen a program that I created already and improved upon it in some way shape or form. Hopefully by me working on a program that will have a capstone at the end for completion will give me enough to pass the course. If not, I can take the necessary steps to pull other programs to redo these.

Sample Search Module in an Application.





## Databases

### Describe

Throughout my education I have spent a great deal of time learning about the creation of databases, the organization of data in databases and the managing of databases. With the primary database languages being MongoDB and MySQL. I have been able to gain a lot of knowledge and skills from many of the units in my course and through research. The creation of the database involves coming up with the what I want to utilize as a database management system software. In MongoDB, after installing the software and using the terminal, I start the MongoDB and through that I can create a database by using the appropriate commands like *use dbname*. Most of the processes with database involved a CRUD process which included; Create, Reading, Updating and Deleting. We can create tables in the database, we can Read or retrieve data from the created tables or collections, we can update existing data in the collections documents and also delete existing data. For this course and to enhance my skills in this field, I will utilize databases on the project mentioned above. Developing a software as mentioned such as a real-life record management system, where records will be stored on a remote database. This project will help me apply all the skills I acquired in the database classes and I will be able to choose the appropriate database to utilize, whether MySQL, MongoDB or others as my research progresses. This should further enhance my skills on creating tables and their relationships in the database. Finally, I should be able to update my database and also delete data in that database.

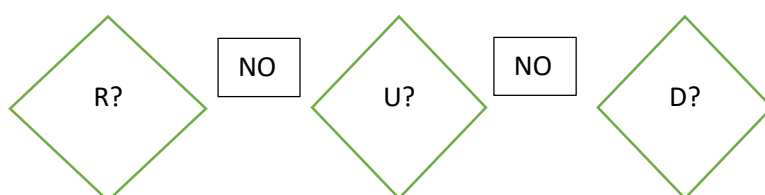
## Justify

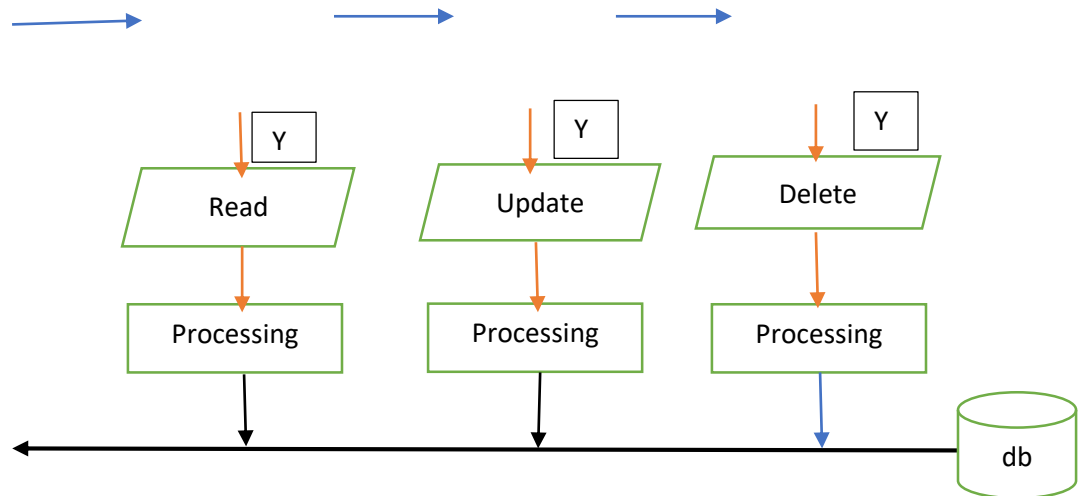
The artifact for this enhancement was created in 2020 and is an additional add-on from a previous build in the last module. This is a search type program that will reference various resources in a database built on Java and SQL. For this artifact I added the ability to connect to the SQL database and pull resources. Connecting to the SQL database will list out when the user is connected and not connected and will pull on resources like usernames and passwords.

