Anass Arrhioui

Diagramme de classes générale

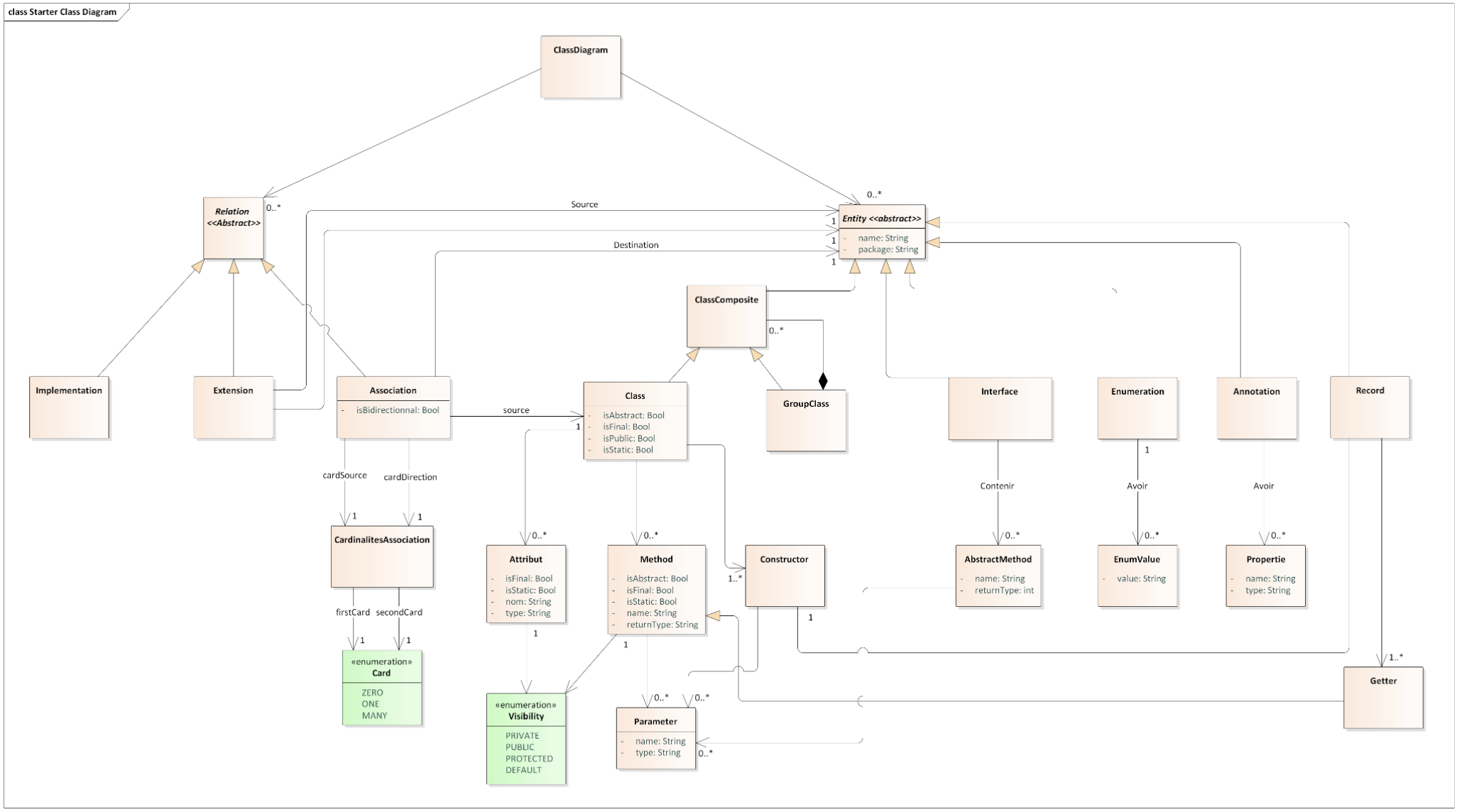

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Diagramme de classes pour les designs patterns

