```
Ant systemtest 如下
          virtual-machine:~/lab4$ ant systemtest
   Buildfile: /home/mo/lab4/build.xml
       [javac] Compiling 1 source file to /home/mo/lab4/bin/src
  testcompile:
       [javac] Compiling 2 source files to /home/mo/lab4/bin/test
       [junit] Running simpledb.systemtest.AbortEvictionTest
        [junit] Testsuite: simpledb.systemtest.AbortEvictionTest
       [junit] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.156 sec
[junit] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.156 sec
       [junit]
       [junit] Testcase: testDoNotEvictDirtyPages took 0.14 sec
        [junit] Running simpledb.systemtest.AggregateTest
        [junit] Testsuite: simpledb.systemtest.AggregateTest
       [junit] Tests run: 6, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.129 sec
[junit] Tests run: 6, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.129 sec
       [iunit]
       [junit] Testcase: testSum took 0.055 sec
       [junit] Testcase: testMin took 0.009 sec
        [junit] Testcase: testMax took 0.011 sec
        [junit] Testcase: testCount took 0.011 sec
        [junit] Testcase: testAverage took 0.007 sec
        [junit] Testcase: testAverageNoGroup took 0.008 sec
       [junit] Running simpledb.systemtest.BTreeFileDeleteTest
        [junit] Testsuite: simpledb.systemtest.BTreeFileDeleteTest
       [junit] Tests run: 6, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 6.054 sec
[junit] Tests run: 6, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 6.054 sec
       [iunit]
    [junit] Testsuite: simpledb.systemtest.DeleteTest
    [junit] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.372 sec
[junit] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.372 sec
     [junit]
     [iunit] Testcase: testEquals took 0.122 sec
     [junit] Testcase: testLessThan took 0.051 sec
     [junit] Testcase: testLessThanOrEq took 0.061 sec
[junit] Testcase: testGreaterThan took 0.055 sec
     [junit] Testcase: testGreaterThanOrEq took 0.05 sec
     [junit] Running simpledb.systemtest.EvictionTest
     [junit] Testsuite: simpledb.systemtest.EvictionTest
     [junit] EvictionTest creating large table
     [junit] EvictionTest scanning large table
     [junit] EvictionTest scan complete, testing memory usage of scan
     [junit] ---
     [junit] Testcase: testHeapFileScanWithManyPages took 1.65 sec
     [junit] Running simpledb.systemtest.FilterTest
[junit] Testsuite: simpledb.systemtest.FilterTest
     [junit] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.207 sec
[junit] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.207 sec
```

[junit]

[junit] Testcase: testEquals took 0.078 sec
[junit] Testcase: testLessThan took 0.028 sec
[junit] Testcase: testLessThanOrEq took 0.032 sec
[junit] Testcase: testGreaterThan took 0.024 sec
[junit] Testcase: testGreaterThanOrEq took 0.018 sec
[junit] Running simpledb.systemtest.HashEquiJoinTest
[junit] Testsuite: simpledb.systemtest.HashEquiJoinTest

