

[DRAFT] Structural Modeling Project General Modeling Software Application [DRAFT]
Strict Order – One Or More Objects Per Class [Auto]
11-15-2016

Introduction:

This document provides a quick introduction and complete overview of a simple system structuring problem. The selected structuring problem is taken from Appendix 2 of 'The Handbook of Interactive Management', section A2.4.1 of the Handbook of Interactive Management. A digital copy of the Handbook is located at:

<http://demosophia.com/wp-content/uploads/2012/09/Handbook-of-Interactive-Management.pdf>

This problem, in Appendix 2, is associated with the DOPRIOR command of the GSM ISM software. In the example presented here, the Strict Order – One Or More Objects Per Class web application approach will be used to demonstrate the problem solution. The 'is of equal or higher priority' (IEHP) natural language system structuring relationship is used in this case. The priority of an object is determined in a manner that evaluates all objects of interest and presents a single thread of structure through the system graph. This is viewed as a global structuring relationship with the following logical properties:

- irreflexive
- asymmetric
- transitive.

Two objects can have the same priority, so one or more objects can populate a single priority class. There will be clusters where there are more than one object in a priority class.

Step One:

Enter the number 10 into the size text box in the Strict Order – One Or More Objects Per Class [Auto] section of the SM GSM Application.

Step Two:

Press the “Display One Or More” button.

The screenshot shows the 'Structural Modeling Project' web application interface. At the top is a navigation bar with links: Home, About, Documents, License, and Contact. The main content area is titled 'Please Select The Appropriate Approach.' and contains six sections, each with a title, a label 'Enter Initial Matrix Size', a 'Size:' input field, a button, and a 'Get Detailed Information' link.

- Strict Order - One Object Per Class [Manual]**: Size: [] Display One
- Strict Order - One Object Per Class [Auto]**: Size: [] Display One
- Strict Order - One Or More Objects Per Class [Manual]**: Size: [] Display One Or More
- Strict Order - One Or More Objects Per Class [Auto]**: Size: 10 Display One Or More
- Cluster Objects Into Classes [Manual]**: Size: [] Display Cluster
- Cluster Objects Into Classes [Auto]**: Size: [] Display Cluster

Step Three:

Begin to gather empirical information about the objects of interest. The empirical sampling proceeds in a structured fashion starting at the top with object one (1) and moving down through the objects of interest in a measured fashion. This is the manual algorithm approach.

Is 1 a higher priority than 2? No (Do not enter anything in the application interface.)

Is 1 the same priority as 2? Yes

Step Four:

Enter Y in the “Entries Equal?” text input box. Enter the number 1 in the “Enter Column Number” text input box. Enter the number 2 in the “Enter Row Number” text input box.

Step Five:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False, 1 = Known True, 0 = Unknown, 1 = Inferred True. Simpson Augmented Boolean Algebra. Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: Y Enter Column Number: 1 Enter Row Number: 2 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1 2 3 4 5 6 7 8 9 10

1 2

Step Six:

Is 1 a higher priority than 3? Yes

Step Seven:

Enter N in the “Entries Equal?” text input box. Enter the number 1 in the “Enter Column Number” text input box. Enter the number 3 in the “Enter Row Number” text input box.

Step Eight:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False, 1 = Known True, 0 = Unknown, 1 = Inferred True. Simpson Augmented Boolean Algebra. Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 1 Enter Row Number: 3 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1 2 3 4 5 6 7 8 9 10

1 2

Step Nine:

Is 4 a higher priority than 1? No (Do not enter anything in the application interface.)

Is 4 the same priority as 1? No (Do not enter anything in the application interface.)

Is 3 a higher priority than 4? No (Do not enter anything in the application interface.)

Is 3 the same priority as 4? Yes

Step Ten:

Enter Y in the “Entries Equal?” text input box. Enter the number 3 in the “Enter Column Number” text input box. Enter the number 4 in the “Enter Row Number” text input box.