I selected this item because it's definitely something that is anything for me. Databases can be challenging and tricky especially pulling and pushing to one. I'm working on this resource database to connect to this SQL database and to be able to create and update information. I believe having this in my ePortfolio will show off my ability to work in SQL database environment and the ability to create an outward facing user interface.

## Reflect

I believe I'm at the course objective in the plans mentioned in module one. In module one I was torn between MySQL and Mungo DB of those I chose MySQL. This database will be able to utilize the crud process. The process for creating this was very difficult and still has serious issues that I'm working out. I'm using a local SQL server that it connects to and should have no difficulty setting it up connect to set up a test user list there are definitely variables that I'm working to complete and the code is not clean. As I progress through this course in the coming modules I will be cleaning up my code and ensuring that it is functional with reference texts so that if a user wishes to try the application that they will have that ability. Again I believe that I bit off the lot in this project maybe it was from a misunderstanding in the milestones but I'm happy that I'm working on it and believe that I'm on the right track for completion.





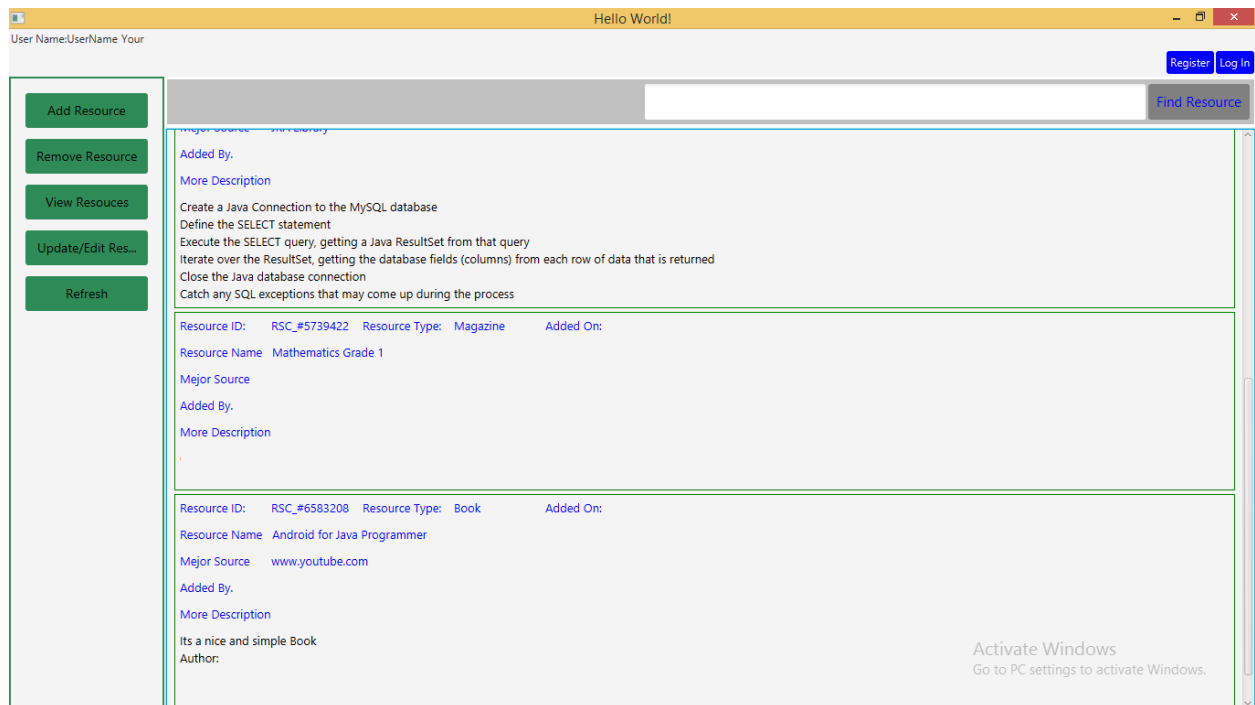
