JDBC Project Context

Over the JDBC Project, you are required to implement a sales system for a computer part store so that all information about transactions, computer parts and salespersons is stored.

- You are required to implement the sales system as…
  - a Java command-line program.
  - your system will to support interactive inquiries from users.
- You are required to use **Java JDBC API** to...
  - access the database
  - implement a Java application to satisfy all system functions defined in these few weeks.

JDBC Project
Role of Administrator

Tasks

- Basic Loop
  1. Present a list of functions for the client to chose from
  2. The client will type in the function they wish to chose
  3. You perform the action(s) **– see next slides**
  4. After performing a function specified in any of following sub-sections, the program should go back to topmost level of menu.
  5. Any error or informative message of the Java program should be displayed in a new line.

- Confused? Check next slide for picture examples!

WEEK7 – ADMIN FUNCTIONS

- The functions that can be used by an administrator are:
- **1. Create table schemas in the database:**
- This function creates all tables for the sales system in the Oracle DBMS based on the relational schema given.

```
→  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 1

-----Operations for administrator menu-----
What kinds of operation would you like to perform?
1. Create all tables
2. Delete all tables
3. Load from datafile
4. Show content of a table
5. Return to the main menu
Enter Your Choice: 1
Processing...Done! Database is initialized!
```

Figure 1: Expected interactive input and output while creating table schemas in MySQL DBMS.

WEEK7 – ADMIN FUNCTIONS

- The functions that can be used by an administrator are:
- **2. Delete table schemas in the database:**
- This function deletes all existing tables of the sales system from Oracle DBMS

```
→  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 1

-----Operations for administrator menu-----
What kinds of operation would you like to perform?
1. Create all tables
2. Delete all tables
3. Load from datafile
4. Show content of a table
5. Return to the main menu
Enter Your Choice: 2
Processing...Done! Database is removed!
```

Figure 2: Expected interactive input and output while deleting table schemas from MySQL DBMS.

WEEK7 – ADMIN FUNCTIONS

- The functions that can be used by an administrator are:
- **3. Load data from a dataset:**
- This function reads all data files from a user-specified folder and inserts the records into the appropriate table in the database.

```
→  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 1

-----Operations for administrator menu-----
What kinds of operation would you like to perform?
1. Create all tables
2. Delete all tables
3. Load from datafile
4. Show content of a table
5. Return to the main menu
Enter Your Choice: 3

Type in the Source Data Folder Path: sample_data
Processing...Done! Data is inputted to the database!
```

Figure 3: Expected interactive input and output while loading data from data files to the table schemas in MySQL DBMS

- **4. Show the content of a specified table:** This function shows the content of a user-specified table.

```
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Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 1

-----Operations for administrator menu-----
What kinds of operation would you like to perform?
1. Create all tables
2. Delete all tables
3. Load from datafile
4. Show content of a table
5. Return to the main menu
Enter Your Choice: 4
Which table would you like to show: part
Content of table part:
| p_id | p_name | p_price | m_id | c_id | p_quantity | p_warranty |
| 1 | AMD FX-8320 | 1199 | 2 | 1 | 99 | 36 |
| 2 | AMD A8 5600K | 710 | 2 | 1 | 99 | 36 |
| 3 | CORE I3-3250 | 1088 | 1 | 1 | 99 | 36 |
| 4 | CORE I7-4820K | 2599 | 1 | 1 | 99 | 36 |
| 5 | GA-H87N-WIFI | 999 | 3 | 2 | 99 | 12 |
| 6 | G1.SNIPER 5 | 3299 | 3 | 2 | 99 | 12 |
| 7 | MSI Z87-G43 | 1050 | 4 | 2 | 99 | 12 |
| 8 | NM70I-1037U | 579 | 5 | 2 | 99 | 12 |
| 9 | H61-BF UATX | 420 | 1 | 2 | 99 | 12 |
| 10 | Z87 XPOWER | 3899 | 4 | 2 | 99 | 12 |
| 11 | 8GB DDR3 | 530 | 6 | 3 | 99 | 60 |
| 12 | 16GB DDR3 | 1760 | 7 | 3 | 99 | 60 |
| 13 | SV35 2TB | 730 | 8 | 4 | 99 | 60 |
| 14 | SSHD 1TB | 720 | 8 | 4 | 99 | 60 |
| 15 | 256GB NEUTRON | 1650 | 7 | 4 | 99 | 60 |
| 16 | CX-430M 430W | 399 | 7 | 5 | 99 | 60 |
| 17 | HCG 520W | 539 | 9 | 5 | 99 | 60 |
| 18 | NEO ECO 450C-BR | 439 | 9 | 5 | 99 | 60 |
| 19 | GTX650TI | 1299 | 3 | 6 | 99 | 36 |
| 20 | HD7770 1GB | 850 | 3 | 6 | 99 | 36 |
| 21 | N760 HAWK | 2199 | 4 | 6 | 99 | 36 |
| 22 | R7770-PMD | 899 | 4 | 6 | 99 | 36 |
| 23 | Sound Blaster Play | 195 | 10 | 7 | 99 | 12 |
| 24 | Sound Blaster XZ | 1250 | 10 | 7 | 99 | 12 |
| 25 | AC1200 DB | 1070 | 11 | 8 | 99 | 12 |
| 26 | N600 Router | 488 | 11 | 8 | 99 | 12 |
| 27 | HP 2000 2D18TU | 3109 | 12 | 9 | 99 | 18 |
| 28 | ENVY 17 J002TX | 10898 | 12 | 9 | 99 | 18 |
| 29 | Probook 440 | 6880 | 12 | 9 | 99 | 18 |
| 30 | G580G i5 3230 | 4499 | 13 | 9 | 99 | 18 |
| 31 | Flex 15 Core I5 | 7980 | 13 | 9 | 99 | 18 |
| 32 | G710A i7 4702 | 6509 | 13 | 9 | 99 | 18 |
```

