Thread safety concerns for the class DataContext

|  |  |  |
| --- | --- | --- |
| Member | Synchronization | Note |
| Constructor | None | Inherently thread safe because can be called only by a single thread |
| Destructor | None | Assumes that the object is not visible by anybody when destructor is called. |
| IsReadOnly | None | Immutable property |
| UniqueId | None | Immutable property |
| Name | None | Not supposed to be written by other threads |
| EntityChanged | Yes | Thread safety provided by simple lock mechanism (eventLock member) |
| EntityContext | None | Immutable property |
| DataInfrastructure | None | Immutable property |
| DataContextPool | None | Immutable property |
| DbInfrastructure | None | Immutable property |
| TypeEngine | None | Immutable property |
| DataLoader | None | Immutable property |
| DataSaver | None | Immutable property |
| SerializationManager | None | Immutable property |
| DataConverter | None | Immutable property |
| EnableNullVirtualization | None | Immutable property |
| CreateEntity1 | None | Not supposed to be called from other threads |
| CreateEntity2 | None | Not supposed to be called from other threads |
| CreateEntityAndRegisterAsEmpty | None | Not supposed to be called from other threads |
| Contains | Read | Does not modify internal state |
| GetLocalEntity | Write | Might require to load an entity from the database and thus modify the internal state |
| GetNormalizedEntityKey | Read | Does not modify internal state |
| GetEntity | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| DefineRowKey | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| DefineEntityModificationEntry1 | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| DefineEntityModificationEntry2 | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| GetEntityModificationEntryId1 | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| GetEntityModificationEntryId2 | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| ContainsChanges | Read | Does not modify internal state |
| RegisterEmptyEntity | None | Not supposed to be called from other threads |
| UnregisterEmptyEntity | None | Not supposed to be called from other threads |
| UpdateEmptyEntityStatus | None | Not supposed to be called from other threads |
| IsRegisteredAsEmptyEntity | Read | Does not modify internal state |
| DeleteEntity | None | Not supposed to be called from other threads |
| IsDeleted | Read | Does not modify internal state |
| GetEntities | Read | Does not modify internal state |
| GetManagedEntityTypeIds | None | Internal method supposed to be called by methods having acquired the lock |
| GetModifiedEntities | None | Internal method supposed to be called by methods having acquired the lock |
| GetEntitiesDeleted | None | Internal method supposed to be called by methods having acquired the lock |
| GetEntitiesToDelete | None | Internal method supposed to be called by methods having acquired the lock |
| MarkAsDeleted | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| ResaveReferencingFields | None | Not supposed to be called from other threads |
| ResaveReferencingField1 | None | Not supposed to be called from other threads |
| ResaveReferencingFields2 | None | Not supposed to be called from other threads |
| GetFieldsToResave | None | Internal method supposed to be called by methods having acquired the lock |
| ClearFieldsToResave | None | Internal method supposed to be called by methods having acquired the lock |
| ResolveEntity1 | Write | Might modify the internal state. |
| ResolveEntity2 | None | Calls a method that does its job and acquires the write lock. |
| ResolveEntity3 | None | Calls a method that does its job and acquires the write lock. |
| Reload | Write | Might modify the internal state. |
| DeleteDeletedEntities | None | Internal method supposed to be called by methods having acquired the lock |
| ReloadOutDatedEntities | None | Internal method supposed to be called by methods having acquired the lock |
| GetByExample | Write | Might modify the internal state. |
| GetByRequest | Write | Might modify the internal state. |
| SaveChanges | None | Not supposed to be called from other threads |
| Contains | None | Not supposed to be called from other threads |
| Synchronize1 | None | Not supposed to be called from other threads |
| Synchronize2 | None | Not supposed to be called from other threads |
| Synchronize3 | None | Not supposed to be called from other threads |
| Synchronize4 | None | Not supposed to be called from other threads |
| RemoveAllReferences | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| RemoveReferences | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| GetPossibleReferencers | None | Internal method supposed to be called by methods not supposed to be called from other threads or having acquired the lock |
| Dispose1 | None | Not supposed to be called from other threads |
| Dispose2 | None | Not supposed to be called from other threads |
| AssertDataContextIsNotDisposed | None | The diposed state is not supposed to be changed from other threads and this method only reads that state |
| AssertEntityIsNotForeign | None | Not necessary because this only reads properties of the entity and of the DataContext that are considered immutable. |
| IsForeignEntity | None | Not necessary because this only reads properties of the entity and of the DataContext that are considered immutable. |
| GetPersistedId | Read | Does not modify the internal state |
| GetPersistedEntity | Write | Might modify the internal state because it can load an entity from the database. |
| IsPersistent | None | Calls a method that does its job and acquires the read lock. |
| HandleEntityCreated | None | Internal method supposed to be called by methods having acquired the lock |
| OnCreationAssignToDataContext | None | Internal method supposed to be called by methods having acquired the lock |
| OnCreationPatchEntity | None | Internal method supposed to be called by methods having acquired the lock |
| OnCreationRegisterAsEmptyEntity | None | Internal method supposed to be called by methods having acquired the lock |
| OnCreationFreezeEntity | None | Internal method supposed to be called by methods having acquired the lock |
| OnCreationAddToCache | None | Internal method supposed to be called by methods having acquired the lock |
| HandleEntityChanged | None | Does not rely on mutable internal state. |
| NotifyEntityChanged | Yes | Thread safety ensured by lock mechanism (eventLock) |
| CopyEntity | Read then Write | Read for start of method on sender DataContext then Write for end of method on receiver DataContext. |

Thread safety concerns for the Proxy classes

Their PromoteToRealInstance must be lock the associate DataContext in Write mode, because it might modify its internal state.