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Christmas Santa 2.0

Abstract

Christmas Santa 2.0 is a project I built to help Santa and his helpers have an easier way to perform their tasks at the north pole. The project will allow Santa to become more organized around the holidays while also saving him a lot of time. In this assignment I was given the option to choose a database project where I create the data using SQL queries and perform different tasks on that data also using SQL queries. I stored the sample data that I made on a postgres server and then used Java to connect to the Postgres Server. Then I used a Graphical User Interface library called Java Swing to design a frame with buttons and other uses to change or organize the data by the users' interest. The user will be able to command and filter through information using buttons and drop-down menus all coded with flexible SQL query's to retrieve specific output. Users will also be able to edit, insert and delete specific data in the database. Therefore, the Christmas Santa 2.0 program allows Santa to transfer his information over from a paper to a database system making his job easier, faster, and more efficient.

Introduction

While we are getting closer to the holidays Santa has a difficult time becoming organized with using just pen and paper to put together the millions of presents for children. The north pole can be chaotic to organize and control everything including Santa’s helpers. Santa must be able to have a database to store all his information and have an option to insert or delete new children

into that database. Therefore, Christmas Santa 2.0 was created because I wanted to make Santa's job at the north pole easier for him. The north pole is very similar to a real company business in which it stresses the importance of switching everything to a computerized system that is user friendly. The motivation behind using a database system allows me to have a deeper understanding of the compatibility of database with Java. Within this final paper you will find the database script and Java code attached with an explanation of why I used certain things within my code. It will also include the ER diagram and UML diagram to explain in more detail on how this project was built.

Detailed System Description

The system is supposed to organize the database information each time a user clicks on a button. The design is built to be user friendly so that anyone that uses it for the first time will have an easier time understanding the different functions without the need of additional instruction. I designed the program to perform many different tasks useful to Santa and his elves. For example, it can sort the different columns in each JTable provided like the kids table which can be organized by first and last name. Another example is if Santa wants to search up a specific region while traveling to get the information of a child he can simple use the drop-down menu of the address table and sort it by the region or zip code. The fluidness of this JTable is made possible the majorQuery class. The intent of the major query class is to write a fluid query that changes due to whatever the users' interests are. In the majorQuery class variables are initialized to store crucial information about the desired output the users want. For example table name and sort are two variables that can be altered in the majorQuery class using the built in setTableName and setSort functions. The program also has a menu bar that only pertains to a specific class or table within the database that can be edited like the kids, the addresses, the staff, the reindeers,

the gift wrapping and many other options. Within each class such as the editKidsTableFrame there are buttons built in designed to establish a certain task along with a unique JTable displaying the current records in that particular table. Java code is used to give these buttons action. Each button has a listener so that when the user clicks on it there is an action method provided. For example, the insert button takes each numbered text box or combo box and the number scheme of each box goes by what specifically you want to insert or change. In the UML diagram you will find that the main object is the window Christmas_Santa that extends a JFrame class. Within the Christmas Santa there are many methods such as the Christmas_Santa the jbInit and the btnLoadTable method.

Christmas_Santa
-Name: String -contentPane: JPanel -btnLoadTable: JButton -table: JTable -scrollPane:JScrollPane
+main(String[] args) +jblnit(): void +do_btnLoadTable_actionPerformed(ActionEvent i): void

Requirements

The specific problems that have been addressed while creating the system included the database and Java code. Currently, I am taking Database Management in which figuring out how

to link Java with the Database was a difficult task. It was a process to figure out how to connect Java to Postgres. In my code you will find in the class called postgresConnection where I make a connection to the database with all the sample data. I decided to establish the connection in a separate file so that way I would not need to write the same repetitive code inside my frame files each time I wanted to run a query. Thus, this allowed me to present the database in the jtable and use it towards specific queries I requested from the server. The graphical user interface that I created presented these queries using specific buttons. I also had to create my own database or data and queries. The ER diagram is what helped me organize each table and the records with each table. This was also a difficult task because I had to change the ER diagram many times to make this project more understandable. Coming up with and entering sample data also took up a lot of time however after creating the majority of my sample data I was introduced to a data generator that helps fill out specific data such as creating a name or different ages which saved a lot of time and also helped prevent redundancy or Primary and Foreign key errors and increase the speed of the project. After many trails and errors, I was able to make the system work but there are still singularities that I wanted to include in my project such as a filter. The filter can be used for future enhancements in the project where I will be able to have a button that filters out specific data that the user requests such as a filter on age or even names.

Literature Survey

Other work that was able to address the same issues that helped me with the tasks during the project such as several websites. The Postgres website explained different ways to implement java with the database while YouTube, another great resource, taught me how to use and fully take advantage of java swing. Together with these sources I was able to create a class that included the code to connect to the server of my postgres. Postgres is where all the data is stored. That postgres

server had a hostname and a password to have access to the data. When the user clicks onto the buttons it will allow the user to do specific action that includes the data. Within eclipse I had to make a graphical user interface to display or make the Jframe visible for users to view. This was called Java Swing where I found more instructional use on the eclipse website. This allowed insertions for specific buttons to be used to manage the database and how it will graphical appear to the user.

User Manual

The system is used as a database organizer for Santa to control all operations at the north pole. It allows the user to go through specific fields within a table and organize them based on their preferences. There are millions of kids within the world and Santa is unable to know everyone's information automatically. Once a user clicks on the sort button it will only collect the specific set of column(s) from the combo box button for different tables in the database. This is displayed on the Jframe inside another object called a JTable. The sort button automatically presses on the refresh button to retrieve the specific query by user input thus putting the desired column in order. On the left of the frame you will find various buttons for Santa to have a quick view of a query. If Santa doesn't have enough time to sort by a specific order he can click on the query buttons to search a specific table of data. In the first Jframe the user will only be able to view, sort, and read the provided information not modify it. However, that is why the edit drop down buttons were created on the original Jframe. This edit button allows a window or another frame to open to be able to edit the database. One example of the edit button is the edit Kids table. This prompts each text box with a child that is selected and highlighted on the jtable. To insert or edit a child name you would click on the button to enter the desired information about the child. Then after refreshing the table the child should appear. Each kid will have various

information linked to them regarding Christmas including Name, Address Id, and verdict to determine their status on receiving presents for Christmas. Not only is this edit tab available for Santa to edit children in the system he is also able to edit staff, factories, inventory and other links at the north pole. When Santa is done he can close out the frame by clicking cancel and then file exit.

Conclusion

The goal within this system is to make Santa's job at the north pole a lot easier and organized. Hopefully, Santa will find that this is an easier alternative to storing data rather than Paper and Pen. It will help organize the data for Christmas for future years to come. This system can take those millions of children and organize each piece of data and sort them for Santa to find each child or address easily. Also, if Santa is too busy he can use the quick queries to sort each table by specific things such as children that did not send in a letter to Santa. The system is also able to change Santa's list to children that were good or bad. Making it easier for Santa to sort through information for Christmas. Santa, his elves, and the reindeers will have happier transaction to preparing Christmas this year. Therefore, Santa is coming to town!

References

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