Step Eleven:

Press the “Enter Data” button.

The screenshot shows the application interface with the title "Structural Modeling Project". The navigation bar includes "Home", "About", "Documents", "License", and "Contact". A legend box on the left defines the matrix values: 0 (red) = Known False, 1 (green) = Known True, 0 (yellow) = Unknown, and 1 (blue) = Inferred True. It also mentions "Simpson Augmented Boolean Algebra". The text "Initial Matrix Size is 10" is displayed. The main heading is "Strict Order - One Or More Objects Per Class [Auto]". Below this, the "Entries Equal?" field is set to "Y", "Enter Column Number:" is 3, and "Enter Row Number:" is 4. The "Enter Data" button is highlighted. The matrix is a 10x10 grid. The first row is all yellow (0). The second row has a green 1 in the first column and yellow 0s elsewhere. The third row has a yellow 0 in the first column and yellow 0s elsewhere. The fourth row has a yellow 0 in the first column and yellow 0s elsewhere. The fifth row has a yellow 0 in the first column and yellow 0s elsewhere. The sixth row has a yellow 0 in the first column and yellow 0s elsewhere. The seventh row has a yellow 0 in the first column and yellow 0s elsewhere. The eighth row has a yellow 0 in the first column and yellow 0s elsewhere. The ninth row has a yellow 0 in the first column and yellow 0s elsewhere. The tenth row has a yellow 0 in the first column and yellow 0s elsewhere. Below the matrix is a small table with columns 1 through 10 and rows 1 through 4.

Step Twelve:

Is 3 a higher priority than 5? Yes

Step Thirteen:

Enter N in the “Entries Equal?” text input box. Enter the number 3 in the “Enter Column Number” text input box. Enter the number 5 in the “Enter Row Number” text input box.

Step Fourteen:

Press the “Enter Data” button.

The screenshot shows the application interface with the title "Structural Modeling Project". The navigation bar includes "Home", "About", "Documents", "License", and "Contact". A legend box on the left defines the matrix values: 0 (red) = Known False, 1 (green) = Known True, 0 (yellow) = Unknown, and 1 (blue) = Inferred True. It also mentions "Simpson Augmented Boolean Algebra". The text "Initial Matrix Size is 10" is displayed. The main heading is "Strict Order - One Or More Objects Per Class [Auto]". Below this, the "Entries Equal?" field is set to "N", "Enter Column Number:" is 3, and "Enter Row Number:" is 5. The "Enter Data" button is highlighted. The matrix is a 10x10 grid. The first row is all yellow (0). The second row has a green 1 in the first column and yellow 0s elsewhere. The third row has a yellow 0 in the first column and yellow 0s elsewhere. The fourth row has a yellow 0 in the first column and yellow 0s elsewhere. The fifth row has a yellow 0 in the first column and yellow 0s elsewhere. The sixth row has a yellow 0 in the first column and yellow 0s elsewhere. The seventh row has a yellow 0 in the first column and yellow 0s elsewhere. The eighth row has a yellow 0 in the first column and yellow 0s elsewhere. The ninth row has a yellow 0 in the first column and yellow 0s elsewhere. The tenth row has a yellow 0 in the first column and yellow 0s elsewhere. Below the matrix is a small table with columns 1 through 10 and rows 1 through 4.

Step Fifteen:

Is 6 a higher priority than 3? No (Do not enter anything in the application interface.)

Is 6 the same priority as 3? No (Do not enter anything in the application interface.)

Is 5 a higher priority than 6? Yes

Step Sixteen:

Enter N in the “Entries Equal?” text input box. Enter the number 5 in the “Enter Column Number” text input box. Enter the number 6 in the “Enter Row Number” text input box.

Step Seventeen:

Press the “Enter Data” button.