## ePortfolio Overall

For my ePortfolio, my first enhancement plan on software design will perfect my skills on software development testing and also deployment. From my research, each programming language, though they may have the same method of deployment, they have different software for creating the final application or installer for deployment. When comparing to a web-based application getting a host to publish your website is much easier than deploying a standalone application. Secondly, my plan on enhancing my database skills will target perfecting database management in terms of database creation, updating database records, deleting database records and reading records using a computer application. However, choosing the best programming language with a vast network of documentation on using connectors and also if the final product will be compatible with all operating system may be a potential problem. In the end, my plan on enhancing data structures and algorithms will improve my knowledge on creating algorithms that can be used in real life situations.

## Description of Artifact – Github

<https://github.com/JeremyPetty/ePortfolio>

I created the application using java language utilizing netbeans. The application communicates with a web based database (MySQL) to retrieve, update, delete and insert data to database table. This information is pulled and pushed between the database server and the application on the desktop.



The application is meant to help students locate resources in various ways. The application can be modified to include additional resources as well as additional fields and his application proves is a beta test for a larger module that can be created. It has several modules.

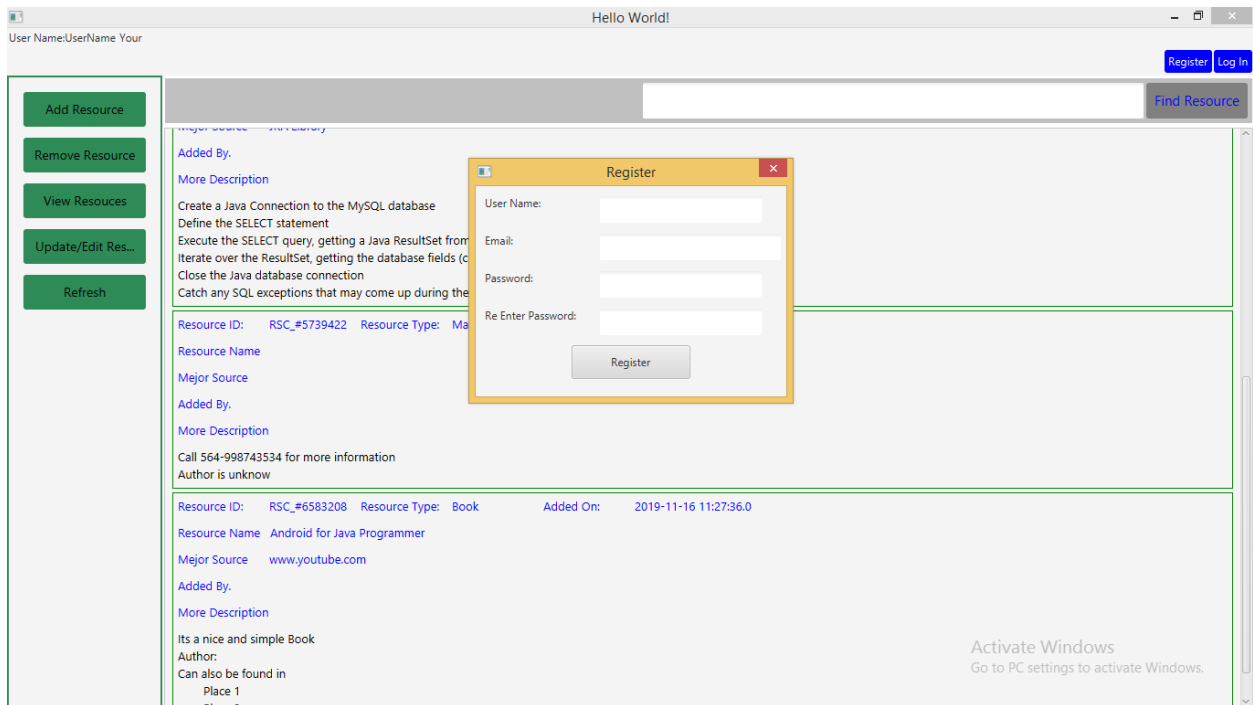
1. Log in
2. Registration
3. Add Resource
4. Remove Resource