Figure 4: Expected interactive input and output while showing content of *category* table.

JDBC Project
Role of Salesperson

W8 Task 1: **Search for Part**

- Salesperson can **search** for computer parts available based on **one** of the two different search criterias.
  - By Part Name **OR** By Manufacturer Name (partial matching)
- After search keyword entered, program should perform query and return all matching parts
- Salesperson can then choose any one of two different ways to **sort** the parts:
  - By price, ascending order **OR** By price, descending order

- *Notes:*
  - *Results from search keywords should support partial matching*
  - *Only one search criterion can be selected for each query*
  - *Results Include {Part ID, Part Name, Manufacturer Name, Category Name, Available Quantity, Warranty Period, Part Price}*
  - *Finally, result should be outputted as a table as follows (see next slide)*

- Figure 5: Expected interactive input and output while searching for parts.

```
→  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 2

-----Operations for salesperson menu-----
What kinds of operation would you like to perform?
1. Search for parts
2. Sell a part
3. Return to the main menu
Enter Your Choice: 1
Choose the Search criterion:
1. Part Name
2. Manufacturer Name
Choose the search criterion: 2
Type in the Search Keyword: Intel
Choose ordering:
1. By price, ascending order
2. By price, descending order
Choose the search criterion: 1
| ID | Name | Manufacturer | Category | Quantity | Warranty | Price |
| 9 | H61-BF UATX | Intel | Motherboard | 99 | 12 | 420 |
| 3 | CORE I3-3250 | Intel | CPU | 99 | 36 | 1088 |
| 4 | CORE I7-4820K | Intel | CPU | 99 | 36 | 2599 |
End of Query
```

W8 Task 2 : **Perform Transaction**

- After salesperson finds matching part, they will try to perform a transaction in the same system.
    1. First, salesperson inputs…
        - part ID of part to be sold
        - and salesperson ID.
    2. Then, system checks if part is available
        - (Hint: *Part Available Quantity* > 0)
        - If part available, part is sold, and any data is updated accordingly
            - print informative message on remaining available quantity of the transacted part.
        - If part could not be be sold, an error message should also be shown.

- Figure 6: Expected interactive input and output while performing transaction.

```
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Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 2

-----Operations for salesperson menu-----
What kinds of operation would you like to perform?
1. Search for parts
2. Sell a part
3. Return to the main menu
Enter Your Choice: 2
Enter The Part ID: 1
Enter The Salesperson ID: 1
Product: AMD FX-8320(id: 1) Remaining Quality: 98
```

JDBC Project
Role of Manager

W9 Task 1: **List all salespersons…**

- **List all salespersons in ascending or descending order of years of experience:**
- Your system needs to provide a method for the manager to list all salespersons in either ascending or descending order of their years of experiences.
  - *After he/she specifies the output order, the program will perform the query and return the ID, name, phone number and years of experience of each salesperson.*
- See next page for example interaction.

