

The Administrator's Guide Matrix

Installation Process.

The preinstalled Sun JVM version 1.4. or higher is required for installation. To start the installation execute a command:

```
java -jar ccngenerator-installation.jar
```

Then follow the instalator instructions.

During the installation process enter the name of directory where the program is installing - <ccn_home>.

Since the installation process was successfully completed, go to the directory <ccn_home>.

- The file sequences.xml containing an example of sequence description and database connection parameters is created in the directory of ccn_home during installation. It is necessary to *edit* sequences.xml after the process of the Matrix installation.
- The file keys.xml containing example of the keys description for encoding algorithms is created in the directory of ccn_home during installation.
- The Matrix can be started by running startup.bat (Windows) or startup.sh (Unix) from <ccn_home>.
- Deleting of the program and all files created in the process of installation, could be done by running the uninstall.bat (Windows) or uninstall.sh (Unix) from ccn_home directory.

There are also the directories are created during installation:

- bin – the directory contains an executable file;
- docs – the directory contains files with a documentation;
- ext - the directory contains the files of a database drivers;
- lib – the directory contains additional libraries used by the program;
- uninstaller – the directory contains a file for the program deleting.

Adjustment Process

The MATRIX uses data recorded in the file ccn_home/sequences.xml during the sequences generation. The file sequences.xml can contain description of one or several sequences.

Every sequence description contains:

- data-base connection parameter specification.
- description of sequence properties, such as an uniqueness, alphabet etc.
- associated data definition.
- sql request that is executed after a sequence members generation.

sequences.xml File Format

<sequence-list> - sequences list.

<sequence> Description of sequence is concluded between tags <sequence> .

</sequence>. Contains nested tags:

- <name> - a sequence name, which will be displayed at the MATRIX interface.
- <connection-settings> database connection parameters specification. Contains nested tags:
 - <dialect-class-name> - tag contents one of the following strings:
ua.gradsoft.ccngenerator.sequence.dialect.MySQLDialect (for MySQL)
ua.gradsoft.ccngenerator.sequence.dialect.MSSQLDialect (Microsoft MSSQL server)
ua.gradsoft.ccngenerator.sequence.dialect.OracleDialect (Oracle server)

- <db-uri> - uri data-bases. The writing rules could be found in the related database drivers documentation.

Examples:

Oracle server	<db-uri> <i>dbc:oracle:thin:@localhost:1521:MyDBname</i> </db-uri>
MySQL	<db-uri> <i>jdbc:mysql://localhost:3306/MyDBname?useUnicode=true&characterEncoding=windows-1251</i> </db-uri>
Microsoft MSSQL	<db-uri> <i>jdbc:microsoft:sqlserver://localhost:1433;DatabaseName=MyDBname</i> </db-uri>

- <user-name> - data-base user
- <password> - user's password
- <table-name> - the name of table where generated sequences will be stored in. Attention! Table must contain the obligatory fields (see below).
- <field-name> - the table field name, where the generated sequence members will be stored in
- <alphabet-class-name> - the name of alphabet used to generate a sequence

One of:

ua.gradsoft.ccngenerator.sequence.alphabet.HexAlphabet - hexadecimal alphabet

ua.gradsoft.ccngenerator.sequence.alphabet.NumericAlphabet - decimal alphabet

ua.gradsoft.ccngenerator.sequence.alphabet.NumericLatinAlphabet - numbers and Latin letters (title and capital).

ua.gradsoft.ccngenerator.sequence.alphabet.NumericMarkLatinAlphabet - numbers and Latin letters

and signs of punctuation {0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz+*_,!?:;}

- <length> - the length of a sequence member without a signature and without prefix. Not less than 3 and no more than 30.
- <counter-length> - the length of a counter (optional parameter). By default is 3.
- <unique> - uniqueness of a sequence members (optional parameter). One of: true, false. By default is false.
- <associated-data-format-list> - associated data definition (optional parameter). Can include a number of nested tags <associated-data-format>.
- <associated-data-format> - description of one associated data field. Contains nested tags:
 - <name> - the name of the field which will be used the by the MATRIX interface.
 - <type> - the field type. One of: "string", "double", "integer", "long", "Boolean", "date"
 - <size> - the field size. By default it is considered to be equal to zero.
 - <field-name> - the table field name, where the generated sequence members will be stored in
 - <print> - to print the field value or not. One of: "no", "yes"
 - <after-generation> - contains sql commands executed after a sequence members generation. Contains nested tags:
- <sql> - contains sql command(s) description. This command will be executed in one transaction, since a generated sequence members will be brought to a database. If there will be errors happened during command execution, additional confirmation in

the MATRIX interface is needed to bring generated sequence members to a database.

At the start the program checks up the correctness of a sequences description and in the case of errors (for instance the connection with database is not established) the relevant message appear in the program interface. If errors are discovered in the file format of sequences.xml, the program will produce the error message and complete the work.

Types of the Associated Data Fields and Their Description in the File sequences.xml

During a new block generation in the Matrix interface the user can input the associated data values (more detailed description see in user's Guide). Thus the fields for data input can have different types. These types are determined in the sequences.xml file in the tag <type> at associated data definitions. The value of tag <type> can be following.

- **"string"** - the field for input of any characters.
- **"integer"** - the field is allowing to enter integer. It is comfortable to use for small numbers, but not above 1 000 000 000.
- **"long"** - the field is allowing to enter any integer.
- **"double"** - the field for input of numbers with decimal fractions. Can to be entered with mantissa (for example 12?-589). The number of the input signs is checked up only for the numbers without mantissa.
- **"boolean"** - the field is allowing to choose value «yes» or not», and returning 1(if «yes») and 0 («no»).
- **"date"** - the field is allowing to enter date and time.

In the tag <size>, you can indicate the possible size of data input to the related field. If value of this size parameter is equal to 0, the size of data input to the field is unchecked. The tag <size> is not obliging and by default its value is «0».

- Non zero value of the tag <size> is taken into account if one of the following types: "string", "integer", "long", "double" is specified in the tag <type>. Thus if the field has the "double", type the number of the input signs is checked up only for numbers without mantissa.
- Tag <size> is never taken into account if the type of "Boolean" or "date" is specified in the tag <type>.

Specification of the Obligatory Fields for the Tables Were the Sequence Members will be Generated in.

The table were the data generated by the MATRIX will be stored must have the following imperative fields:

	The field name in the database	That meaning	The SQL data type
1	create_date	The date of sequence member creation	Datetime
2	print_date	Date of sequence member printing	Datetime

The field for sequence members storage and the field for associated data storage (in case it is defined) are obligatory too. The names of these fields are determined in the sequences description xml-file (sequences.xml).

File keys.xml Format

The keys used to the sequence member generation (private keys and control keys) are can define in the MATRIX interface or but their or by description in xml-file ccn_home/keys.xml.

The file keys.xml contains following tags <keys> - the list of the keys. It contains nested tags:

- <encryption-keys> - list of the private keys. Can contain several nested tags
- <key> - contains a key
- <control-keys>- list of control keys of. It can contain several nested tags:
- <key>- contains a key

The Integration of the Matrix and the „Grad” billing system.

The „Grad” billing system is designed for internet providers. For the Matrix integration with the billing system „Grad” it is enough just to put necessary changes to the xml-file sequences.xml. For the details see the document «Instruction on integration of the Matrix with the "Grad" billing system