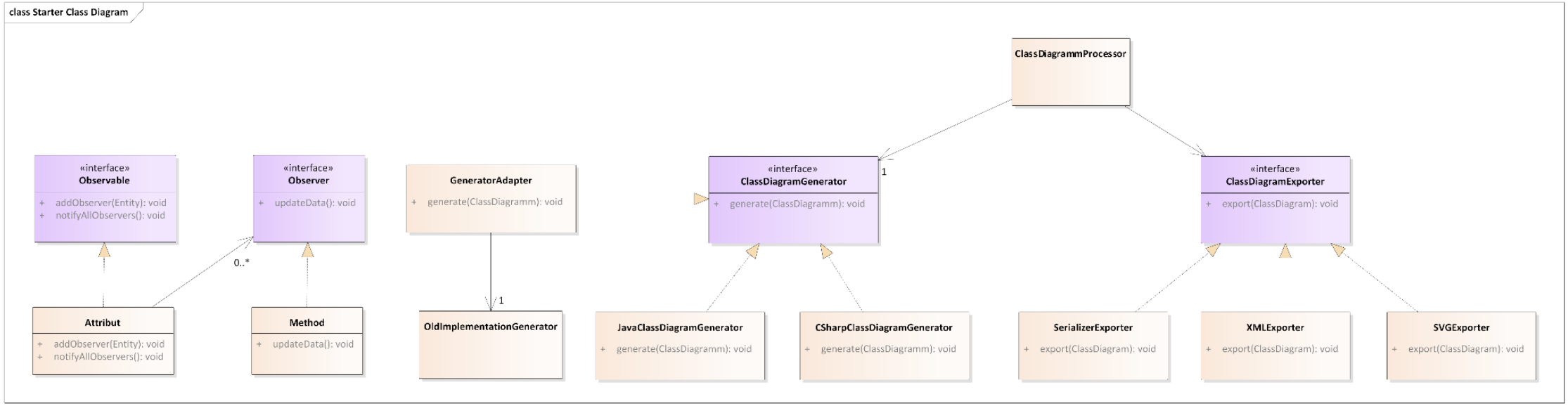

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Diagramme de classes générale

Diagramme de classes pour les designs patterns

Les classes du diagramme

Partie Entité

Entity

```
public abstract class Entity  implements Serializable {

    protected String name;
    protected String classPackage;


    public Entity(String name, String classPackage) {
        this.name = name;
        this.classPackage = classPackage;
    }

    public String getName() {
        return name;
    }

    public String getClassPackage() {
        return classPackage;
    }
}
```

ClassComposite

```
public abstract class ClassComposite extends Entity implements Serializable {
    public ClassComposite(String name, String classPackage) {
        super(name, classPackage);
    }
}
```

Class

```
public class Class extends ClassComposite implements Serializable {

    private boolean isPublic;
    private boolean isStatic;
    private boolean isFinal;
    private boolean isAbstract;
    private List<Attribut> attributs;
    private List<Method> methods;
    private List<Constructor> constructors;




    public Class(String name, String classPackage, boolean isPublic, boolean isStatic, boolean isFinal
        super(name, classPackage);
        this.isPublic = isPublic;
        this.isStatic = isStatic;
        this.isFinal = isFinal;
        this.isAbstract = isAbstract;
        this.attributs = attributs;
        this.methods = methods;
        this.constructors = constructors;
    }

    @Override
    public String toString() {
        return "Class{" +
                ", classPackage='" + classPackage + '\'' +
                ", name='" + name + '\'' +
                "isPublic=" + isPublic +
                ", isStatic=" + isStatic +
                ", isFinal=" + isFinal +
                ", isAbstract=" + isAbstract +
                ", constructors=" + constructors +
                ", attributs=" + attributs +
                ", methods=" + methods +
                '}';
    }
}
```

GroupClass

```
public class GroupClass extends ClassComposite {
    List<ClassComposite> classComposites = new ArrayList<>();

    public GroupClass(String name, String classPackage) {
        super(name, classPackage);
    }

    public List<ClassComposite> getClassComposites() {
        return classComposites;
    }

    public void setClassComposites(List<ClassComposite> classComposites) {
        this.classComposites = classComposites;
    }
}
```

Attribut

```
public class Attribut implements Serializable, Observable {

    private String name;
    private String type;
    private boolean isStatic;
    private boolean isFinal;
    private Visibility visibility;
    private List<Observer> observers = new ArrayList<>();

    public Attribut(String name, String type, boolean isStatic, boolean isFinal, Visibility visibility
        this.name = name;
        this.type = type;
        this.isStatic = isStatic;
        this.isFinal = isFinal;
        this.visibility = visibility;
    }

    public String getName() {
        return name;
    }

    @Override
    public String toString() {
        return "\n\tAttribut{" +
                "name='" + name + '\'' +
                ", type='" + type + '\'' +
                ", isStatic=" + isStatic +
                ", isFinal=" + isFinal +
                ", visibility=" + visibility +
                "}\n";
    }

    @Override
    public void addObserver(Observer observer) {
        this.observers.add(observer);
    }

    @Override
    public void removeObserver(Observer observer) {
        this.observers.remove(observer);
    }

    @Override
    public void notifyAllObservers() {
        observers.forEach(observer -> observer.update(this));
    }
}
```