W9 Task 1: **Search for Part**

- **Figure 7:** Expected interactive input and output while listing salespersons.

```
→  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 3

-----Operations for manager menu-----
What kinds of operation would you like to perform?
1. List all salespersons
2. Count the no. of sales record of each salesperson under a specific range on years of experience
3. Show the total sales value of each manufacturer
4. Show the N most popular part
5. Return to the main menu
Enter Your Choice: 1
Choose ordering:
1. By ascending order
2. By descending order
Choose the list ordering: 1
| ID | Name | Mobile Phone | Years of Experience |
| 3 | Colin Carlin | 27689679 | 1 |
| 2 | John Smith | 28592710 | 2 |
| 4 | Kimberly Wooldridge | 28366016 | 2 |
| 1 | Maria Fortner | 25037060 | 4 |
```

W9 Task 2 : **Count records…**

- **Count number of transaction records of each salesperson within a given range on years of experience:**
- Your system has to provide an interface to allow a manager to count the number of transaction records of each salesperson within a given range on years of experience (e.g. from 1 year to 3 years) inclusively.
  - *After he/she enters a specific range on years of experience, the program will perform the query and return the ID, name, years of experience and number of transaction records of each salesperson within the range on years of experience specified by the user inclusively.*
  - *These transaction records should be sorted in descending order of Salesperson ID and outputted as a table.*
- See next page for example interaction.

W9 Task 2 : **Count records…**

- **Figure 8:** Expected interactive input and output while counting the number of transaction records of each salesperson within a given range on years of experience (from 1 year to 3 years) inclusively.

```
→  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 3

-----Operations for manager menu-----
What kinds of operation would you like to perform?
1. List all salespersons
2. Count the no. of sales record of each salesperson under a specific range on years of experience
3. Show the total sales value of each manufacturer
4. Show the N most popular part
5. Return to the main menu
Enter Your Choice: 2
Type in the lower bound for years of experience: 1
Type in the upper bound for years of experience: 3
Transaction Record:
| ID | Name | Years of Experience | Number of Transaction |
| 4 | Kimberly Wooldridge | 2 | 9 |
| 3 | Colin Carlin | 1 | 9 |
| 2 | John Smith | 2 | 9 |
End of Query
```

W9 Task 3 : **Total sales value**

- **Sort and list the manufacturers in descending order of total sales value:**
- The system has to provide an interface to allow a manager to sort the manufacturers according to their total sale values.
  - After the program performs the query, it returns the results in terms of *Manufacturer ID*, *Manufacturer Name* and *Total sales value* in descending order of *Total sales value* as a table as follows:
- See next page for example interaction.

W9 Task 3 : **Total sales value**

- Figure 9: Expected interactive input and output while showing all manufacturers in descending order of total sales value.

```
➜  2023FallProj java -classpath ./mysql-jdbc.jar:./ CSCI3170Proj
Welcome to sales system!

-----Main menu-----
What kinds of operation would you like to perform?
1. Operations for administrator
2. Operations for salesperson
3. Operations for manager
4. Exit this program
Enter Your Choice: 3

-----Operations for manager menu-----
What kinds of operation would you like to perform?
1. List all salespersons
2. Count the no. of sales record of each salesperson under a specific range on years of experience
3. Show the total sales value of each manufacturer
4. Show the N most popular part
5. Return to the main menu
Enter Your Choice: 3
| Manufacturer ID | Manufacturer Name | Total Sales Value |
| 12 | HP | 20887 |
| 3 | Gigabyte | 6447 |
| 7 | Corsair | 5968 |
| 13 | Lenovo | 4499 |
| 4 | MSI | 4148 |
| 1 | Intel | 3687 |
| 11 | Belkin | 3116 |
| 2 | AMD | 3108 |
| 10 | Creative | 2890 |
| 8 | Seagate | 2180 |
| 6 | Transcend | 1060 |
| 9 | Antec | 978 |
| 5 | Biostar | 579 |
End of Query
```