

Step 1: (Review your implementation of Assignment 4, refine/correct as necessary)

Step 2: (Review your implementation plan from Assignment 5)

Review and develop the class specification for one of the algorithms discussed in your research paper (Assignment 5). Show me your class specification before you begin implementation.

Example Class Specifications:

```
Class QueryOptimizer {
    Tree *QueryTree;                // Pointer to the original query tree (not optimized)
    Tree *OptimizedTree;            // Pointer to the reorganized (optimized) query tree.
    QueryTree InsertQueryTree(relational_algebra_operator, relation1, [relation2], [conditions] );
    OptimizedTree OptimizeQueryTree();
    bool PrintQueryTree(* Tree);
    etc.
}
```

```
Class ConcurrencyControl {
    bool XLock( T-id, relation);
    bool XLock( T-id, relation, record );
    bool UnLock( T-id, relation);
    bool UnLock( T-id, relation, record );
    bool PrintLockTable();
    bool DetectDeadlock();
    T-id ResolveDeadlock();        // kill a transaction in order to remove deadlock.
    etc.
}
```

```
Class DistributedDB {
    bool AddRelationToGlobalSchema(Relation, OriginatingNode);
    bool RemoveRelationFromGlobalSchema(Relation, OriginatingNode);
    bool DisplayGlobalSchema( );
    bool XLockRelation(T-id, relation );
    bool UnlockRelation(T-id, relation );
    relation ReadRemoteRelation(T-id, relation );
    bool WriteRemoteRelation(T-id, relation );
    etc.
}
```

```
Class DataMine { http://databases.about.com/od/datamining/a/datamining.htm
    ClassificationTree();
    NeuralNetwork();
    Clustering();
    etc.
}
```

Step 3: (Implementation)

Implement the class specification developed in step 2. Extend your MINI_DB system to include your new algorithm.

Extra Credit: Extending your Index File Class (Cluster Index) (20 points)

If you haven't completely or correctly implemented the Cluster index in your Assignment 4, here is another chance. Extend your Index File Class to allow cluster indexes. If you have implemented the cluster index in assignment 4, then extend the cluster block so that the last pointer refers to another cluster block instead of a data record. Develop a test plan to demonstrate its functionality.

What to hand in:

- **Cover page** with proper title, your name, course # and name, assignment #, date, etc....
- **Source code** (documented)
- **Sample runs** (annotated if necessary)