



JDBC ASSIGNMENT

Databases 4

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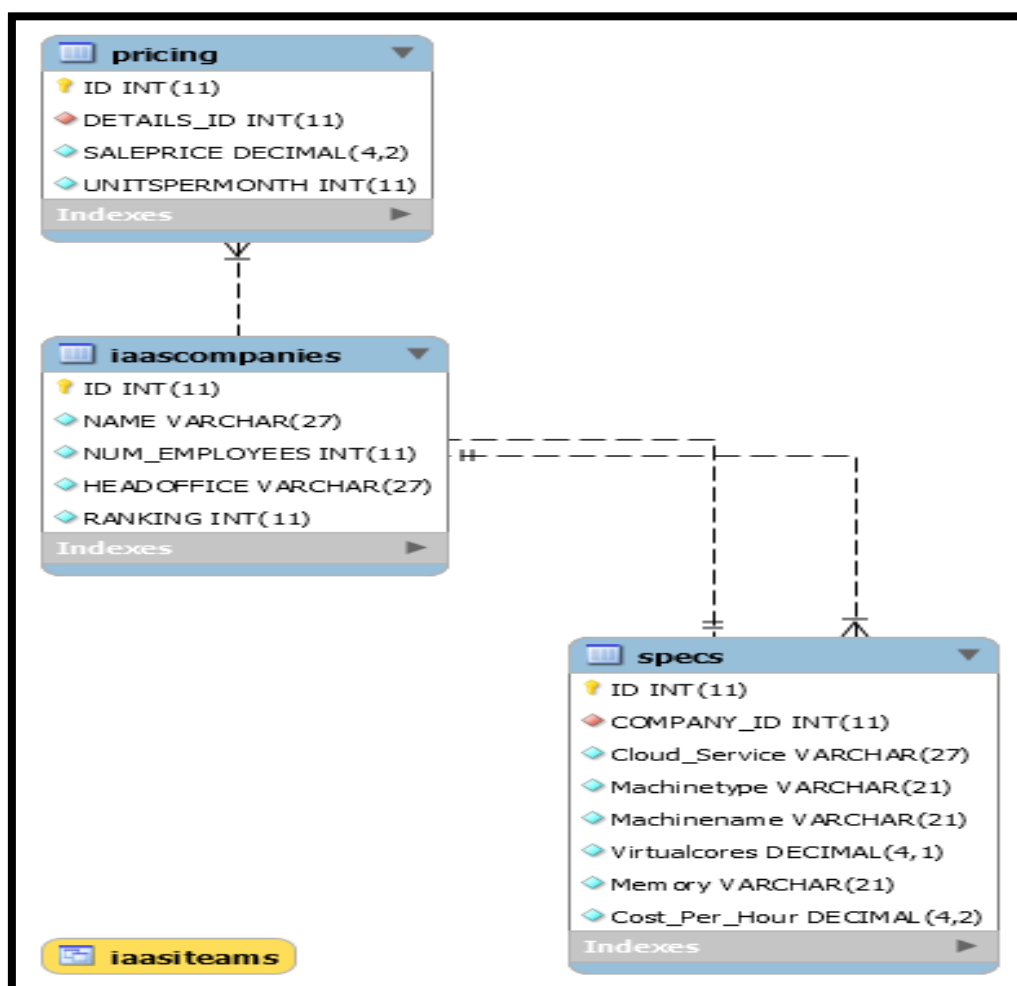
Key concept

The concept for my JDCB project Assignment is a tool for users which they can read and input new Infrastructure companies into the database. The user can keep track of the overall cost and their usage for using Infrastructure services. The Java application is connected to a MySQL database with Three SQL tables inside.

The first table, named Infrastructure as a service companies, contains a list of all the companies who provide Infrastructure, each with their own ID, along with name of the company, the number of employees in that company, the head office location, and their ranking compared to other Infrastructure companies.

The second table, named Specification, contains all the hardware information in relation to the IAAS product. The Specification table consists of the ID, company id (foreign key), the company name, machine type, machine name, virtual core(processor), Memory and cost per hour.

The Third table, named Pricing, this table contains all data which is used in order to bill the customer for the use of Infrastructure services. The distributors table consists of id, details id (foreign key), sales price and finally units per month e.g. amount of data, user has used this month.



GUI

The user can iterate through the tables contained within the database using the radio buttons at the top of the interface. Depending on which table is selected, the form menu which is located on the left-hand side of the interface will update and will allow user to enter details to insert into the database. All tables can be altered through the CRUD functionality included in the application. The user can add, update or delete various companies, specs and prices. The GUI will automatically update and show the new changes.