## 5. Search resource

## 6. Update Resource

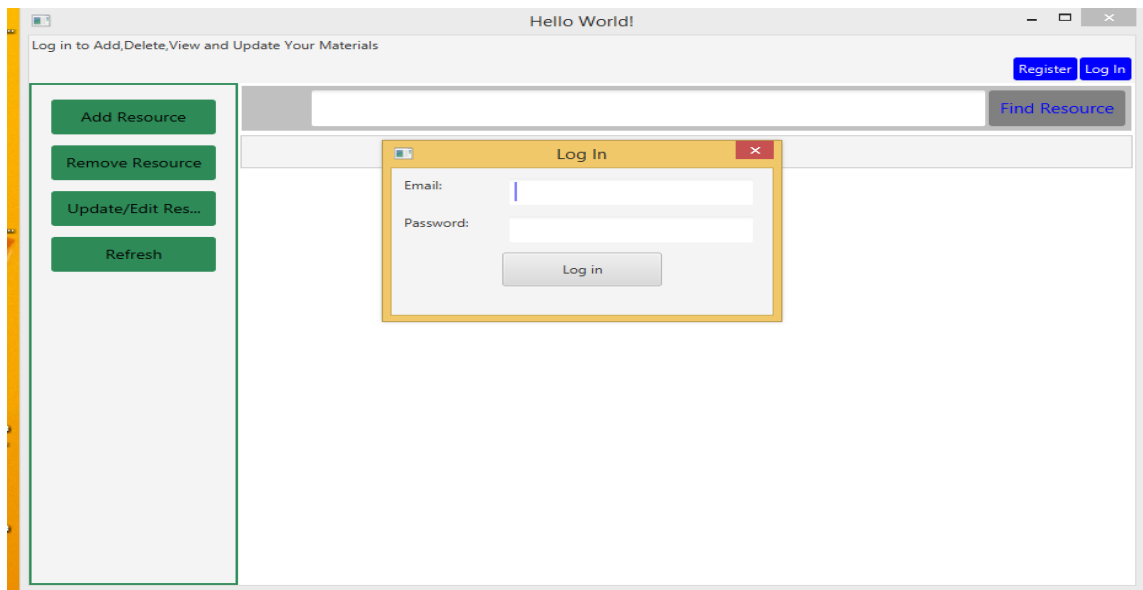
### Registration

Anyone with the application can view the shares resources. In order to share your own resource, you need to create an account. The user provides details like user name, password and email in order to be registered. (Selection statements have been used to check if user already exists before registration. INSERT statements are used to register the client in our database).



