

6 Referências

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Apêndice I

Algoritmos mais Relevantes

I. 1 Recupera todos os pacotes do BD.

```
/**
 * @return lista de todos os pacotes que estão no banco.
 */
public static List<DBPackage> parseAllPackages() {
```

Figura 25 – Recupera os pacotes do BD

I. 2 Recupera todos os nomes dos pacotes.

```
/*
 * @return nomes de todos os pacotes do banco.
 */
public static List<String> allPackageNames() {
    List<String> packages = new ArrayList<String>();
    String sql = "select alls.name from all_source alls
where alls.type = 'PACKAGE' and alls.owner = '"+DBUser+"' group by
alls.name order by alls.name";
    //System.out.println("Query " + sql);
    try {
        // connection = DBUtils.getConnectionDefault();
        PreparedStatement pstmt =
connection.prepareStatement(sql);
        ResultSet rs = pstmt.executeQuery(sql);
        ...
    }
}
```

Figura 26 – Recupera todos os nomes dos pacotes

I.3 Realiza o parse nos pacotes.

O conteúdo de um pacote é incluído em um arquivo temporário de forma que seja lido o conteúdo linha a linha (`parsePackage(String pkg_name)`) Figura 24.

A seguir é realizado um parse no arquivo temporário, procurando pelo símbolo de abertura de comentário e pelo fechamento de comentário.

Quando um bloco de comentário é reconhecido como o último comentário de uma procedure ou function, esse conteúdo é atribuído a um buffer. Para encontrar o último comentário, é realizada uma busca pela string “Procedure” ou “Function” junto com um espaço em branco seguido pelo <nome da procedure> ou o <nome da function>, e caso não seja encontrado esse padrão, o conteúdo é descartado. Ao encontrar o último comentário de uma procedure ou function, é realizado outro parse no buffer para encontrar uma parte do buffer que corresponda ao padrão de instrumentação. Ao encontrar o padrão de instrumentação, é realizado outro parse para verificar quais itens do padrão são contemplados.

I.3.1. Chamadas aos parses nos pacotes

O sistema realiza a chamada à recuperação do conteúdo do pacote (`getPackageContents (String packageName)`) Figura 25. A seguir faz a inclusão do conteúdo no arquivo temporário, e em seguida recupera o nome de todas as procedures no pacote (`getProcedureNamesAt(String packageName)`) e realizada a chamada ao parse da procedure (`parseText(File fileCode, String procName)`). Ao final retorna um objeto `DBPackage` criado com o nome do pacote e a lista de procedures criadas. Durante o processo, é realizado todo o parse no pacote e suas procedures.

-parseText (`File fileCode, String procName`) – Reconhece um bloco de cabeçalho de procedure / function e chama o método `parseComment(StringBuilder commentContext, String name)` (Figura 26).

-parseComment (`StringBuilder commentContext, String name`) – Reconhece o início e o final do padrão de instrumentação e chama o método `parseProcedure(String name, String header, String code)`(Figura 27).

-parseProcedure (`String name, String header, String code`) – Faz a verificação do padrão de instrumentação (bloco correspondente ao padrão). Cria

três listas correspondentes ao conjunto de representação (UC, RN e Contexto) e ao final cria um objeto procedure (Figura 28).

```

/**
 * Dado o nome do pacote, cria o objeto
 */
public static DBPackage parsePackage(String pkg_name) {
    String fulltext =
DataBaseObject.getPackageContents(pkg_name).toString();
    File file = new File("tmp.sql");
    try {
        FileWriter fw = new
FileWriter(file.getAbsolutePath());
        BufferedWriter bw = new BufferedWriter(fw);
        bw.write(fulltext);
        bw.close();
    } catch (IOException e) {
        e.printStackTrace();
    }
}

```

Figura 27 – Arquivo temporário e chamadas aos parses

```

public static StringBuilder getPackageContents(String
packageName) {
    StringBuilder result = new StringBuilder();
    String sql = "select * from all_source alls where
alls.owner='"+DBUser+"' and alls.type='PACKAGE BODY' and
alls.name='"
                                + packageName + "' order by
alls.line";
    //System.out.println("Query " + sql);
    try {
        // connection = DBUtils.getConnectionDefault();
        PreparedStatement pstmt =
connection.prepareStatement(sql);

