2a]

Components of GIS are:-

1. Software
2. Hardware
3. Data
4. Procedure
5. User.

1. Software:

* Software is the application which runs on the Hardware system.

* The GIS software has the capability to ~~run~~ capture, process, collect, display the data.

3

* The GIS software has also responsibility to handle the rules and certain framework rather than general process.

* The user can access the major GIS ~~softw~~ features through the software.

* The GIS software can run on cloud platforms also.

2. Hardware :-

* Hardware is the system where the GIS software runs.

* It can be a small personal Computer to any super Computers.

* Hardware includes input devices like Sensors, Image Capturing devices etc...

* Hardware will give the collected data to the software

3. Data :-

* The GIS has two types of Data.
  > Spatial data
  > attribute data

* Spatial data consists of all the geographical information of the location like satallite image etc.

* Attribute data consists of all the descriptive information of the location

* The Combination of both Spatial and attribute data makes unique from the other database system.

* While storing also the GIS data are stored combining the spatial and attribute data.

4. Procedure

* The procedure of GIS includes the collecting, processing and giving desired output to the user

* Procedure is the main brain of GIS.

* The ~~user~~ open-source workers will help the GIS to update the procedure.

5. Users

* ~~Users will be~~ The work of the user is to ~~collect the data~~ make the correction in software

* Also, they will give contribution to update the data.

* They also help to make the GIS work in an efficient way.

⊙ GIS is a system which is used to locate, identify or gain information of an specific point.

⊙ GIS stands for Geographic Information System.

2b]

Attibute data

- Nominal
  - ordinal
  - Binary
- Numeric
  - Discrete
  - Continoue.

Attibute data Contains the Descriptive ~~and~~ or theoritical ~~in for~~ type of data.

Attribute data is divided into many types:-

1) Nominal:- No-ordered Ranking

* As name indicates nominal data consists of named data

* the some category of data are grouped and they are named with a single name.

* Nominal data is the most common type of Attribute data.

eg:- 'cat', 'dog' are named as 'Animals'.

2) ordinal:-

* ordinal data gives the order; to the stored data

* A valid integer is used to give the order for data

* These order doesn't give any value to the stored data

* It is only used for referrence for storing data.

Eg:- Highway (1), Normal Road (2), Bad road (3)

3) Binary

* It uses only two values to represent data.

* Most simple type of data.

* ~~Eg:~~ The inputs that most probably used are:

1. True / Yes / Present.
2. False / No / absent.

* Eg:- The region is Vilage?

Id	Value
1	True
2	False.

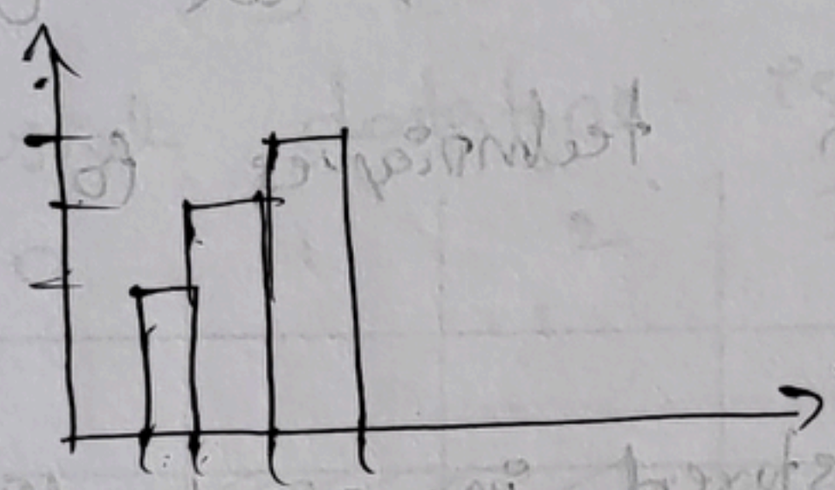
4) Numeric

* Numeric data stores the only value which are in numeric format.