[junit] Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.084 sec

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[junit] Testcase: testNoMatch took 0.004 sec
         [junit] Testcase: testMultipleMatch took 0.005 sec
         [junit] Running simpledb.systemtest.InsertTest
         [junit] Testsuite: simpledb.systemtest.InsertTest
         [junit] Tests run: 4, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.089 sec
[junit] Tests run: 4, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.089 sec
         [iunit]
         [junit] Testcase: testOneToOne took 0.049 sec
         [junit] Testcase: testEmptyToEmpty took 0.007 sec
[junit] Testcase: testEmptyToOne took 0.005 sec
         [junit] Testcase: testOneToEmpty took 0.007 sec
         [junit] Running simpledb.systemtest.JoinTest
[junit] Testsuite: simpledb.systemtest.JoinTest
                     Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.099 sec
         [junit] Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.099 sec
         [junit]
         [junit] Testcase: testSingleMatch took 0.071 sec
         [junit] Testcase: testNoMatch took 0.006 sec
         [junit]
                     Testcase: testMultipleMatch took 0.003 sec
         [junit] Running simpledb.systemtest.QueryTest
        [junit] Started a new transaction tid = 9
[junit] Added scan of table emp
         [junit] Added scan of table dept
         [junit] Added scan of table hobbies
[junit] Added scan of table hobby
         [junit] Added join between emp.c1 and dept.c0
         [junit] Added join between hobbies.c0 and emp.c2
         [junit] Added join between hobbies.c1 and hobby.c0
         [junit] Added select list field null.*
                         c0 emp.c1 emp.c2 emp.c3 emp.c4 emp.c5 dept.c0 dept.c1 dept.c2 hobbies.c0 hobby.c3 hobby.c4 hobby.c5
        [junit] Transaction 9 aborted because of unhandled error
                                   --- Standard Error ------
                     simpledb.DbException: 2
at simpledb.Parser.processNextStatement(Parser.java:558)
at simpledb.Parser.processNextStatement(Parser.java:497)
at simpledb.Parser.processNextStatement(Parser.java:497)
at simpledb.systemtest.QueryTest.queryTest(QueryTest.java:82)
at sun.reflect.NativeMethodAccessorImpl.invoke0(NativeMethodAccessorImpl.java:62)
at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:62)
at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
at java.lang.reflect.Method.invoke(Method.java:498)
at org.junit.runners.model.FrameworkMethodSt.runReflectiveCall(FrameworkMethod.java:44)
at org.junit.runners.model.FrameworkMethodSt.runReflectiveCall(FrameworkMethod.java:41)
at org.junit.internal.runners.model.ReflectiveCallable.run(ReflectiveCallable.java:15)
at org.junit.internal.runners.statements.InvokeMethod.evaluate(InvokeMethod.java:28)
at org.junit.internal.runners.statements.FailOnTimeouts.call(FailOnTimeout.java:32)
at java.util.concurrent.FutureTask.run(FutureTask.java:266)
at java.util.concurrent.ThreadPoolExecutor.vunNorker(ThreadPoolExecutor.java:624)
at java.lang.Thread.run(Thread.java:758)
         [iunit] simpledb.DbException: 2
        [junit]
         [iunit]
         [junit]
         [junit]
[junit]
[junit]
         [junit]
         junit]
junit]
         junit
         junit
                         at java.lang.Thread.run(Thread.java:750)
         [junit
         [junit] Testcase: queryTest took 2.839 sec
[junit] Running simpledb.systemtest.ScanTest
[junit] Testcuita: cimpledb.systemtest ScanTest
       [junit] Testcase: queryTest took 2.839 sec
        [junit] Running simpledb.systemtest.ScanTest
       [junit] Testsuite: simpledb.systemtest.ScanTest
       [junit] Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.721 sec
[junit] Tests run: 3, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.721 sec
        [junit] Testcase: testRewind took 0.046 sec
       [iunit] Testcase: testCache took 0.361 sec
       [junit] Testcase: testSmall took 0.302 sec
        [junit] Running simpledb.systemtest.TransactionTest
        [junit] Testsuite: simpledb.systemtest.TransactionTest
       [junit] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 16.671 sec
[junit] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 16.671 sec
        [junit] Testcase: testTwoThreads took 0.189 sec
       [junit] Testcase: testTenThreads took 13.499 sec
       [junit] Testcase: testAllDirtyFails took 0.082 sec
       [junit] Testcase: testSingleThread took 0.026 sec
[junit] Testcase: testFiveThreads took 2.848 sec
BUILD SUCCESSFUL
Total time: 41 seconds