```

Figura 28 – Recupera conteúdo de um pacote

```

private static Procedure parseText(File fileCode, String
procName) {
    String sCurrentLine;
    StringBuilder commentContext = new StringBuilder();
    int commentFlag = 0;
    Procedure procedure = null;
    try {
        BufferedReader br = new BufferedReader(new
FileReader(fileCode.getAbsolutePath()));
        while ((sCurrentLine = br.readLine()) != null) {
            if (sCurrentLine.trim().contains("*/")) {
// encontrou comentario fechado
                commentFlag = 2;
            }
            else if (commentFlag == 1)
                commentContext.append(sCurrentLine);
            else if
(sCurrentLine.trim().contains("/*")) { // encontrou comentario
aberto
                commentFlag = 1;
            }
            else if (commentFlag == 2 && !
sCurrentLine.trim().equals("")) // analisa a próxima linha para ver
se tem procedure nome_procedure
                {
                    if (sCurrentLine.contains("procedure
" + procName) || sCurrentLine.contains("PROCEDURE " + procName) ||
                        sCurrentLine.contains("function
" + procName) || sCurrentLine.contains("FUNCTION " + procName))
                        {
                            procedure =

```

Figura 29 – Reconhece um bloco de cabeçalho

```
private static Procedure parseComment(StringBuilder  
commentContext, String name) {  
    String text = commentContext.toString();  
    int init = text.indexOf("* <!-- begin-Trace -->");  
    if (init != -1)  
        init += "* <!-- begin-Trace -->".length();  
}
```

Figura 30 – Reconhece o início e o final do padrão de instrumentação

```
public static Procedure parseProcedure(String name, String
header, String code){

    // Domain
    String regexDom = "%Domain\\s*:([^%]*)";
    Pattern patternDom = Pattern.compile(regexDom);
    // Faz o match do texto com a regex armazenando todos
os trechos onde o padrão é identificado
    // (i.e. Armazena todos os contextos)
    Matcher matcherDom = patternDom.matcher(header);

    // Armazena os contextos
    List <String> domains = new ArrayList<String>();
    if(matcherDom.find()){
        String[] dms = matcherDom.group(1).split(",");
        for(int j=0; j < dms.length; j++){
            String trimmed = dms[j].trim();
            if(! trimmed.isEmpty())
                domains.add(trimmed);
        }
    }

    // Business Rules
    String regexRN = "%RN\\s*:([^%]*)";
    Pattern patternRN = Pattern.compile(regexRN);
    // Faz o match do texto com a regex armazenando todos
os trechos onde o padrão é identificado
    // (i.e. Armazena todas as RNs)
    Matcher matcherRN = patternRN.matcher(header);

    // Armazena regras de negócio
    List <String> business_rules = new ArrayList<String>();
    if(matcherRN.find()){
        String[] RNs = matcherRN.group(1).split(",");
        for(int j=0; j < RNs.length; j++){
            String trimmed = RNs[j].trim();
            if(! trimmed.isEmpty())
                business_rules.add(trimmed);
        }
    }
}
```

```
// Cria um objeto Procedure e o adiciona a uma lista
    Procedure procedure = new Procedure(name, header,
code, inArgs, outArgs, business_rules, use_cases, developer,
creation date, domains, null);
    //procedure.print();
```