~~* It gives the n~~

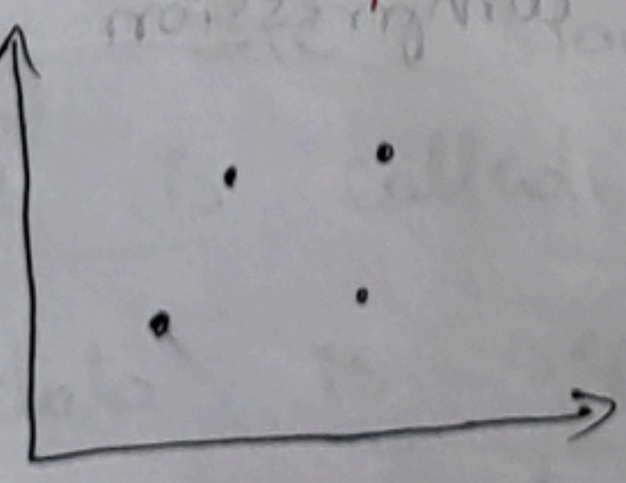
5) Discrette

* It stores the discrette values of the data
* Discrette can be in specific range
* eg:- Bar chart, Age, ~~Height, width~~



6) Continous

* The Values of the data are Continous
* Continous values are infinite.
* eg:- Scatter plot, Height, width



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Data Compression is used because, the large data is difficult to handle. We can also face storage issues so we use data Compression techniques to overcome all these problems.

Raster data is stored in pixels like grids so, Compression is much easier in Raster Data

Compressing the raster data for a specific purpose is called raster data Compression

Types of raster data Compression

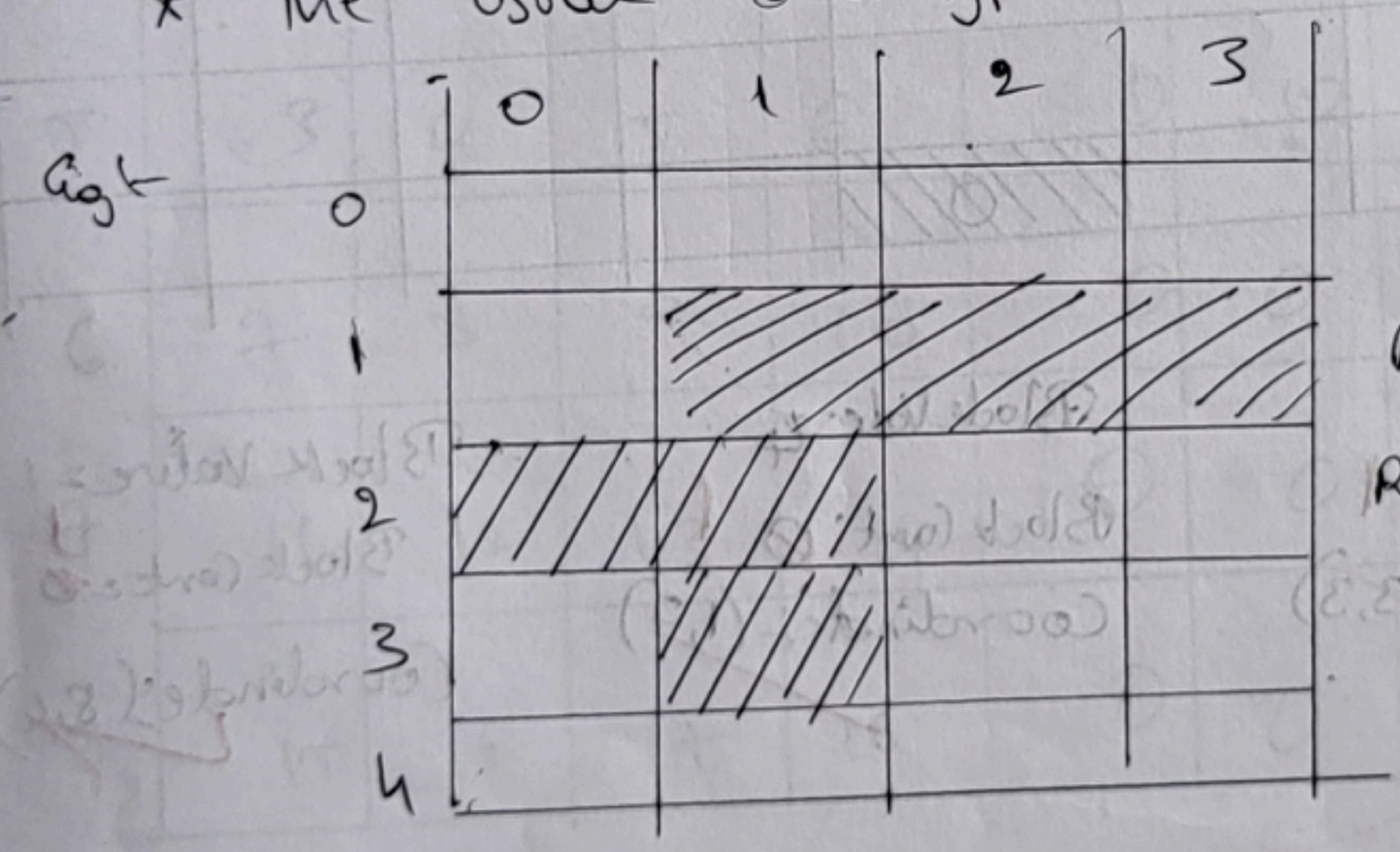
1. Range length
2. Blocking
3. Quad tree
4. chaining