Method

```
public class Method implements Serializable, Observer {

    private String name;
    private String returnType;
    private boolean isStatic;
    private boolean isFinal;
    private boolean isAbstract;

    private Visibility visibility;
    private List<Parameter> parameters;


    public Method(String name, String returnType, boolean isStatic, boolean isFinal, boolean isAbstrac
        this.name = name;
        this.returnType = returnType;
        this.isStatic = isStatic;
        this.isFinal = isFinal;
        this.isAbstract = isAbstract;
        this.visibility = visibility;
        this.parameters = parameters;
    }

    @Override
    public String toString() {
        return "\n\tMethod{" +
                "name='" + name + '\'' +
                ", returnType='" + returnType + '\'' +
                ", isStatic=" + isStatic +
                ", isFinal=" + isFinal +
                ", isAbstract=" + isAbstract +
                ", visibility=" + visibility +
                ", parameters=" + parameters +
                "}\n";
    }

    @Override
    public void update(Attribut data) {
        System.out.println("Observer triggered for " + data.getName());
    }
}
```

Parameter

```
public class Parameter  implements Serializable {
    private String name;
    private String type;

    public Parameter(String name, String type) {
        this.name = name;
        this.type = type;
    }


    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getType() {
        return type;
    }

    public void setType(String type) {
        this.type = type;
    }

    @Override
    public String toString() {
        return "\n\t\tParameter{" +
                "name='" + name + '\'' +
                ", type='" + type + '\'' +
                "}\n";
    }
}
```

Interface

```
public class Interface extends Entity  implements Serializable {

    List<AbstractMethod> abstractMethods;

    public Interface(String name, String classPackage, List<AbstractMethod> abstractMethods) {
        super(name, classPackage);
        this.abstractMethods = abstractMethods;
    }


    @Override
    public String toString() {
        return "Interface{" +
                ", classPackage='" + classPackage + '\'' +
                ", name='" + name + '\'' +
                "abstractMethods=" + abstractMethods +
                "}\n";
    }
}
```

Record

```
public class Record extends Entity implements Serializable {

    private Constructor constructor;
    List<Attribut> attributs;

    List<Getter> getters;


    public Record(String name, String classPackage, Constructor constructor, List<Attribut> attributs,
        super(name, classPackage);
        this.constructor = constructor;
        this.attributs = attributs;
        this.getters = getters;
    }
}
```

Getter

```
public class Getter extends Method {
    public Getter(String name, String returnType, boolean isStatic, boolean isFinal, boolean isAbstrac
        super(name, returnType, false, false, false, Visibility.PUBLIC, parameters);
    }
}
```

```
public class Annotation extends Entity implements Serializable {
    public Annotation(String name, String classPackage) {
        super(name, classPackage);
    }


    @Override
    public String toString() {
        return "Annotation{" +
                "name='" + name + '\'' +
                ", classPackage='" + classPackage + '\'' +
                "}\n";
    }
}
```

```
public class EnumVal  implements Serializable {
    private String value;

    public EnumVal(String value) {
        this.value = value;
    }


    @Override
    public String toString() {
        return "EnumVal{" +
                "value='" + value + '\'' +
                "}\n";
    }
}
```

Relations

Relation

```
public abstract class Relation  implements Serializable {

}
```

Association

```
public class Association extends Relation implements Serializable {

    private Class source;
    private Class destination;
    private Cardinalite cardMinSource;
    private Cardinalite cardMaxSource;
    private Cardinalite cardMinDestination;
    private Cardinalite cardMaxDestination;


    public Association(Class source, Class destination, Cardinalite cardMinSource, Cardinalite cardMax
        this.source = source;
        this.destination = destination;
        this.cardMinSource = cardMinSource;
        this.cardMaxSource = cardMaxSource;
        this.cardMinDestination = cardMinDestination;
        this.cardMaxDestination = cardMaxDestination;
    }

    @Override
    public String toString() {
        return "\n\t\tAssociation{" +
                "source=" + source.getClassPackage()+"."+source.getName() +
                ", destination=" + destination.getClassPackage()+"."+destination.getName() +
                ", cardMinSource=" + cardMinSource +
                ", cardMaxSource=" + cardMaxSource +
                ", cardMinDestination=" + cardMinDestination +
                ", cardMaxDestination=" + cardMaxDestination +
                "}\n";
    }
}
```

CardinaliteAssociation

```
public class CardinaliteAssociation  implements Serializable {

    private Cardinalite firstCard;
    private Cardinalite secondCard;


    public CardinaliteAssociation(Cardinalite firstCard, Cardinalite secondCard) {
        this.firstCard = firstCard;
        this.secondCard = secondCard;
    }

    @Override
    public String toString() {
        return "\n\t\tCardinaliteAssociation{" +
                "firstCard=" + firstCard +
                ", secondCard=" + secondCard +
                "}\n";
    }
}
```

Cardinalite

```
public enum Cardinalite  implements Serializable {
    ZERO, ONE, MANY
}
```