Figura 31 – Verifica o padrão e cria o objeto procedure

Apêndice II Diagrama de Classes da Ferramenta

II.1. Telas do sistema

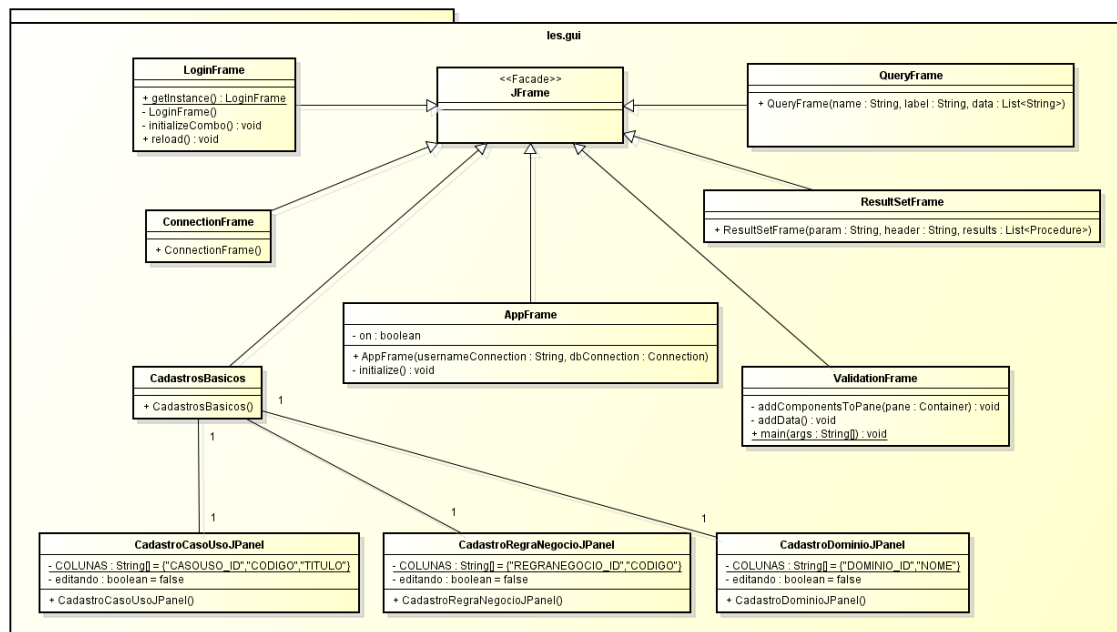


Figura 32 – Diagrama de classes das telas do sistema

II.2. Classes de conexão

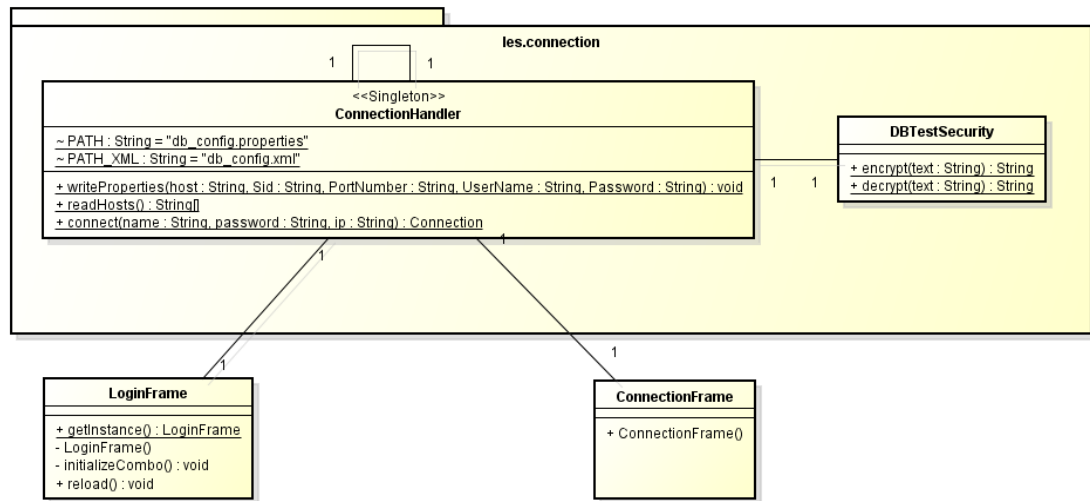