1) Rangelength.

* It combines the grids ~~with~~ in the same row with the range length

* The range can specified by starting point and ending point for each row

* The usual datatype is integer.



Row 1 → (1, 3)

Row 2 → (0, 1)

Row 3 → (1, 1)

2) Blocking

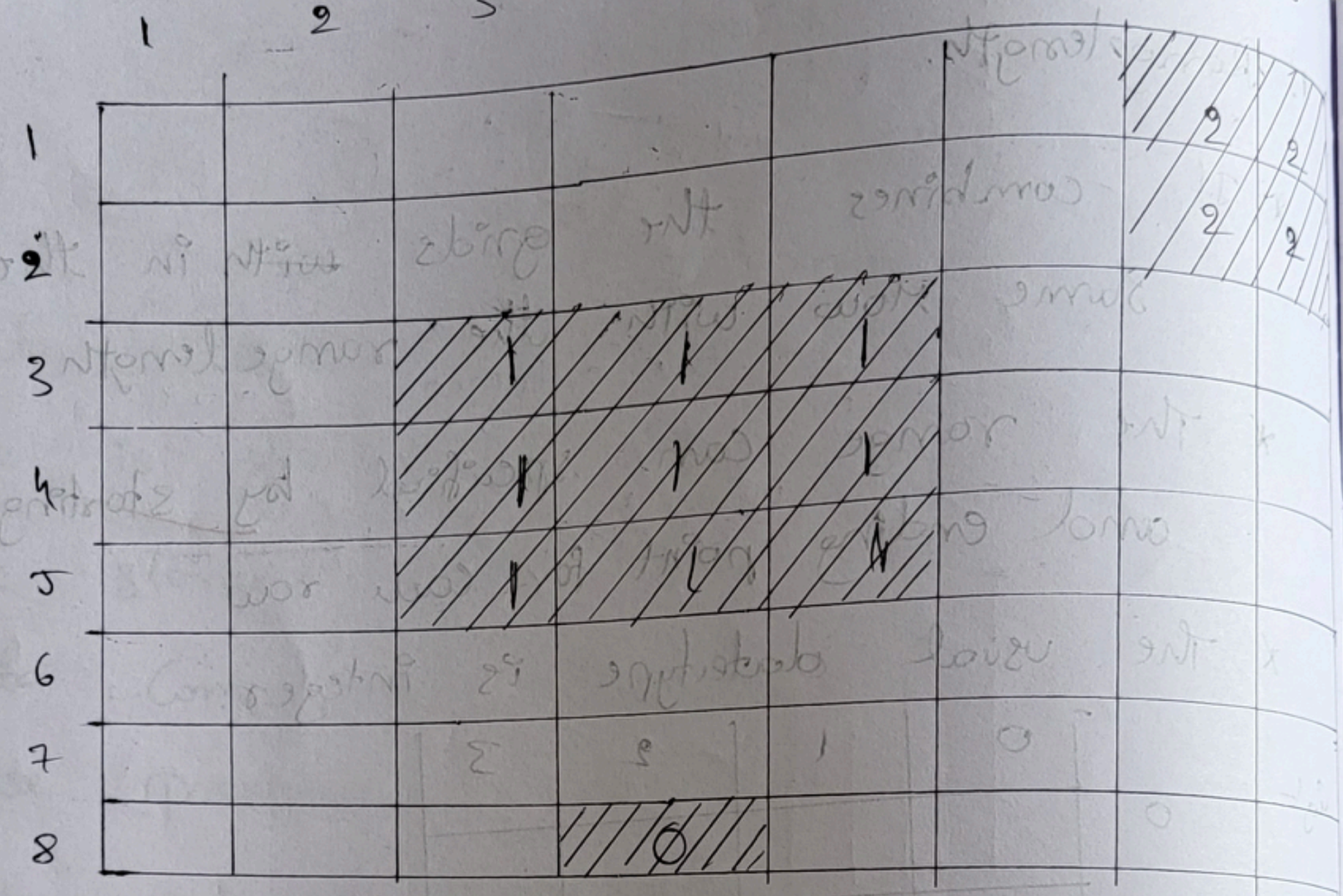
* Combining the Blocks to a single Block is called Blocking (Proper definition ?)

