Expense Manager Simple

Persistence Layer

PersistenceFactory

- Criar no package persistence a classe PersistenceFactory cujo objetivo é criar
  - A **Fábrica** de Fábricas de Repositórios, que é **única**.
    O método buildRepositoryFactory() devolve a fábrica de repositórios de acordo com a estratégia escolhida. Isto é uma InMemoryRepositoryFactory (old PersistenceRegistry) ou JpaRepositoryFactory
- Os padrões utilizados:
  - **Factory**
  - **Singleton**
  - **Strategy**

```
public class PersistenceFactory {

    //SINGLETON
    private PersistenceFactory() {

        // … ver a seguir
    }
    //LAZY LOADING – create only when needed
    private static PersistenceFactory instance = null;

    public static PersistenceFactory getInstance() {
        if (instance == null) {
            instance = new PersistenceFactory ();
        }
        return instance;
    }

    public IRepositoryFactory buildRepositoryFactory(){

        //  … ver a seguir
}
//….
}
```

Considere que existe na pasta raíz do projeto um ficheiro de propriedades **Persistence.properties**
Com a linha

PERSIST = "persistence.JpaRepositoryFactory"

PersistenceFactory Constructor

Considere que existe na pasta raíz do projeto um ficheiro de propriedades **expensemanager.properties**
Com a linha

PERSIST = "persistence.JpaRepositoryFactory"

```
private PersistenceFactory() {
//vai ao ficheiro config  - Persist.config- buscar qual a
//politica a usar .   Por omissão   hibernate
      try{
         FileInputStream propFile = new FileInputStream("Persistence.config");
         Properties p = new Properties(System.getProperties());
         p.load(propFile);
         System.setProperties(p);
        // p.propertyNames();
      } catch(Exception e) {
         System.setProperty("PERSIST", "JpaRepositoryFactory");
// System.setProperty("PERSIST", "persistance.JpaRepositoryFactory");
      }
   }
```

```
public  IRepositoryFactory buildRepositoryFactory()
   {
      String desc = System.getProperty("PERSIST");

      try
      {
         return (IRepositoryFactory)
         Class.forName(desc).newInstance();
      } catch(Exception ex)
      {
    return null;
      }
   }
```

```
public class InMemoryRepositoryFactory implements
IRepositoryFactory{

    @Override
   public IExpenseRepository getExpenseRepository(){
        return new Persistence.inmemory.ExpenseRepository();
    }

    @Override
    public IExpenseTypeRepository getExpenseTypeRepository(){
        return new Persistence.inmemory.ExpenseTypeRepository();
    }
    @Override
    public IPaymentMeansRepository getPaymentMeansRepository(){
        return new Persistence.inmemory.PaymentMeansRepository();
    }
}
```

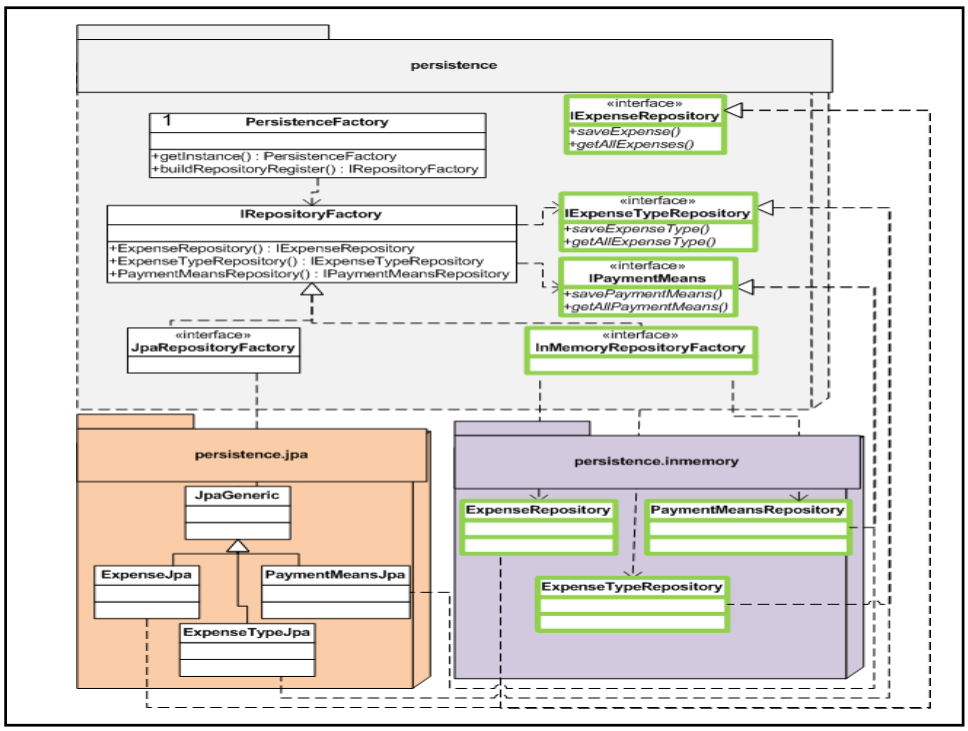
```
public class JpaRepositoryFactory
                implements IRepositoryFactory{

    @Override
    public IExpenseRepository getExpenseRepository(){
        return new persistence.jpa.ExpenseDAO();
    }

    @Override
    public IExpenseTypeRepository getExpenseTypeRepository(){
        return new persistence.jpa.ExpenseJpa();
    }

    @Override
    public IPaymentMeansRepository getPaymentMeansRepository(){
        return new persistence.jpa.PaymentMeansJpa();

    }
}
```

