Step 1:

Take the raw data and compute the hash functions using MD5 and the algorithm as described in the paper, i.e h1 and h2. Use this to select the tuples where the watermark will be embedded and remove the LSBs of these particular tuples and attributes indices.

Raw Data: ionosphere.xlsx

After LSB removal: ionosphere after LSB removal.xlsx

Step 2:

Take this data (i.e after removing the LSBs) and apply Genetic Reduction algorithm to produce the reducts and then generate the rules for the RST using Rosetta software.

Reducts: ionosphere reducts.xlsx

Rules: ionosphere rules.xlsx

Step 3:

Take the reducts and the rules and apply the hash function on it, and then, again hash the concatenated hashes of the reducts and rules to produce the final hash value. This serves as the final watermark.

watermarkreducts = f497ca1ef059ff2d6899ada74d4ae452

watermarkrules = 01095804525ba5ff746cb77128fa5c42

finalwatermark = 7592e09ed9fe85a646c4a47fe0cea850

Step 4:

Take this final watermark and embed it back into the database that has its LSBs removed using the algorithm as described in the paper.

This creates the watermarked database.

Watermarked Database: ionosphere watermarked data.xlsx

Step 5:

Again, using the blind algorithm, extract the watermark using the watermarked data and compare with the original watermark for detecting any tampering of the data in the database.

watermarkextracted = 7592e09ed9fe85a646c4a47fe0cea850

\*\*\*\*

alpha=8;

gamma=2;

key=10;

\*\*\*\*

Find below the code outputs to the process:

Watermark\_Creation\_And\_Embedding:

conn =

Instance: 'ionosphere'

UserName: ''

Driver: []

URL: []

Constructor: [1x1 com.mathworks.toolbox.database.databaseConnect]

Message: []

Handle: [1x1 sun.jdbc.odbc.JdbcOdbcConnection]

TimeOut: 0

AutoCommit: 'on'

Type: 'Database Object'

m =

351

n =

35

conn =

Instance: 'ionosphere reducts'

UserName: ''

Driver: []

URL: []

Constructor: [1x1 com.mathworks.toolbox.database.databaseConnect]

Message: []

Handle: [1x1 sun.jdbc.odbc.JdbcOdbcConnection]

TimeOut: 0

AutoCommit: 'on'

Type: 'Database Object'

m =

175

n =

3

watermarkreducts =

f497ca1ef059ff2d6899ada74d4ae452

conn =

Instance: 'ionosphere rules'

UserName: ''

Driver: []

URL: []

Constructor: [1x1 com.mathworks.toolbox.database.databaseConnect]

Message: []

Handle: [1x1 sun.jdbc.odbc.JdbcOdbcConnection]

TimeOut: 0

AutoCommit: 'on'

Type: 'Database Object'

m =

54605

n =

2

watermarkrules =

01095804525ba5ff746cb77128fa5c42

finalwatermark =

7592e09ed9fe85a646c4a47fe0cea850

conn =

Instance: 'ionosphere after removing LSB'

UserName: ''

Driver: []

URL: []

Constructor: [1x1 com.mathworks.toolbox.database.databaseConnect]

Message: []

Handle: [1x1 sun.jdbc.odbc.JdbcOdbcConnection]

TimeOut: 0

AutoCommit: 'on'

Type: 'Database Object'

m =

351

n =

35

finalwatermark =

7592e09ed9fe85a646c4a47fe0cea850

Watermark\_Extraction:

conn =

Instance: 'ionosphere watermarked data'

UserName: ''

Driver: []

URL: []

Constructor: [1x1 com.mathworks.toolbox.database.databaseConnect]

Message: []

Handle: [1x1 sun.jdbc.odbc.JdbcOdbcConnection]

TimeOut: 0

AutoCommit: 'on'

Type: 'Database Object'

m =

351

n =

35

watermarkextracted =

7592e09ed9fe85a646c4a47fe0cea850