* The data is represented by

Coordinate,

Block count,

Block value



Block Value:- 4
Block Cont:- 0
Coordinate:- (3,3)

Block Value:- 4
Block Cont:- 0
Coordinate:- (1,7)

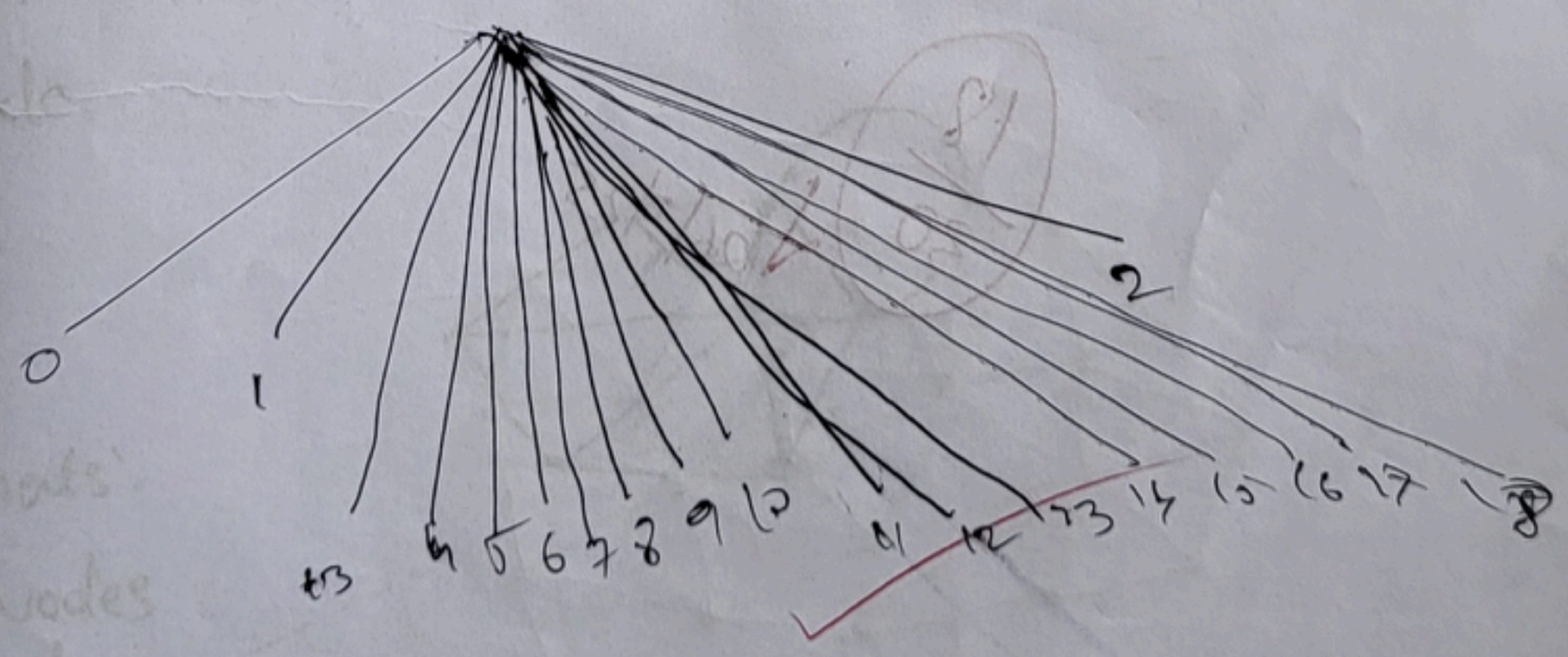
Block Value:- 1
Block Cont:- 0
Coordinate:- (8,8)