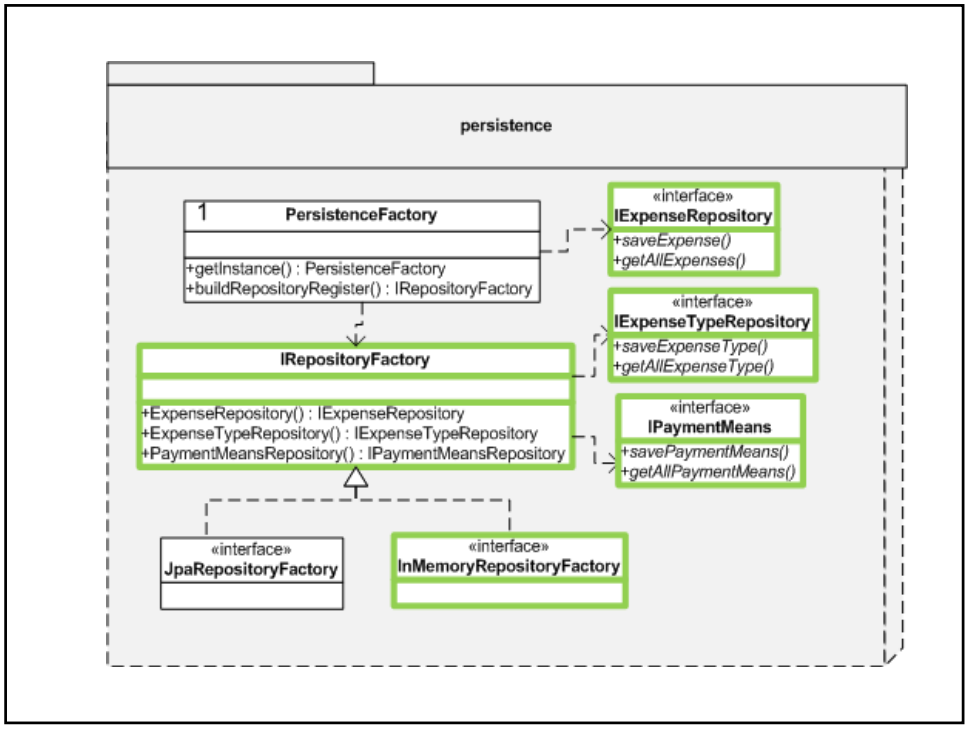
```
public interface IExpenseTypeRepository {

public ExpenseType saveExpenseTType(
                ExpenseType expenseType);


public List<ExpenseType> getAllExpenseType();
}
```

