Project 7 – Database Application – Advanced

Academic Integrity: I completed this project without the assistance of others. I understand that cheating, helping others to cheat, or failing to report such actions is dishonest and wrong. Such acts could result in disciplinary action against me.

Project Submission:

- Name your project Project7_JohnDoe (substitute your own name of course)
- Name your application class containing the main() method **MulchSimulator**
- Eclipse
    - Include a text file call Student.txt containing your name and email address
    - Include all JAVA and CLASS files.
    - Include updated
        1. ER diagram as a JPEG
        2. Functional Dependencies as TXT
        3. Relation schemas as TXT
            - Prove each relation schema is in BCNF
        4. SQL files into the project as SQL or TXT files
    - Zip the entire Eclipse project directory.
- Email the zip file to the instructor and the TA using the usual submission subject line

When the TA runs your app, he will:

1 Run the scripts to CREATE the database structures
2 Run the INSERTS to load the data
3 Run your app
4 Run the DROP script to get rid of all of the data and structures

Mulch Delivery and Dispatch System Description
Mulch Order Data
Mulch Order Reports

Student Questions and Clarifications

APPLICATION SIDE

Java Controller Methods

Write methods for each of the following bullets.
Each method will call the appropriate model, view, and controller layers to carry out the tasks.

- Phase_II – Preparation
  - Reports
  - Create Tickets
- Phase III – Dispatch & Delivery
  - Loop
    - Process_Incoming
      - Update_Delivery_Status
    - Process_Outgoing
      - Assign_Tickets
      - Print_Tickets
    - Monitor Delivery Status
- Phase IV – Wrap up

DATABASE SIDE

Stored Procedures & Functions

MOST (if not all) processing of data will occur on the database side in stored functions and procedures.
This is where MOST (if not all) of the transaction (COMMIT, ROLLBACK) should take place.
Include exception handling and RAISE_APPLICATION_ERROR to send an appropriate error msg back to dispatch

Write the following stored functions / procedures in PL/SQL

- Create_Tickets
- Assign_Tickets
- Update_Delivery_Status
- Manage_Time

Views

Create views where practical for reports

Include the following SQL files in your Eclipse project

- **mulch_db_create.sql**
  All tables, primary keys, foreign keys, and any other constraints
- **mulch_db_inserts.sql**
  All inserts for data contained in the Mulch Order Data spreadsheet
- **mulch_db_drop.sql**
  Delete all data and drop all tables.

- **mulch_db_procs.sql**
  All procedure and functions.
- **mulch_db_views.sql**
  All views used in reports and other procedures

Project 7 - Simulation

Run simulation of mulch dispatch and delivery until all mulch is delivered; run final reports

PHASE 2 – PREPARATION

Run the following reports
- BUDGET
- SUMMARY OF ORDERS BY SELLER
- TOP THREE SELLERS
- SUMMARY OF ORDERS BY AREA

Generate tickets

PHASE 3 - DISPATCH AND DELIVERY

Loop every 15 mins doing the following until all mulch is delivered
- Output the current time
- Process incoming trucks
  - Update delivered orders based on tickets that the truck turns in after delivery
    - Assume that all bags have been delivered except possibly the last ticket
  - Send truck into outgoing queue
- Process outgoing truck
  - Assign tickets to the truck up to its capacity
  - Run REPORT - TICKETS ASSIGNED TO TRUCK
    - Print truck name and all the tickets assigned to it - print one line per ticket with all its information
- Monitor delivery status
  - Run REPORT - OVERALL DELIVERY STATUS
    - Generate a report containing the following:
    - * how many tickets & bags have been delivered - overall and per area
    - * how many tickets & bags are out for delivery - overall and per area
    - * how many tickets & bags are left to be delivered - overall and per area

PHASE 4 - WRAP UP AND RECONCILIATIONS

At the end of the day, verify that all the mulch has been delivered. Run the following reports:
- REPORT - OVERALL DELIVERY STATUS
- REPORT - FINAL DELIVERY STATUS

NOTES:

For the simulation: Transaction management MUST be thought out and implemented

It should happen on the back end whenever possible