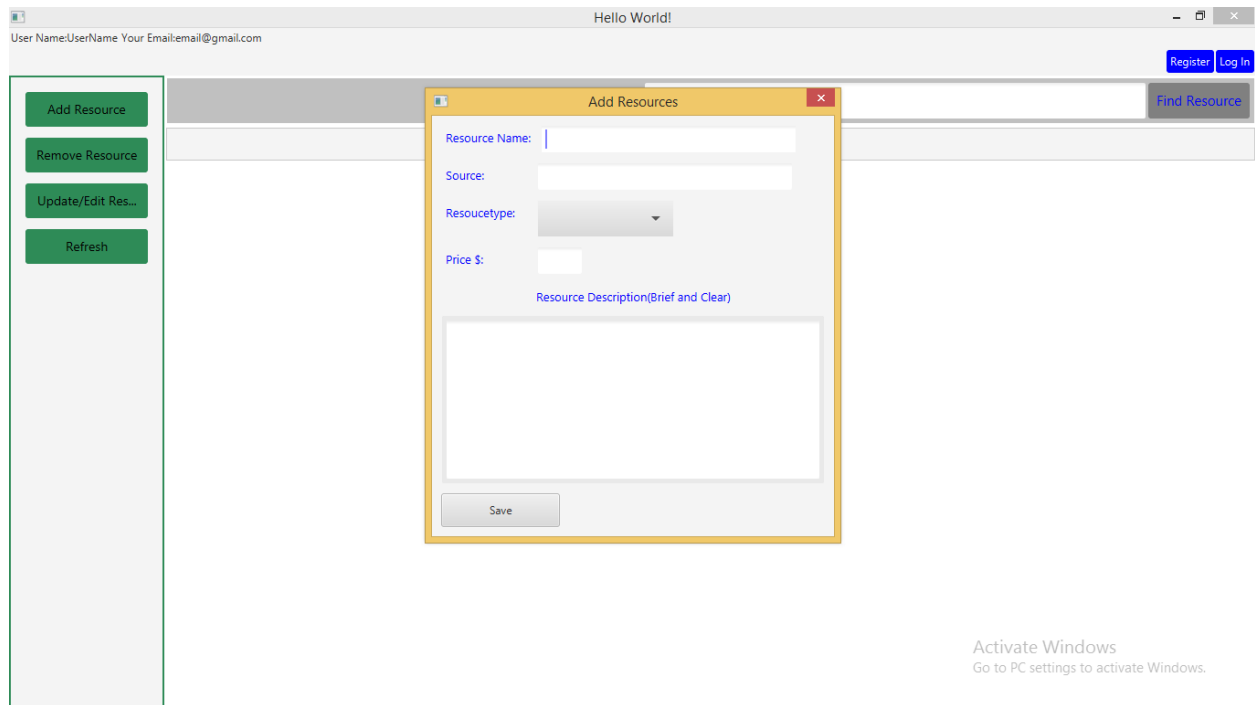
### Log in

Once user has be registered then they are required to log in, in order to access the services. For example adding a resource or removing a resource.



### Add Resource

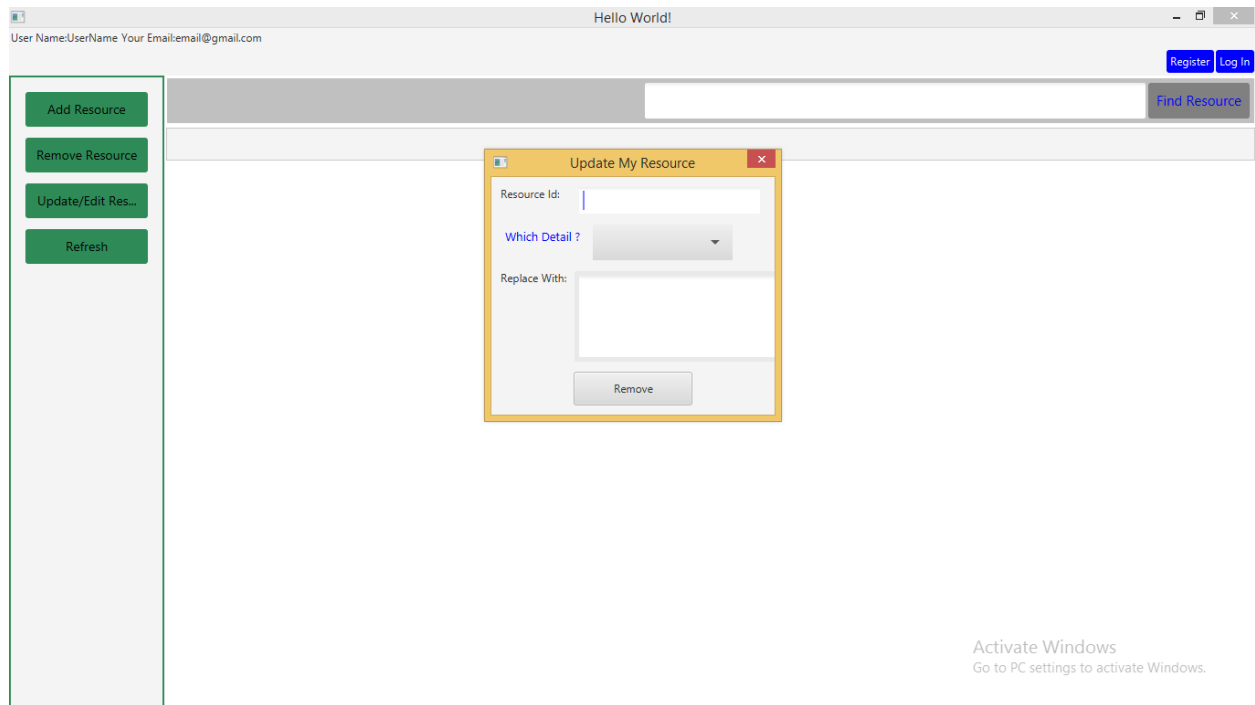
In this module, a registered user is allowed to share his resources or resources from other people that he wishes to share (You do not need to be the author). Provided the resource you share can help others. This module enables the user to use INSERT statement and using statements in JDBC to insert data in my online database.