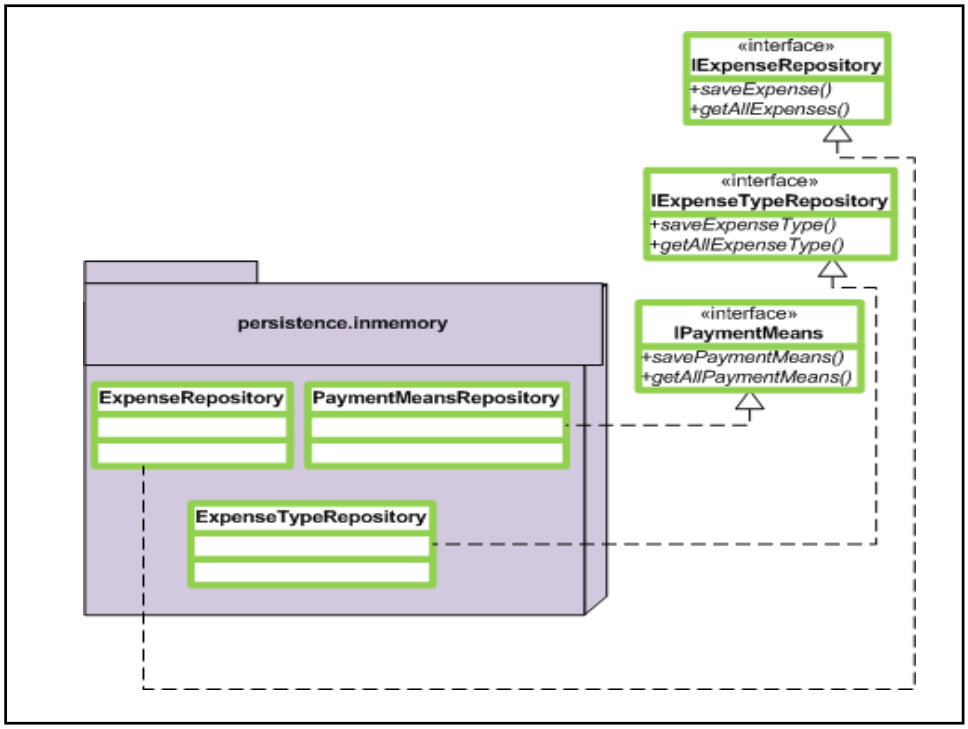
Criar uma instância de um determinado Repositório

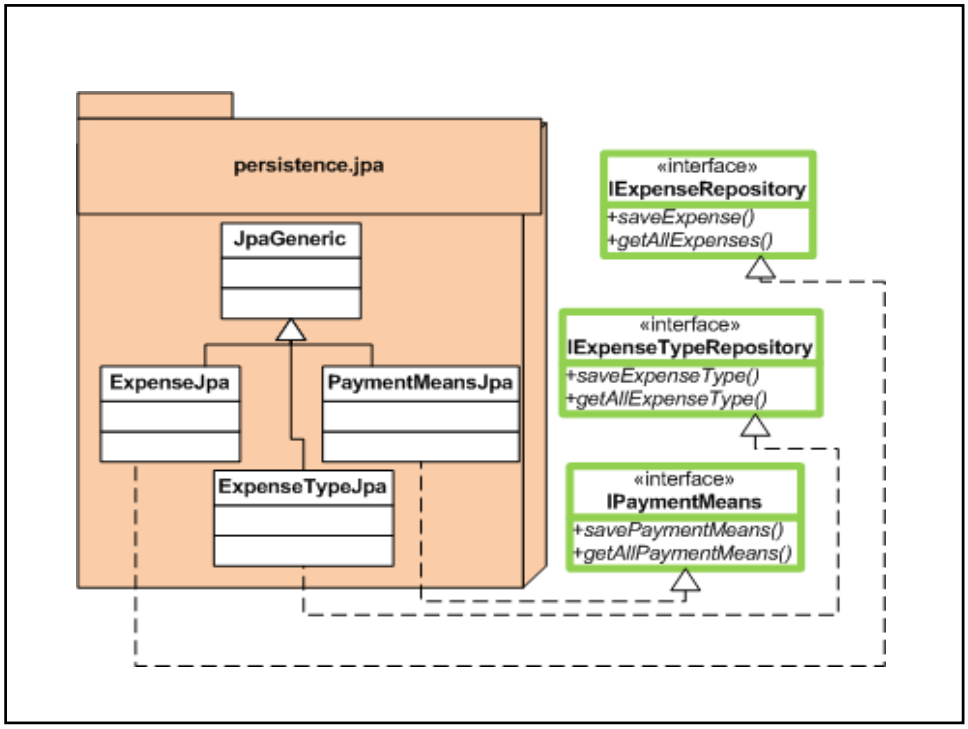
- Por exemplo:
  - ExpenseRegisterController invoca o ExpenseRepository para gravar uma nova expense

```
public void saveExpense( Expense expense) {
IExpenseRepository repo=
    PersistenceFactory.getInstance().buildRepositoryFactory.
    expenseRepository();
 repo.saveExpense(expense);
  }
```