The screenshot shows the 'Structural Modeling Project' application. The header includes 'Home', 'About', 'Documents', 'License', and 'Contact'. A legend explains the matrix values: 0 (red) = Known False, 1 (green) = Known True, 0 (yellow) = Unknown, and 1 (blue) = Inferred True. The title is 'Strict Order - One Or More Objects Per Class [Auto]'. The input fields are 'Entries Equal?: N', 'Enter Column Number: 5', and 'Enter Row Number: 6'. The 'Enter Data' button is highlighted. The matrix is a 10x10 grid with the following values (row 1 to 10, column 1 to 10):

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

Below the matrix is a small table with the following values:

1	2
3	4

Step Eighteen:

Is 3 a higher priority than 7? Yes

Step Nineteen:

Enter N in the “Entries Equal?” text input box. Enter the number 3 in the “Enter Column Number” text input box. Enter the number 7 in the “Enter Row Number” text input box.

Step Twenty:

Press the “Enter Data” button.

The screenshot shows the 'Structural Modeling Project' application. The header includes 'Home', 'About', 'Documents', 'License', and 'Contact'. The legend is the same as in Step 17. The title is 'Strict Order - One Or More Objects Per Class [Auto]'. The input fields are 'Entries Equal?: N', 'Enter Column Number: 3', and 'Enter Row Number: 7'. The 'Enter Data' button is highlighted. The matrix is a 10x10 grid with the following values (row 1 to 10, column 1 to 10):

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	1	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

Below the matrix is a small table with the following values:

1	2
3	4

Step Twenty One:

Is 6 a higher priority than 7? Yes

Step Twenty Two:

Enter N in the “Entries Equal?” text input box. Enter the number 6 in the “Enter Column Number” text input box. Enter the number 7 in the “Enter Row Number” text input box.

Step Twenty Three:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False 1 = Known True From Empirical Data: 0 = Unknown 1 = Inferred True
Simpson Augmented Boolean Algebra

Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 6 Enter Row Number: 7 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	1	0	1	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1	3	5	6	7	8	9	10
---	---	---	---	---	---	---	----

1	2
3	4

Step Twenty Four:

Is 3 a higher priority than 8? Yes

Step Twenty Five:

Enter N in the “Entries Equal?” text input box. Enter the number 3 in the “Enter Column Number” text input box. Enter the number 8 in the “Enter Row Number” text input box.

Step Twenty Six:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False 1 = Known True From Empirical Data: 0 = Unknown 1 = Inferred True
Simpson Augmented Boolean Algebra

Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 3 Enter Row Number: 8 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	1	0	1	0	0	0	0	0
8	0	1	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1	3	5	6	7	8	9	10
---	---	---	---	---	---	---	----

1	2
3	4

Step Twenty Seven:

Is 6 a higher priority than 8? Yes

Step Twenty Eight:

Enter N in the “Entries Equal?” text input box. Enter the number 7 in the “Enter Column Number” text input box. Enter the number 8 in the “Enter Row Number” text input box.

Step Twenty Nine:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False, 1 = Known True, 0 = Unknown, 1 = Inferred True. Simpson Augmented Boolean Algebra. Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 7 Enter Row Number: 8 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	0	0	1	0	0	0	0	0
8	0	1	0	0	1	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1	3	5	6	7	8	9	10
1	2						
3	4						

Step Thirty:

Is 3 a higher priority than 9? Yes

Step Thirty One:

Enter N in the “Entries Equal?” text input box. Enter the number 3 in the “Enter Column Number” text input box. Enter the number 9 in the “Enter Row Number” text input box.

Step Thirty Two:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False, 1 = Known True, 0 = Unknown, 1 = Inferred True. Simpson Augmented Boolean Algebra. Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 3 Enter Row Number: 9 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	1	0	1	0	0	0	0	0
8	0	1	0	0	1	0	0	0	0
9	0	1	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1	3	5	6	7	8	9	10
1	2						
3	4						

Step Thirty Three:

Is 6 a higher priority than 9? Yes

Step Thirty Four:

Enter N in the “Entries Equal?” text input box. Enter the number 6 in the “Enter Column Number” text input box. Enter the number 9 in the “Enter Row Number” text input box.