## Update Resource

This module, like the others checks if user has logged in before opening window for update. This module allow user to update his resource. The app has been designed in a way that the resources updated belong to the logged in user, you are not allowed to update other people's resources.

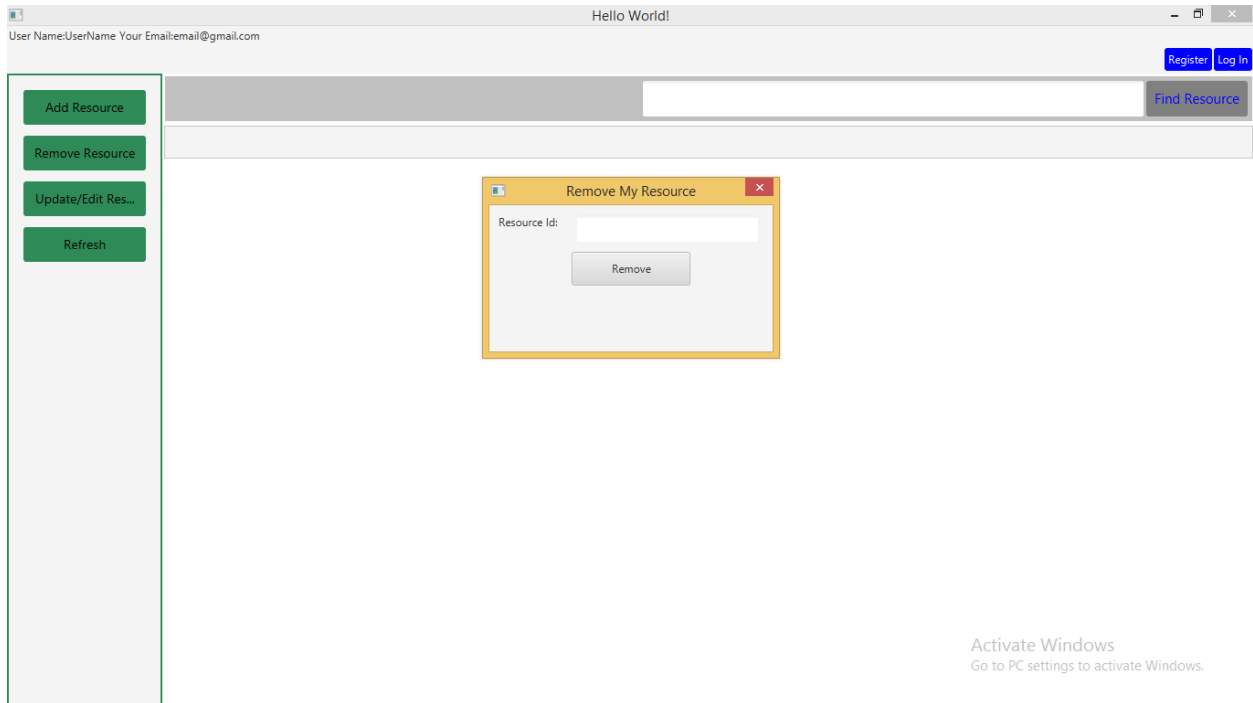
UPDATE statements have been used to update the existing records in the database.