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[depend] The class simpledb.BTreeInternalPageIterator in file /home/mo/lab4/bin/src/simpledb/BTreeInternalPageIterator.class is out of
     to simpledb.RecordId but has not been deleted because its source file could not be determined
[depend] The class simpledb.BTreeInternalPageReverseIterator in file /home/mo/lab4/bin/src/simpledb/BTreeInternalPageReverseIterator.cla
      ut of date due to simpledb.RecordId but has not been deleted because its source file could not be determined
[depend] The class simpledb.BTreeFileIterator in file /home/mo/lab4/bin/src/simpledb/BTreeFileIterator.class is out of date due to simpl
[depend] The class simpledb.BTreeFileIterator in file /home/mo/lab4/bin/src/simpledb/BTreeFileIterator.class is out of date due to simpl bstractDbFileIterator but has not been deleted because its source file could not be determined [depend] The class simpledb.BTreeSearchIterator in file /home/mo/lab4/bin/src/simpledb/BTreeSearchIterator.class is out of date due to s db.AbstractDbFileIterator but has not been deleted because its source file could not be determined [depend] The class simpledb.TupleComparator in file /home/mo/lab4/bin/src/simpledb/TupleComparator.class is out of date due to simpledb. but has not been deleted because its source file could not be determined [depend] The class simpledb.BTreeLeafPageReverseIterator in file /home/mo/lab4/bin/src/simpledb/BTreeLeafPageReverseIterator.class is out date due to simpledb.Tuple but has not been deleted because its source file could not be determined [depend] The class simpledb.BTreeLeafPageIterator in file /home/mo/lab4/bin/src/simpledb/BTreeLeafPageIterator.class is out of date due mpledb.Tuple but has not been deleted because its source file could not be determined [depend] The class simpledb.TupleArrayIterator in file /home/mo/lab4/bin/src/simpledb/TupleArrayIterator.class is out of date due to sim .Tuple but has not been deleted because its source file could not be determined [depend] The class simpledb.TupleArrayIterator in file /home/mo/lab4/bin/src/simpledb/TupleArrayIterator.class is out of date due to sim .Tuple but has not been deleted because its source file could not be determined [depend] Deleted 106 out of date files in 0 seconds
      [depend] Deleted 106 out of date files in 0 seconds
[javac] Compiling 79 source files to /home/mo/lab4/bin/src
[javac] /home/mo/lab4/src/java/simpledb/Catalog.java:171: warning: [unchecked] unchecked cast
[javac] return (Integer) tables.get(index++).id;
        [javac]
[javac]
                        required: Intege
                        found: java.lang.Integer
where Integer is a type-variable:
Integer extends Object declared in class Catalog.TableIdIterator
        [javac]
         [iavac]
        [javac] 1 warning
testcompile:
    [junit] Running simpledb.AggregateTest
    [junit] Testsuite: simpledb.AggregateTest
    [junit] Tests run: 8, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.08 sec
[junit] Tests run: 8, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.08 sec
    [junit]
     [junit] Testcase: getTupleDesc took 0.026 sec
     [junit] Testcase: countStringAggregate took 0.002 sec
    [junit] Testcase: sumStringGroupBy took 0.003 sec
[junit] Testcase: sumAggregate took 0.001 sec
     [junit] Testcase: avgAggregate took 0.001 sec
     [junit] Testcase: maxAggregate took 0.001 sec
    [junit] Testcase: minAggregate took 0 sec
[junit] Testcase: rewind took 0.001 sec
     [junit] Running simpledb.BTreeDeadlockTest
     [junit] Testsuite: simpledb.BTreeDeadlockTest
    [junit] testReadWriteDeadlock constructing deadlock:
     [junit] testReadWriteDeadlock resolved deadlock
    [junit] -----
    [junit] ---------- Standard Error ------
     [junit] simpledb.TransactionAbortedException
     [iunit]
                           at simpledb.BufferPool.getPage(BufferPool.java:694)
                            at simpledb.BTreeFile.getPage(BTreeFile.java:512)
     [junit]
    [junit]
                            at simpledb.BTreeFile.getParentWithEmptySlots(BTreeFile.java:424)
     [junit]
                            at simpledb.BTreeFile.splitLeafPage(BTreeFile.java:316)
     [junit]
                            at simpledb.BTreeFile.insertTuple(BTreeFile.java:548)
                            at simpledb.BufferPool.insertTuple(BufferPool.java:808)
     [junit]
                            at simpledb.BTreeUtility$BTreeWriter.run(BTreeUtility.java:522)
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非常多行直到

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