**The Barkley Brothers**

**Problem Statement:**

You are to design and implement an Oracle Database for the Barkley Brothers LLC. This is a real estate agency that has several branch offices within the local area that it covers. Each branch office is located in a different city within the state of Virginia and uses a PO Box as its mailing address. The agency also has a branch phone number. One agent that works with the branch is assigned to be the branch manager. Each branch office has a unique office name that is the same name as the city in which it is located.

Each branch office has sales agents. These agents have a unique Agent Id. Each agent also has a first and last name, an office extension number and a home phone number. An agent works with both buyers and sellers. When working with a seller, the seller lists the property with the agent. The listing agent then assumes the responsibility of advertising and other duties necessary to notify the public and other agents of the property’s availability. When the agent works with a buyer, the agent shows the property, negotiates an offer for the property, and performs other duties associated with purchasing a property. An agent may work with a buyer for any property. This includes properties listed by him/herself, properties listed by other agents in his/her branch, or properties listed with agents of other branches.

The real estate agency also uses independent agents. These agents are not associated with any branch office. Other than not being associated with a particular branch office, they are treated the same as any other sales agent.

Sellers are those people that have listed property for sale with an agent. The agency assigns each seller a unique Seller Id and keeps the name, address (City, state, zip), and phone number of all sellers. In some cases, especially those cases where a seller is a bank or an estate, a seller may have more than one property listed with an agent; however, all properties will be listed with the same agent. If the seller is a bank or other type of holding company, the company will have a contact person. The contact person will have a name, title, and phone number. There will be only one contact person for a seller and a contact person can only represent one seller.

A listing number identifies properties that are listed with an agent. The agency keeps information about the Property (Type, location (Street, City, State, Zip) and Asking Price as well as a picture of the property. The agent also keeps track of the date the property was listed.

Buyers are people that have visited the branch office and viewed some of the properties listed with the office. A buyer is identified by a unique Buyer Id. Each buyer also leaves their name, address(Street, City, Sate, Zip), and phone number so that they can be contacted about the availability of new properties. A buyer will always work with the same agent. There may be buyers that have simply dropped by one of the offices and not talked with an agent. These buyer may not have an agent to work with and may not be interested in any specific properties.

Sometimes buyers will make an Offer for a Property to a Seller. This offer states the date of the offer and the amount of the offer. A buyer may make an offer on more than one property and there may be more than one offer on a property.

Other times buyers have visited the agency but, for one reason or another, have not made an offer on a property. The agency still keeps information on the buyer so they can be contacted at a later time. Buyers may also be interested in a particular property however they may not place an offer on a property. The buyers may be interested in several properties. Several buyers may also be interested in the same property. Some technique must be implemented to find all properties that a buyer is interested in and all buyers that may be interested in a specific property.

**Barkley Brothers LLC Database Data**

Use the following data has been provided to implement your prototype database.