Figura 33 – Diagrama de classes de conexão

II.3. Classes de administração dos itens de requisitos

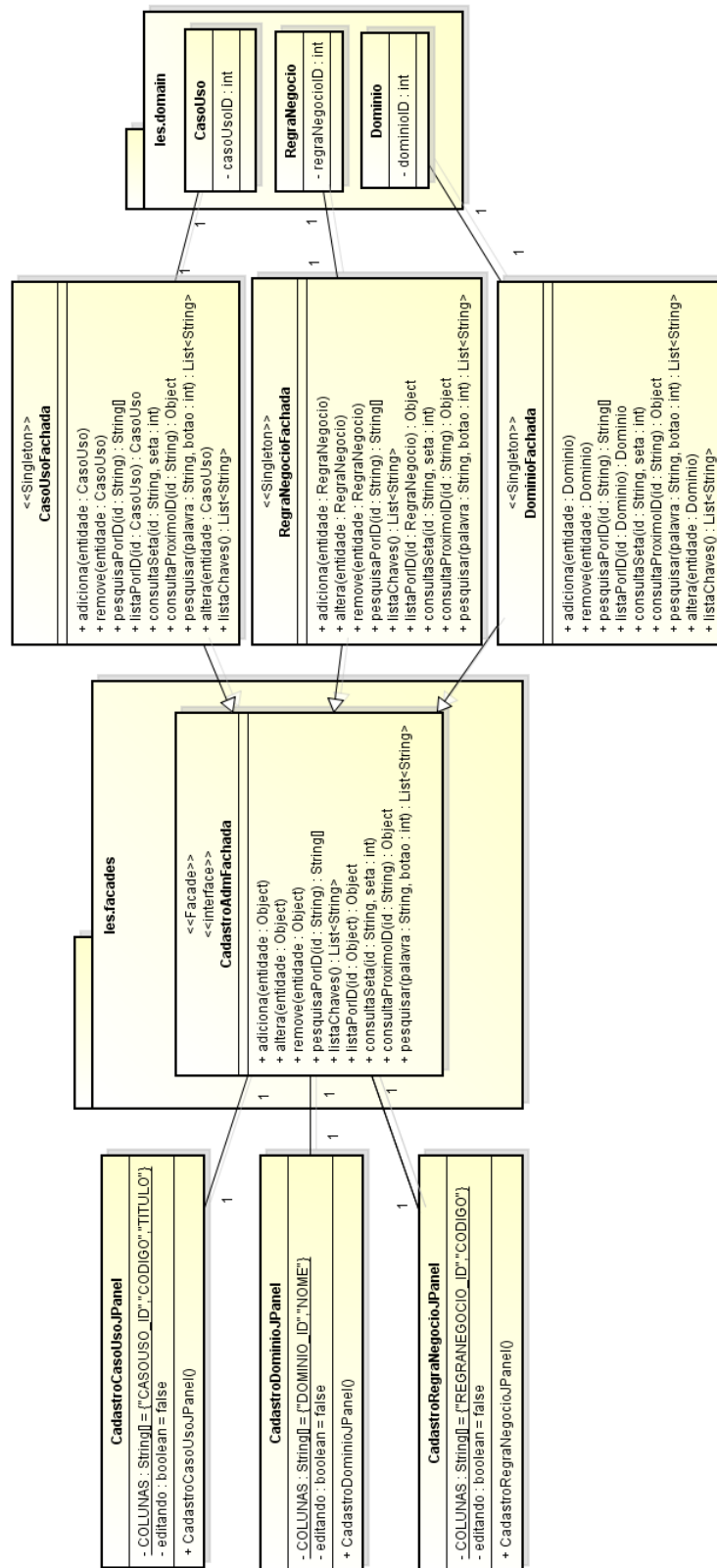


Figura 34 – Diagrama de classes de administração das representações

II.4. Diagrama de classes do “parser”

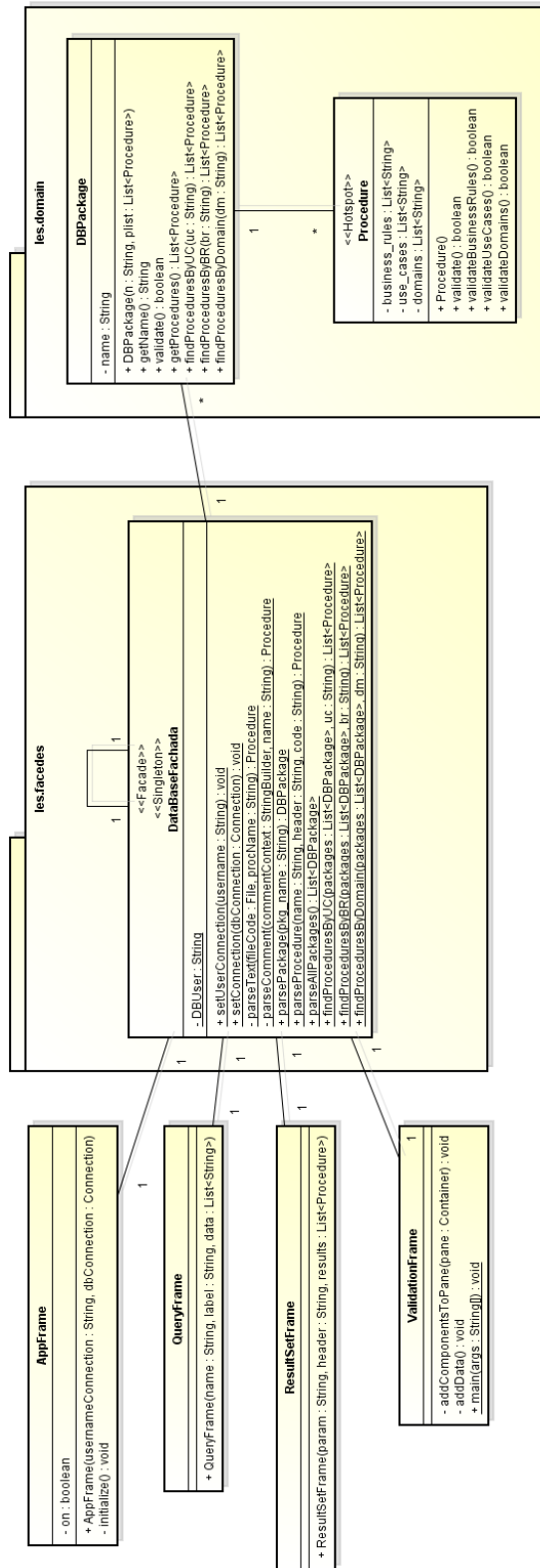


Figura 35 – Diagrama de classes do “parser”