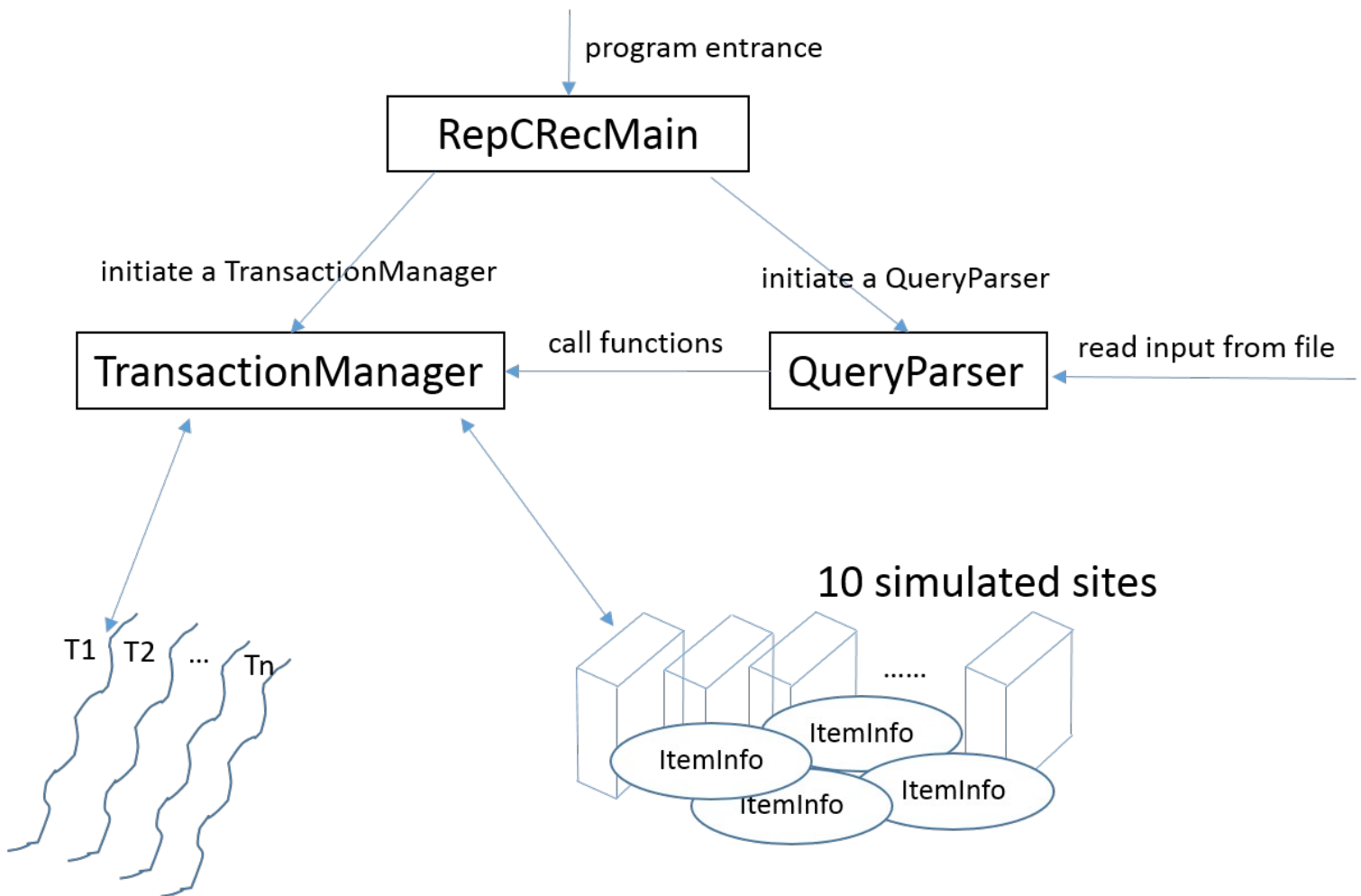


Code Structure and Component Relation Illustration



Code Structure Description

This replicated concurrency control and recovery database consists of 6 main parts, **RepCRecMain.java**, **QueryParser.java**, **TransactionManager.java**, **Transaction.java**, **SimulatedSite.java**, **ItemInfo.java**

- **RepCRecMain**, the entrance of the program, it does only two things:
 - initialize a **QueryParser**

- initialize a TransactionManager.
- QueryParser
 - parse user input and call methods in TransactionManager
 - check and execute unfinished query first when the logical time advanced
 - call deadLockCheckAndHandle() after a read / write query
- TransactionManager, the central control of the program.
 - initialize the cluster (simulated sites)
 - create a transaction when it receives “begin()” or “beginRO()”
 - handle all commands from QueryParser, with the help of different transactions.
- Transaction, the executing thread, one thread for each transaction.
 - create a database snapshot when a readonly transaction is initialized
 - perform commitReadsAndWrites() and releaseLocks()
- SimulatedSite, the site actually store the data and perform certain operations on data
 - use a lockTable to manager locks of different items
 - accept updateConflicts() / dump() / fail() / recover() / commands from TransactionManager
- ItemInfo, stores all information about an item, with relative method to operate the item
 - stores lock information and wait list information about this item
 - provide any lock information about the item
 - perform a critical operation, updateItemLockStatus()

Evolution

Program structure is changed from multi-threaded to single-threaded.