**Branch Offices**

City Mail Phone

Williamsburg PO Box 122 433-0009

Elkton PO Box 333 401-2222

Bridgewater PO Box 566 322-0909

**Sellers**

Seller\_id Name Street City State Zip Phone

1 Al Able 500 Maple Elkton VA 31102 401-1111

2 Bob Bodkin 410 South Williamsburg VA 22801 433-2222

3 Dominion National Bank 314 N. Main Williamsburg VA 22801 433-3333

4 Bob Ellis 300 Westover Williamsburg VA 22801 433-5555

5 Jill Turner 105 Market Bridgewater VA 22900 322-6789

6 Paula Jones 902 Park Bridgewater VA 22900 322-9011

7 Tammy Miller 230 Mt. Clinton Pk Williamsburg VA 22801 568-0000

8 First National Bank 109 E. Main Bridgewater VA 22900 322-4444

**Sales Agents**

Agent\_Id First Name Last Name Ext. Home Phone

10 Jane Smith 111 433-1010

20 Ellen Davis 222 434-2000

30 Frank Ramey 333 401-7777

40 Paul Jones 444 401-8010

50 Alfred Baker 555 668-3011

60 Mollie Brown 666 568-9021

70 Sarah Parket 777 401-8765

80 Thomas Pill 434 403-7781

**Buyers**

Buyer\_Id First Name Last Name Street City State Zip Phone

500 Gene Guall 12 Oak La. Elkton VA 31102 401-5522

510 Bob Smith 367 Divot Elkton VA 31102 401-2222

520 Ina Ingle 266 Snowbird Williamsburg VA 22801 434-9999

530 Jill Jenkins 1966 Westover Williamsburg VA 22801 434-0000

540 Kim Kemper 399 Market Bridgewater VA 22900 434-1000

550 Jane Johnston 456 Lakeview Williamsburg VA 22801 433-5555

560 Mike Miller 872 Arrowhead Williamsburg VA 22801 434-3000

570 Nelson Jones 126 E. Market Williamsburg VA 22801 433-4567

580 Polly Paul 411 Duke Bridgewater VA 22900 434-1234

590 Bob Smith 196 Phillips Williamsburg VA 22801 434-1122

600 Tom Turk 888 Market Bridgewater VA 22900 434-3344

**Properties**

List. No. Type Street City State Zip Asking Price

101 Single Family 104 South St. Williamsburg VA 22801 210,000

102 Building Lot 200 E. Main Elkton VA 31102 35,000

103 Single Family 300 W. Market Williamsburg VA 22801 200,000

104 Single Family 400 N. Maple Elkton VA 31102 175,500

105 Condo 500 E. Oak Elkton VA 31102 305,600

106 Building Lot 600 N. Dogwood Williamsburg VA 22801 32,000

107 Single Family 700 S. Crescent Bridgewater VA 22900 225,000

108 Condo 800 Lakewood Dr Elkton VA 31102 235,000

109 Single Family 419 Maple Williamsburg VA 22801 125,500

110 Townhouse 902 Park Bridgewater VA 22900 119,000

111 Townhouse 677 Market Elkton VA 31102 115,500

112 Single Family 230 Mt. Clinton Pike Williamsburg VA 22801 135,500

Note: The pictures of the properties has been placed in your course digital drop box. They are in a compressed folder so the folder will need to be unzipped. The images are in a JPEG format.

**The following indicates the actions that were taken on the data shown above**:

Agents Smith, Davis, Pill work at the Williamsburg Branch. Smith is the branch manager.

Agents Ramey and Jones work at the Elkton Branch. Ramey is the branch manager.

Alfred Baker works at the Bridgewater Branch. Alfred is also the branch manager.

Brown and Parket are independent agents.

Dominion National Bank uses Robert Dike, Phone 433-9922 as their contact person.

Robert is a Vice President.

First National Bank uses Laura Lamb, Phone 433-3434 as their contact person. Laura is a Loan Officer.

Al Able lists property 101 on 12/05/03 with agent Jane Smith

Bob Bodkin lists property 102 on 02/08/04 with agent Jane Smith

Dominion National Bank lists property 103 on 01/05/04 with agent Ellen Davis

Dominion National Bank lists property 109 on 03/07/04 with agent Ellen Davis

Paula Jones lists property 110 on 01/25/04 with agent Mollie Brown

First National Bank lists property 104 on 03/16/04 with agent Ellen Davis

First National Bank lists property 105 on 12/05/03 with agent Ellen Davis

First National Bank lists property 108 on 11/08/03 with agent Ellen Davis

Dominion National Bank lists property 106 on 02/15/04 with agent Ellen Davis

Bob Ellis lists property 107 on 04/03/04 with agent Frank Ramey

Jill Turner lists property 111 on 03/12/04 with agent Frank Ramey

Tammy Miller lists property 112 on 02/08/04 with agent Jane Smith

Gene Gual is interested in property 101, 102, and 103. Gene uses agent Jane Smith.

Jill Jenkins is interested in property 101, 102, and 106. Jill uses agent Jane Smith.

Ina Ingle is interested in property 101, 106, and 107. Ina uses agent Mollie Brown.

Nelson Jones is interest in property 106, and 111. Nelson uses agent Frank Ramey.

Kim Kemper is interested in property 102, 107, and 111. Kim uses agent Ellen Davis.

Mike Miller is interested in Property 102. Mike uses agent Ellen Davis.

Bob Smith (590) is interested in Property 106 and 111. Bob uses agent Mollie Brown.

On 04/08/04 Jill Jenkins makes an offer of 190,000 for listing number 101.

On 04/11/04 Bob Smith (510) makes an offer of 32,000 for listing number 102.

On 04/13/04 Kim Kemper makes an offer of 155,000 for listing number 103

On 04/01/04 Jane Johnston makes an offer of 29,000 for listing number 106. Jane uses agent Sarah Parket.

On 04/11/04 Mike Miller makes an offer of 105,000 for listing number 111.

On 04/12/04 Tom Turk makes an offer of 200,000 for listing number 108. Tom uses agent Sarah Parket.

On 04/17/04 Jane Johnston makes an offer of 115,550 for listing number 109. Jane uses agent Sarah Parket

On 04/06/04 Jane Johnston makes an offer of 195,000 for listing number 101. Jane uses agent Sarah Parket

On 04/12/04 Kim Kemper makes an offer of 201,000 for listing number 101.

On 04/11/04 Kim Kemper makes an offer of 225,000 for listing number 108.

**Queries:**

**Make sure you list only the items asked for and list them in the order ask.**

Query1: List the First Name, Last Name, and Phone of all Buyers. Order the list by City. Within City, order the list by Last Name.

Query2: List the Property type, Street, City, and Asking price of all Single Family properties in the database. Order the properties by Asking Price.

Query3: List each property type and the average price for the property type.

Query4: List each property in the database (Street, City, and Asking Price), the offers on the house Offer amount), and the difference between the Asking Price and the Offer Amount (Asking-Offer). Name the difference column DIFFERENCE. Do not list houses that have no offers. Order the list by Street address.