3. Quad tree

* The ~~the~~ Value is stored by dividing the the value into Quadrants until the ~~value~~ match of Value
* It is represented using trees

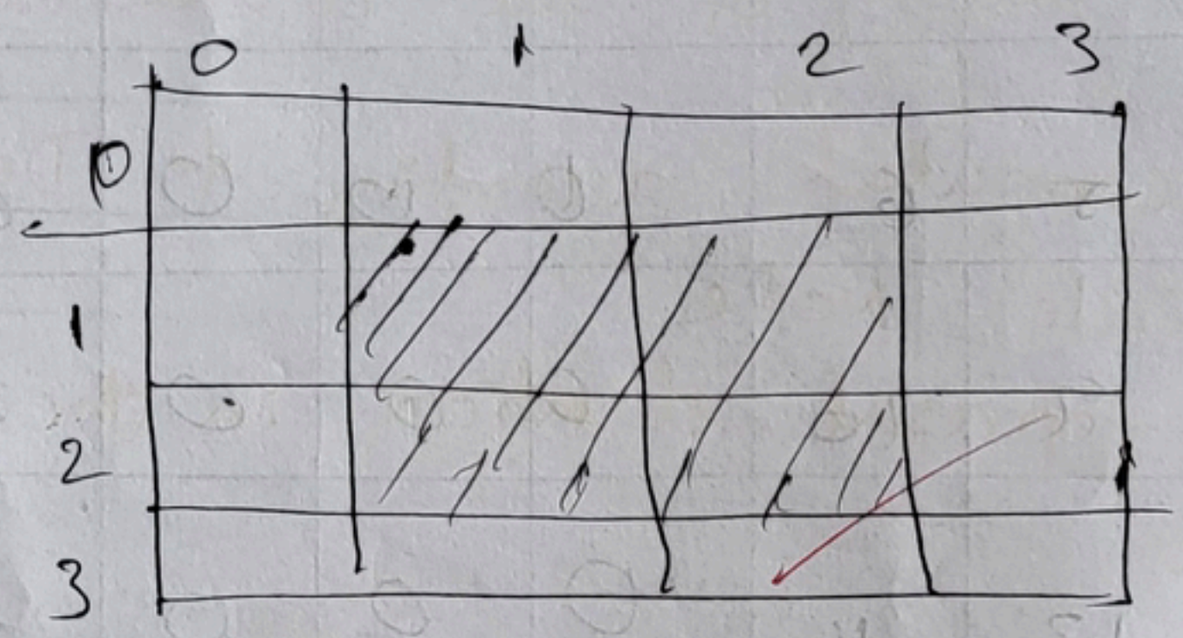
	1	2	3	4	5	6	7	8
1	1	1	1	1	2	2	2	2
2	1	1	1	1	2	2	2	2
3	1	1	1	1	2	2	2	2
4	1	1	1	1	2	2	2	2
5	3	4	5	6	0	0	0	0
6	7	8	9	10	0	0	0	0
7	11	12	13	14	0	0	0	0
8	15	16	17	18	0	0	0	0

7



Chaining

* It is used to ~~chain~~ combine all the blocks in chain like structure
* It uses direction to chain the elements
* Commonly used is directions.



* start coordinate (1,1)

1E, 1S, 1W, 1N.

18/30 26/3/25