Name of the files edited per task and the changes done:

Task 1: G clock replacement policy

1. *Buffer.java* - Methods initRefCount(), decrRefCount() and isReferenced() are added to increment, decrement and check status of referenceValue variable respectively.

2. *BasicBufferMgr.java* - Method chooseUnpinnedBuffer() is modified to implement the G clock replacement policy. Method unpin() is modified to initialise the referenceValue count to default value which may be passed through command line or default is set to 5.

3. *StartUp.java* - defaultRefCount value is set from command line if passed else default is set to 5.

Task 2: **Map data structure for buffer pool**

1. *BasicBufferMgr.java* - bufferPoolMap has been added keyed on block, BasicBufferMgr() constructor initialises it, pin() and pinNew() are used to put blocks in the buffer map. findExistingBuffer() gets the required block, chooseUnpinnedBuffer() removes the block from he map which has to be replaced.

Task 3: Revise SimpleDB to implement elements of recovery

1. *Buffer.java* - Methods, savedBlock() and restoreBlock() added.

2. *UpdateRecord.java* - A class created for managing the log updates and the undo() method at the end of the class will restore the changes made by this class at the time of crash. Parameters: transaction number, filename of the block, number of the block being updated and the number of the block in the file saving it.

3. *LogRecord.java* - A new type of record added, viz. UPDATE by assigned a value of 6.

4. *LogRecordIterator.java* - A case was added in the switch statement of this class to handle the Update Record.

5. *RecoveryMgr.java* - The methods setInt() and setString() were updated to update the value of the change and not append the value.

6. *Transaction.java* - Changed methods setInt() and setString() by introducing a check for empty buffer to save the offset .