## Remove Resource

This module allow user to delete his resource by providing the resource id only. Once the remove button is clicked the app will remove the resource permanently from the database. In this case too, you can only update your owns resources.

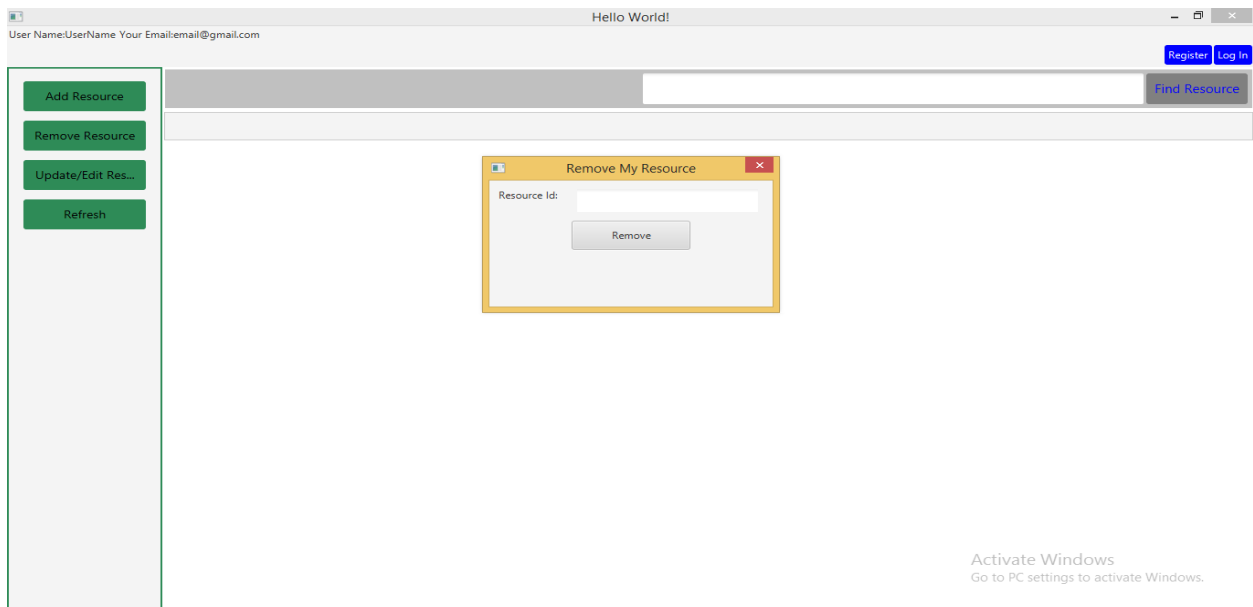




## Search Resource

The app provide a searching area where user can type resource names, provides name, source names etc. The app will use this hints to retrieve all the records that match the typed letters.

The white bar in the image below is the searching bar.



### How to run, as Admin

The app will create all the required tables once its run. However the database should be created in the server. To connect to the database the below url has been used in the application.

```
DriverManager.getConnection("jdbc:mysql://localhost:3306/resourcesdb", "root", "");
```

Where resourcesdb is the name of the database, root is server user name and the last empty string is the password. Has been tested in MySQL database provided in XAMPP.

Run the all the files in case a terminal is used, when using an IDE you just click the run button.