Step Thirty Five:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False, 1 = Known True, 0 = Unknown, 1 = Inferred True. Simpson Augmented Boolean Algebra. Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 6 Enter Row Number: 9 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	1	0	1	0	0	0	0	0
8	0	1	0	0	1	0	0	0	0
9	0	0	0	1	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0

1 3 5 6 7 8 9 10

1 2
3 4

Step Thirty Six:

Is 8 a higher priority than 9? No (Do not enter anything in the application interface.)

Is 8 the same priority as 9? Yes

Step Thirty Seven:

Enter Y in the “Entries Equal?” text input box. Enter the number 8 in the “Enter Column Number” text input box. Enter the number 9 in the “Enter Row Number” text input box.

Step Thirty Eight:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False, 1 = Known True, 0 = Unknown, 1 = Inferred True. Simpson Augmented Boolean Algebra. Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: Y Enter Column Number: 8 Enter Row Number: 9 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	1	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	1	0	1	0	0	0	0	0
8	0	1	0	1	1	0	0	0	0
9	0	0	0	1	0	0	0	1	0
10	0	0	0	0	0	0	0	0	0

1 3 5 6 7 8 10

1 2
3 4
8 9

Step Thirty Nine:

Is 3 a higher priority than 10? No

Step Forty:

Enter N in the “Entries Equal?” text input box. Enter the number 3 in the “Enter Column Number” text input box. Enter the number 10 in the “Enter Row Number” text input box.

Step Forty One:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False 1 = Known True From Empirical Data: 0 = Unknown 1 = Inferred True
Simpson Augmented Boolean Algebra

Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 3 Enter Row Number: 10 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	1	0	0	0	0	0	0	0
8	0	1	0	1	1	0	0	0	0
10	0	1	0	0	0	0	0	0	0

1	3	5	6	7	8	10
1	2					
3	4					
8	9					

Step Forty Two:

Is 7 a higher priority than 10? Yes

Step Forty Three:

Enter N in the “Entries Equal?” text input box. Enter the number 7 in the “Enter Column Number” text input box. Enter the number 10 in the “Enter Row Number” text input box.

Step Forty Four:

Press the “Enter Data” button.

Structural Modeling Project Home About Documents License Contact

From Empirical Data: 0 = Known False 1 = Known True From Empirical Data: 0 = Unknown 1 = Inferred True
Simpson Augmented Boolean Algebra

Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: N Enter Column Number: 7 Enter Row Number: 10 Enter Data Infer Information

1	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0	0	0
7	0	1	0	1	0	0	0	0	0
8	0	1	0	1	1	0	0	0	0
10	0	1	0	0	1	0	0	0	0

1	3	5	6	7	8	10
1	2					
3	4					
8	9					

Step Forty Five:

Is 8 a higher priority than 10? Yes

Step Forty Six:

Enter N in the “Entries Equal?” text input box. Enter the number 8 in the “Enter Column Number” text input box. Enter the number 10 in the “Enter Row Number” text input box.

Step Forty Seven:

Press the “Enter Data” button.

Structural Modeling Project

HomeAboutDocumentsLicenseContact

From Empirical Data

0 = Known False

1 = Known True

From Empirical Data

0 = Unknown

1 = Inferred True

Simpson Augmented Boolean Algebra

Initial Matrix Size is 10

Strict Order - One Or More Objects Per Class [Auto]

Entries Equal?: NEnter Column Number: 8Enter Row Number: 10Enter DataInfer Information

1	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0
5	0	1	0	0	0	0	0
6	0	0	1	0	0	0	0
7	0	1	0	1	0	0	0
8	0	1	0	1	1	0	0
10	0	1	0	0	1	1	0

13567810

12

34

89

Process Complete.