Infrastructure as a service Companies

The screenshot displays a Java Swing window titled "JDBC Assignment". The interface is divided into several sections:

- IAAS Companies Form:** Located on the left, it contains input fields for "Company ID:", "Company Name:", "Number of Employees:", "Head Office:", and "Company Rankings:". Below these is an "Update Pricing" section with "Price ID:" and "Value:" fields, and an "Update Sales" button.
- Action Buttons:** A vertical column of buttons including "Insert", "Update", "Clear", "Export", "Delete", "Calculate ...", "Products", "24Hour C...", and "Ranking".
- Select Table:** A section with three radio buttons: "IAAS Companies" (selected), "Specification", and "Pricing".
- Console:** A text area on the top right displaying "Welcome!".
- Database Content:** A table on the bottom right showing the current data in the database.

ID	NAME	NUM_EMPLOYEES	HEADOFFICE	RANKING
1	Amazon Web Services	876000	Seattle	1
2	Bluelock	730050	Indianapolis	2
3	CSC	130000	Wilmington	3
4	GoGrid	119000	San Francisco	4
5	IBM	700040	New York	5
6	OpenStack	240000	Texas	6
7	Rackspace	208000	Texas	7
8	Savis	24000	Missouri	8
9	Terremark	4000	Florida	9
10	VMware	200300	California	10

I implemented a console element to allow the user to acknowledge whether the different actions they have performed have been successful or not. The application also contains a button which allows the user to export data which is being shown in the GUI. This results in a CSV file containing the information which is currently displayed on the database content table. I will discuss these exports later in more detail in the Visualization section. The GUI also contains Calculate total sales button and update sales which will be discussed again later.

Pricing Table

JDBC Assignment

Pricing Details

Price ID:

Detail ID:

Sale Price:

Units per Month:

Insert

Update

Clear

Export

Delete

Calculate ...

Products

24Hour c...

Ranking

Select Table

☐ IAAS Companies
☐ Specification
☒ Pricing

Database Content

ID	DETAILS_ID	SALEPRICE	UNITSPERMONTH
1	1	15.55	34000
2	2	16.00	56125
3	3	18.95	74456
4	4	54.66	77
5	5	94.55	47500
6	6	9.00	57777
7	7	10.00	44
8	8	54.99	75000
9	9	55.22	28000
10	10	8.99	7000

Console

PRICING selected

Update Pricing

Price ID:

Value:

Update Sales

Specification Table

JDBC Assignment

Details Actions

ID:

Company ID:

Cloud Service:

Machine Type:

Machine Name :

Virtual Cores :

Memory:

Cost Per Hour:

Insert

Update

Clear

Export

Delete

Calculate ...

Products

24Hour c...

Ranking

Select Table

☐ IAAS Companies
☒ Specification
☐ Pricing

Database Content

ID	COMPANY_ID	Cloud_Service	Machinetype	Machinename	Virtualcores	Memory	Cost_Per_Ho...
1	1	Amazon	Standard	n1-standard-...	16.0	60	1.12
2	2	Bluelock	High Memory	n1-highmem...	16.0	104	1.31
3	3	CSC	High Memory	n1-highcpu-2	2.0	1.80	0.09
4	4	GoGrid	High CPU	n1-highcpu-8	8.0	7.20	0.35
5	5	IBM	Shared Core	g1-small	0.5	1.70	0.04
6	6	OpenStack	Memory-opti...	n1-ultramem...	160.0	3844	25.22
7	7	Rackspace	HighCPU	n1-highcpu-4	4.0	3.60	0.18
8	8	Sawis	Shared Core	f1-micro	0.2	0.60	0.01
9	9	Terremark	High Memory	n1-highmem...	16.0	104	0.70
10	10	VMware	Standard	n1-standard-8	8.0	30	0.66
12	10	VMware	Standard	4	8.0	30	0.66

Console

SPECS Selected

Update Pricing

Price ID:

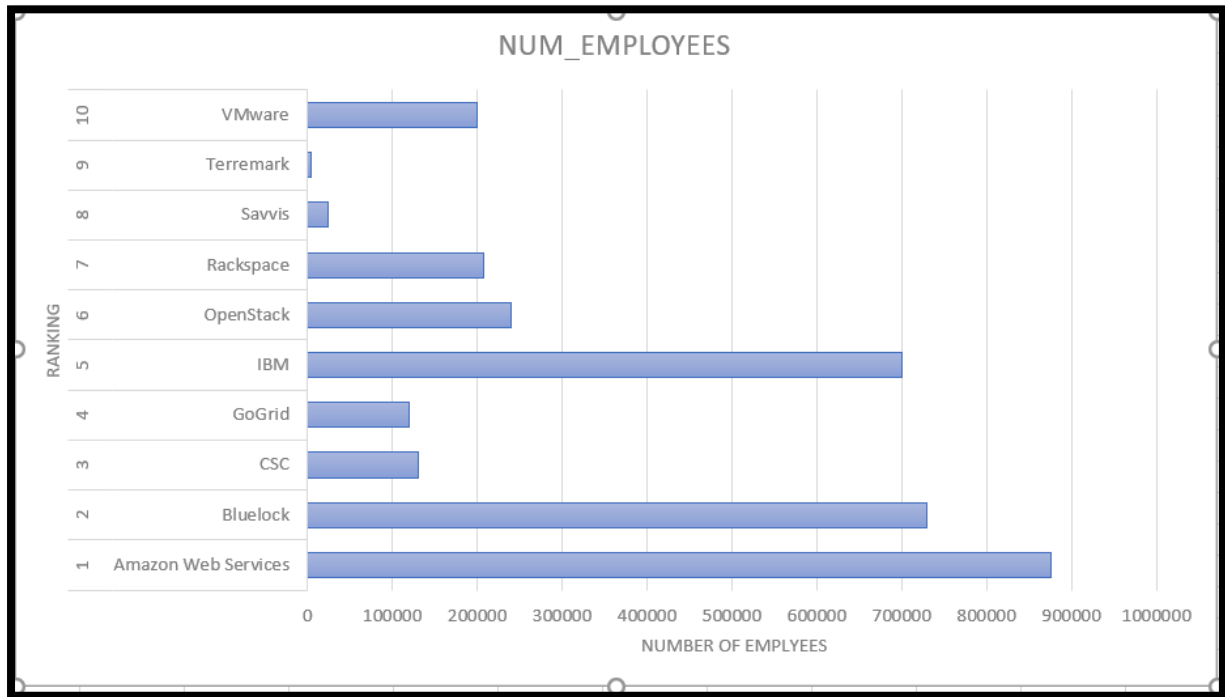
Value:

Update Sales

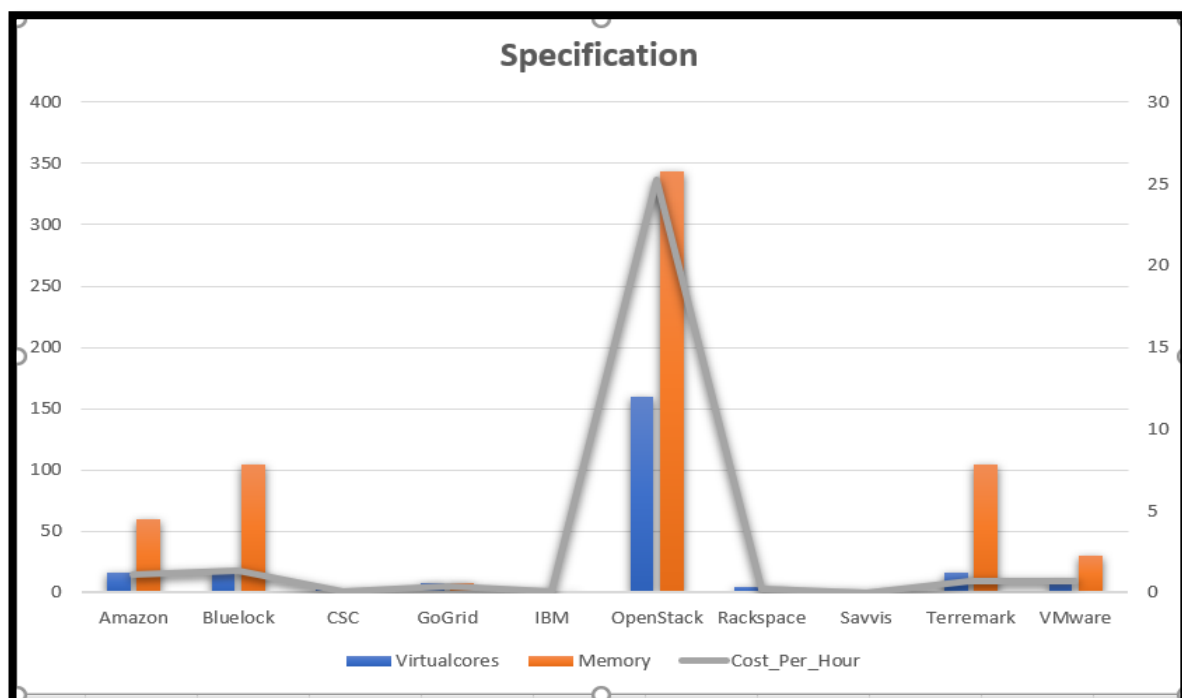
Data Visualization

The following are examples of charts which have been generated from csv files which have been exported from the project:

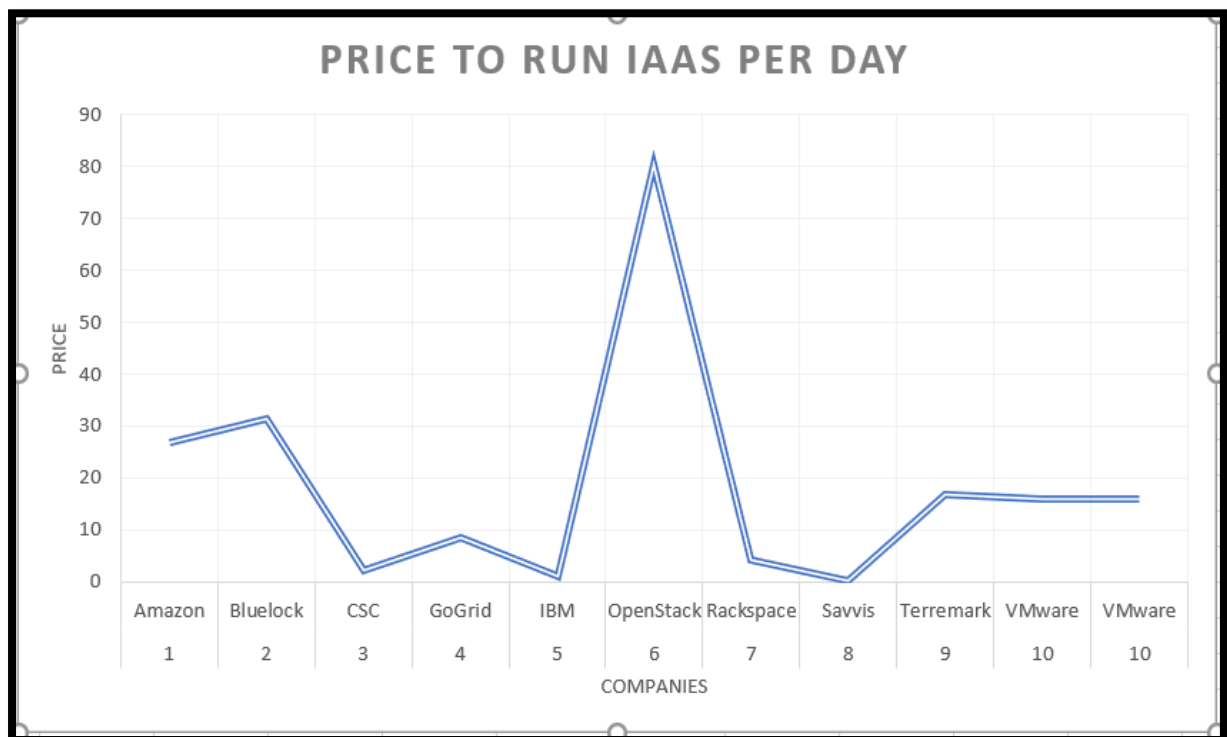
This example is generated from Infrastructure as a service table. The following information describes number of employees who work in a certain Infrastructure company.



