H4CODE 1.2 Reference Manual

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2012.05.24

In this document, we describe the specification of H4CODE. H4CODE is a data format that corresponds to the "Hexadeci-grids" and it is an extension of the data structure of H3CODE corresponding to the "Octgrids".

H4CODE consists of four blocks. Each block will be described below.

(1) Header Block

The header block consists of eight fields and it contains the information of the multilayer rectangular dissections.

1) H4C Version :
   This field shows the version number of H4CODE. It contains an integer value.

2) Row Size :
   This field shows the size of row, that is, number of rows. It contains an integer value.

3) Column Size :
   This field shows the size of column, that is, number of columns. It contains an integer value.

4) Layer Size :
   This field shows the size of layer, that is, number of layers. It contains an integer value.

5) - 8) reserved

(2) List Block

The list block contains the internal information of each cell. Each record in the list block represents a cell, respectively. The record consists of 48 fields, and each field of the record is separated by a space in the order described below.

01 node id
   This field shows node identification. It contains the integer value which is greater than or equal to 1. 0 represents NULL.

02 cell type
   This field shows cell type of this node. It contains the integer value of 0 or 1 as follows. 0 means that this node is a "Perimeter Cell", and 1 means that this node is a "Cell".

03 nwe right
   This field shows the node id of the node to the right with the same north wall of this node. It contains the integer value

which is greater than or equal to 0. 0 represents NULL.

04 nwe left

This field shows the node id of the node to the left with the same north wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

05 swe right

This field shows the node id of the node to the right with the same south wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

06 swe left

This field shows the node id of the node to the left with the same south wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

07 ewe upper

This field shows the node id of the node to the upper with the same east wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

08 ewe lower

This field shows the node id of the node to the lower with the same east wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

09 wwe upper

This field shows the node id of the node to the upper with the same west wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

10 wwe lower

This field shows the node id of the node to the lower with the same west wall of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

11 north wall

This field shows the position of the north wall of this node. It contains the integer value of Y (vertical direction) coordinate of the north wall on the plane. The value is greater than or equal to 0.

12 south wall

This field shows the position of the south wall of this node. It contains the integer value of Y (vertical direction) coordinate of the south wall on the plane. The value is greater than or equal to 0.

13 east wall

This field shows the position of the east wall of this node. It contains the integer value of X (horizontal direction) coordinate of the east wall on the plane. The value is greater than or equal to 0.

14 west wall

This field shows the position of the west wall of this node. It contains the integer value of X (horizontal direction) coordinate of the west wall on the plane.

The value is greater than or equal to 0.

15 content id

This field shows the content identifier of the content to be placed inside this cell. This content identifier is a number used to identify the content in the HCContent file, which is an integer value. However, 0 means that there is no content in this cell.

16 content align

This field shows the alignment of content in this cell. It contains the integer value which is greater than or equal to 0. if content id as above has value 0, then content align has value 0, otherwise the correspondence of a value of this field to an alignment of content in this cell as follows.

1 : left alignment

2 : center alignment

3 : right alignment

17 e point

This field shows the value of "e point" which is used when converting this H4CODE to a XML file supports H4CODE. The meaning of this value is as follows.

0 : do not use

1 : true

2 : false

18-32 reserved

33 nec upper

This field shows the node id of the node to the upstairs with the same northeastern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

34 nec lower

This field shows the node id of the node to the downstairs with the same northeastern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

35 nwc upper

This field shows the node id of the node to the upstairs with the same northwestern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

36 nwc lower

This field shows the node id of the node to the downstairs with the same northwestern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

37 sec upper

This field shows the node id of the node to the upstairs with the same southeastern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

38 sec lower

This field shows the node id of the node

to the downstairs with the same southeastern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

39 swc upper

This field shows the node id of the node to the upstairs with the same southwestern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

40 swc lower

This field shows the node id of the node to the downstairs with the same southwestern corner of this node. It contains the integer value which is greater than or equal to 0. 0 represents NULL.

41 Layer Size for cell

This field shows the layer number which indicates the order of the layers.

42-48 reserved

(3) Content Block

The content block contains the contents information such as string, image information, and data link information of each cell. This block consists of eight fields.

1) content id :

This field shows content identification number. The content id must be unique. Namely, content corresponds to only one content id. It contains the integer value which is greater than 0.

2) content type :

This field shows the number which indicates data type of the content. It contains the integer value as follows.

1 : TEXT type (type 1)

100 : HTML type (type 2)

101 : RFT(Rich Format Text) (type 3)

102 : IMAGE type (type 4)

3) object :

This field shows a string of the content or a link to the content, which is surrounded the double quote (“”). The link to an other file is described with the file's path followed by “link:”.

4) - 8) reserved

(4) Tabular Layer Block

This tabular layer block is a block to manage the multiple multi-layer rectangular dissections. This field is used to display multi-layer diagram. Header, List, and Content Blocks for the multi-layer rectangular dissections are cannot correspond to multiple multi-layer rectangular dissections. This block consists of eight fields.