persistence
1
PersistenceFactory
+getInstance() : PersistenceFactory
+buildRepositoryRegister() : IRepositoryFactory
«interface»
IExpenseRepository
+saveExpense()
+getAllExpenses()
«interface»
IExpenseTypeRepository
+saveExpenseType()
+getAllExpenseType()
«interface»
IPaymentMeans
+savePaymentMeans()
+getAllPaymentMeans()
IRepositoryFactory
+ExpenseRepository() : IExpenseRepository
+ExpenseTypeRepository() : IExpenseTypeRepository
+PaymentMeansRepository() : IPaymentMeansRepository
«interface»
JpaRepositoryFactory
«interface»
InMemoryRepositoryFactory


«interface»
IExpenseRepository
+saveExpense()
+getAllExpenses()
«interface»
IExpenseTypeRepository
+saveExpenseType()
+getAllExpenseType()
«interface»
IPaymentMeans
+savePaymentMeans()
+getAllPaymentMeans()
persistence.inmemory
ExpenseRepository
PaymentMeansRepository
ExpenseTypeRepository




```
public abstract class JpaGeneric <T, PK extends Serializable> {

static protected EntityManagerFactory emf =
 Persistence.createEntityManagerFactory("eapli.ExpenseManagerPU");

protected EntityManager getEntityManager() {
    EntityManager entityManager =emf.createEntityManager();
    return entityManager;
   }
protected Class<T> entityClass;
public JpaGeneric() {
ParameterizedType genericSuperclass =
(ParameterizedType) getClass().getGenericSuperclass();
this.entityClass = (Class<T>)
            genericSuperclass.getActualTypeArguments()[0];
   }
```

```
public T create(T t) {
    this.getEntityManager().persist(t);
    return t;
}

 public T read(PK id) {
    return this.getEntityManager().find(entityClass, id);
}

public T update(T t) {
      // Verificar se já existe
    return this.getEntityManager().merge(t);
}

public void delete(T t) {
    t = this.getEntityManager().merge(t);
    this.getEntityManager().remove(t);
}
```

```
public long getTotalCount() {
    return (Long) getEntityManager().
            createQuery("SELECT COUNT(*) FROM "
              +entityClass.getSimpleName() .getSingleResult();
}


public Collection<T> findAll() {
    return getEntityManager().createQuery( "FROM " +
                        entityClass.getSimpleName()).getResultList();
}
```

```
/
 * inserts or updates an entity
 * @param entity
 * @return the persisted entity - migth be a diferent object than the parameter
 */
public T save(T entity) {
    if (entity == null) {
        throw new IllegalArgumentException();
    }
    EntityManager em = getEntityManager();
    assert em != null;
    try {
        // transaction will be rolled back if any exception occurs
        EntityTransaction tx = em.getTransaction();
        try {
            tx.begin();
            em.persist(entity);
            tx.commit();
        } catch (PersistenceException ex) {
            tx.rollback();
            // we need to set up a new transaction if persist raises an exception
            tx = em.getTransaction();
            tx.begin();
            entity = em.merge(entity);
            tx.commit();
        }
    } finally {
        em.close();
    }
    return entity;
}
```

```
public List<T> all() {

EntityManager em = getEntityManager();
assert em != null;

String tableName = entityClass.getName();

entityClass.getAnnotation(Table.class).name();

Query q = em.createQuery("SELECT it FROM " +
tableName + " it");

List<T> all = q.getResultList();
return all;
 }
}
```