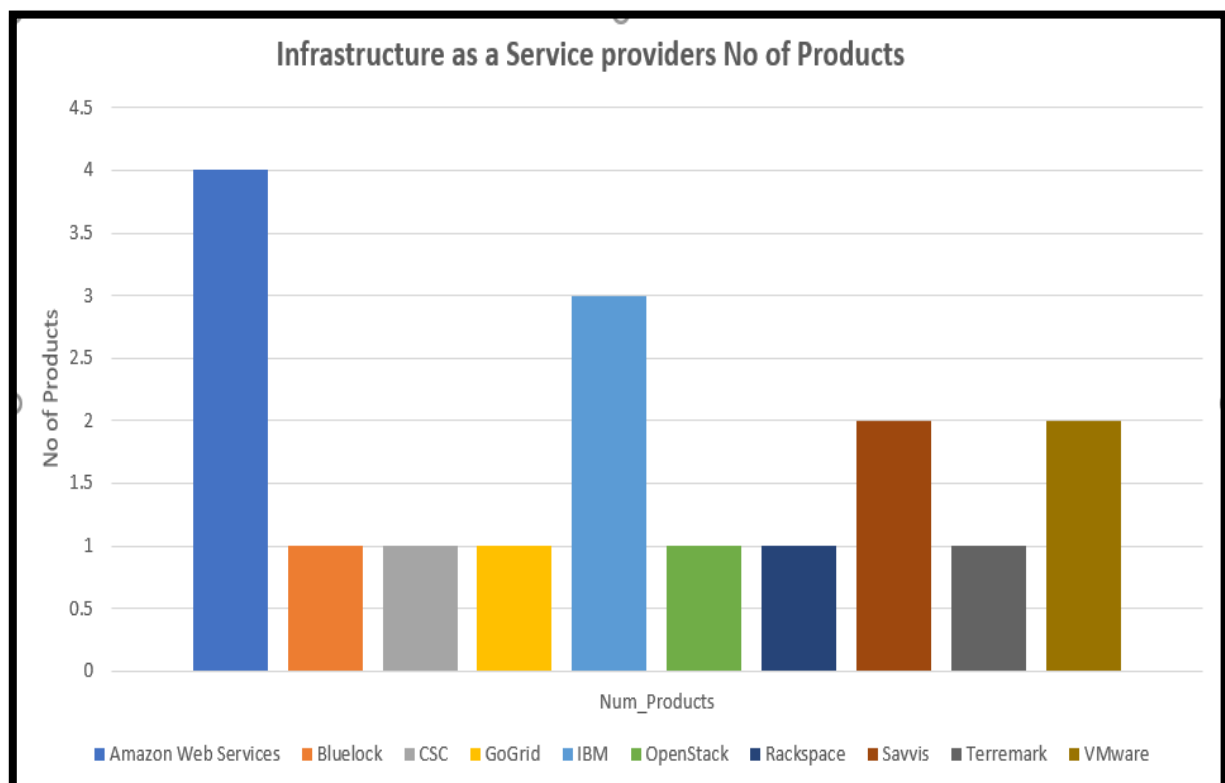
Specification chart is generated from Specification table and describes the total memory, number of virtual cores and cost per hour for each Infrastructure system.



The following data is generated from the 24 hour cost button in the application. The chart represents total cost to run an Infrastructure for a day.



The following information was generated from the products button which implements a mySQL feature a view. The chart generated contains total number of products each Infrastructure company create



Price chart is generated from the Pricing table and describes the Sale price and total amount of units used per month.



Extra Features

The first feature that I would like to promote is the ability to fill in the CRUD form with the details of a row contained within the table on view. When the user clicks on a row on the table, the text fields are filled with the corresponding data from the clicked-on row. This saves time for the user who may only want to update one column for a particular row.

JDBC Assignment

IAAS Companies

Company ID: 1

Company Name: Amazon Web Services

Number of Employees: 876000

Head Office: Seattle

Company Rankings: 1

Update Pricing

Price ID:

Select Table

☒ IAAS Companies

☐ Specification

☐ Pricing

Database Content

ID	NAME	NUM_EMPLOYEES	HEAD OFFICE	RANKING
1	Amazon Web Services	876000	Seattle	1
2	Oracle	130000	Indianapolis	2
3	CSC	130000	Washington	3
4	GoGrid	119000	San Francisco	4
5	IBM	700040	New York	5
6	OpenStack	240000	Texas	6
7	Rackspace	208000	Texas	7
8	Savis	24000	Missouri	8
9	Terremark	4000	Florida	9
10	VMware	200300	California	10

Console

IAAS table Selected

This project contains a stored procedure, a stored function and a view. The view which was discussed earlier in the document allows us to export the number of products being made by Infrastructure companies.

Another feature which I implemented is a stored procedure which allows the user to update the number of units sold for given company within the pricing table.

ID	DETAILS_ID	SALEPRICE	UNITSPER
1	1	15.55	34000
2	2	16.00	56125
3	3	18.95	74456
4	4	54.66	77
5	5	94.55	47500
6	6	9.00	57777
7	7	10.00	44
8	8	54.99	5777
9	9	55.22	28000
10	10	8.99	7000

The last feature I implemented in the project is a store function which lets the user calculate the price total for a given Infrastructure. The function calculates the sale price and number of units per month for the requested Infrastructure and returns the total.

Input dialog box:

Enter ID: 4

Buttons: OK, Cancel

Database Content	
calculatetotal(4)	4208.82

Conclusion

It is very easy to interact with the database in multiple ways, and having the outputs displayed immediately, not just in the table updates but also in the CSV file output, is very handy for users to know instantly what changes they have made.

This project has been great in terms of bridging the gap between SQL and Java, as both work very well together and I enjoyed learning how to integrate the new features, namely stored procedures and stored functions and generating views into the project, which can be used in so many different ways to make vast changes to tables in a quick manner.