Query5: Allow a user to enter a **Listing Number**. List the Buyer’s name, offer amount, Seller’s name, house street address and asking price for any offer on the property. Order the list by buyers last name.Use Listing 101 to test your query.

Query6: Allow a user to enter a **buyer’s name** (First and Last). Using the buyers name, list the buyers name and phone number, house street and asking price of all houses that the buyer may be interested. Include houses that the buyer has placed an offer on **and** houses they are interested in but have not placed an offer on. Order the list by Street address. Test your query using Jill Jenkins.

Query7: Allow a user to enter a branch name. List all the agents for the branch office, the amount of any offer placed on a house listed by any agent in the branch, the address of the house(Street, City, State) the offer was placed on and the name of the buyer that placed the offer. Order the list by Street address. Test your query with the Williamsburg branch and the Bridgewater branch. (turn in both listings).

Query8: List all house addresses(Street, City, and State), the seller's name, and the name of any buyer that has an offer on the house. **Include the house address and seller's name of houses that do not have offers placed on them**.

Query9: List the First Name, Last Name, and phone number of all Agents, Buyers, and Sellers. Indicate whether the person is an Agent or a Buyer. Order the list by last name.

Query10: List the Name and Phone number of all agents along with the Branch Office name and the P.O. Box of the branch office the agent works for. Include all agents even if they do not work for a branch (they are independent). Order the list by Agent last name within Branch Office name.

Query11: List the Branch Name of all branches and the average asking price of properties listed by agents in the branch. Do not include properties that are Building Lots in the average but do include the average of properties that are listed by agents that do not work for a branch office.

Query12: Allow a user to enter an Amount. List the Street, City, Seller Name and Asking Price of any house that is priced within $20,000 of the price entered (20,000 higher or lower). Order the list by Street. To test your query use 220,000.

Query13: Allow a user to enter a Contact person’s name. List the seller name, listing number, and street address of all houses that Contact person is responsible for. Order the list by Listing number.

Query14: List the name of all independent agents (those not working for an agency), Buyer Name the agent represents, street address and offer price for all offers placed by the buyer. Include the name of all independent agents even if they do not have offers placed by a buyer or if the do not represent any buyers. Order the list by Buyer Name (Last, First) within Agent Name (Last, First).

Query15: Allow a user to enter a listing number. List the name of the seller and the name of the seller’s agent, the name of the buyer and the name of the buyer’s agent, and the amount of the offer. Order the list by Buyers name within buyer’s Agent name. Test your query by entering listing number 101

**Form 1:** Create a form that will allow a user to view all properties in the database.

**Form 2:** Create a form that will allow a user to enter an Agents’s Id. The form should display the Agent’s Name (first and Last), the Agent’s Branch if they work for one, and the Agent’s phone number. In a subform, list the Street, City, State, Asking Price, and Seller name of any property the Agent is selling. Test the form with agent Ellen Davis to turn in.

**Report1:** Create a Report that all properties (Street, City, State, Zip) Asking price, Seller’s Name, and Agent’s Name. Order the report by List Id within Seller Name within Agent Name.

**Report2:** Create a Report that All properties (Street, Asking Price, and Picture), Seller’s Name and Buyers name and Offer amount. Order the list by Agent Name. Count the number of properties for each agent, the total of the Asking Prices for that agent, and the total of the offers for that agent.

**System Administration Facility**

1. You must design and implement a system administration facility to add, delete, or update information about Branch Offices, Sellers, Sales Agents, Buyers and Properties.
2. Write the following PL/SQL Packages: Branch\_Offices, Sellers, Sales Agents, Buyers and Properties that will contain all the global data structures, Stored procedures to implement the queries developed in the previous section, Functions, and Triggers for its corresponding function.
3. Write triggers for the tables Branch\_Offices, Sellers, Sales\_Agents, Buyers and Properties that will save into the tables Branch\_Offices\_hist, Sellers\_hist, Sales\_Agents\_hist, Buyers\_hist and Properties\_hist all the rows before they get updated or deleted.
4. Write at least three additional triggers to implement business rules that you cannot implement using table constraints.

**GUI Interface**

Add a GUI interface for the queries, reports and administration facility.

You can use PL/SQL and/or Java and it can use the client/server or three tier architecture.

**Team Presentation – May 5th.**

1. Cover Page.
2. ER Diagram
3. About 10 slides
4. Demonstrate the implementation using either a database in your personal laptop on the CSCI 6441 database.

**Individual Deliverable – Upload to the Blackboard DBProj Project**

1. Cover Page.
2. ER Diagram
3. Physical Design
4. Printout of all query results
5. Printout of reports
6. Printout of all the PL/SQL code
7. Implementation Design of the GUI interface
8. You must place the final deliverable in paper and also create a folder with all the deliverable components, ZIP the folder and place it in BlackBoard’s digital drop box. The ZIP file must be named with first name initial and last name..

EXTRA CREDIT: Store in the database the pictures for the real estate properties and display the pictures in the reports.