Extention

```
public class Extention extends Relation implements Serializable {

    private Entity source;
    private Entity destination;

    public Extention(Entity source, Entity destination) {
        this.source = source;
        this.destination = destination;
    }

    @Override
    public String toString() {
        return "\n\tExtention{" +
                "source=" + source +
                ", destination=" + destination +
                "}\n";
    }
}
```

```
public class ClassDiagram implements Serializable {

    private List<Entity> entities = new ArrayList<>();
    private List<Relation> relations = new ArrayList<>();

    public List<Entity> getEntities() {
        return entities;
    }

    public void setEntities(List<Entity> entities) {
        this.entities = entities;
    }

    public List<Relation> getRelations() {
        return relations;
    }

    public void setRelations(List<Relation> relations) {
        this.relations = relations;
    }
}
```

Partie Design Patterns

Strategy pour la génération du code

ClassDiagramGenerator

```
public interface ClassDiagramGenerator {

    void generate(ClassDiagram classDiagram);
}
```

JavaClassDiagramGenerator

```
public class JavaClassDiagramGenerator implements ClassDiagramGenerator {

    @Override
    public void generate(ClassDiagram classDiagram) {
        System.out.println("########### Structures ###########");
        classDiagram.getEntities()
                .forEach(System.out::println);

        System.out.println("########### Relations ###########");
        classDiagram.getRelations()
                .forEach(System.out::println);
    }
}
```

Adapter de la Strategy pour la génération du code

OldGenerator

```
public class OldGenerator {

    public void generateClassDiagram(ClassDiagram classDiagram) {
        System.out.println("++++++++++++++ Structure ++++++++++++++");
        for (Entity e : classDiagram.getEntities())
            System.out.println(e);

        System.out.println("++++++++++++++ Relation ++++++++++++++");
        for (Relation relation : classDiagram.getRelations())
            System.out.println(relation);
    }
}
```

GeneratorAdapter

Implémentation basé sur la composition

```
public class GeneratorAdapter implements ClassDiagramGenerator {

    private OldGenerator oldGenerator = new OldGenerator();
    @Override
    public void generate(ClassDiagram classDiagram) {
        oldGenerator.generateClassDiagram(classDiagram);
    }
}
```

Strategy pour l'export du diagramme

ClassDiagramExporter

```
public interface ClassDiagramExporter {

    void export(ClassDiagram classDiagram, String path);
}
```

SerialiserDiagramExporter

```
public class SerialiserDiagramExporter implements ClassDiagramExporter {

    @Override
    @Lock
    public void export(ClassDiagram classDiagram, String path) {

            try(FileOutputStream fileOutputStream = new FileOutputStream(path)) {
                try (ObjectOutputStream objectOutputStream = new ObjectOutputStream(fileOutputStream);
                    objectOutputStream.writeObject(classDiagram);
                }
            } catch (IOException e) {
                throw new RuntimeException(e);
            }
    }
}
```

SVGDiagramExporter

```
public class SVGDiagramExporter implements ClassDiagramExporter {
    @Override
    public void export(ClassDiagram classDiagram, String path) {

        System.out.println("SVG export.....");
    }
}
```

XMLDiagramExporter

```
public class XMLDiagramExporter implements ClassDiagramExporter {
    @Override
    public void export(ClassDiagram classDiagram, String path) {

        System.out.println("XML export.....");
    }
}
```

Observer

Observable

```
 package me.arrhioui.observer;

public interface Observable {
    void addObserver(Observer observer);
    void removeObserver(Observer observer);
    void notifyAllObservers();
}
```

Observable

```
 package me.arrhioui.observer;

public interface Observer {
    void update(Attribut data);
}
```

Observable

```
public class Attribut implements Serializable, Observable {
    // Autres attributs
    //.....
    private List<Observer> observers = new ArrayList<>();

    // Autres Méthodes
    // .....

    @Override
    public void addObserver(Observer observer) {
        this.observers.add(observer);
    }

    @Override
    public void removeObserver(Observer observer) {
        this.observers.remove(observer);
    }

    @Override
    public void notifyAllObservers() {
        observers.forEach(observer -> observer.update(this));
    }
}
```

Observable

```
public class Method implements Serializable, Observer {

    @Override
    public void update(Attribut data) {
        System.out.println("Observer triggered for " + data.getName());
    }
}
```

Aspect

Lock

```
public @interface Lock { }
```

Log

```
public @interface Log { }
```

LogAspect

```
@Aspect
public class LogAspect {

    @Before(value = "@annotation(me.arrhioui.aspect.Log)")
    public void log(JoinPoint joinPoint){
        System.out.println("Execution of " + joinPoint.getSignature().getName());
    }
}
```

LockAspect

```
@Aspect
public class LockAspect {

    @Around(value = "@annotation(me.arrhioui.aspect.Lock)")
    public Object lockMethod(ProceedingJoinPoint pjp){
        System.out.println("The method " + pjp.getSignature() +", is Locked");
        return null;
    }
}
```