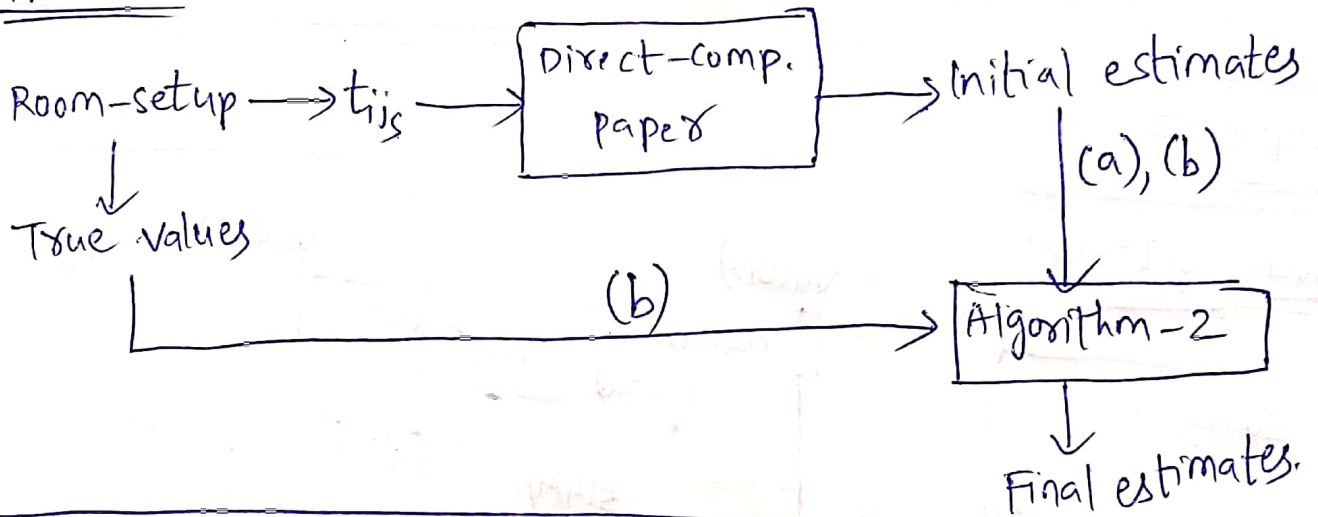


### Approach:-



Note:- In algorithm 2,

- i) (a) → case (a): setting the shaded regions to initial estimates
- ii) (b) → case (b): setting the shaded regions to True values.

### Formulas:-

i) Intermediate rel. error = 
$$\frac{\| \text{True EDM} - \text{EDM after direct-comp Paper (Initial estimates)} \|_F}{\| \text{True EDM} \|_F}$$

ii) Final rel. error = 
$$\frac{\| \text{True EDM} - \text{EDM after Algorithm 2 (Final estimates)} \|_F}{\| \text{True EDM} \|_F}$$

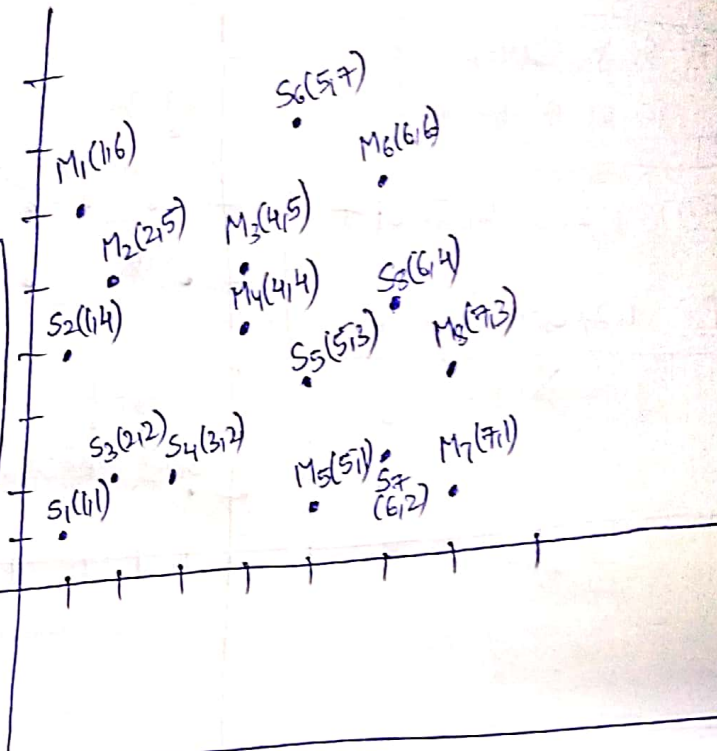
Example ①:-

i) Source, Mic configuration:-

8 Sources, 8 Mics  
in open space

Ti given:- 1, 2, 3, 4, 5, 6, 7, 8,

Ti o/p:- ~~XXXXXX~~  
0, 0, 0, 0, 0, 0, 0, 0



ii) Results:-

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	2.8947	2.8947
Source - mic	2.8947	2.8947
Source - Source	2.8947	2.8947

script 1

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	2.8947	2.7507
Source - mic	2.8947	0.0309
Source - Source	2.8947	2.7317

script 2



## Example ②

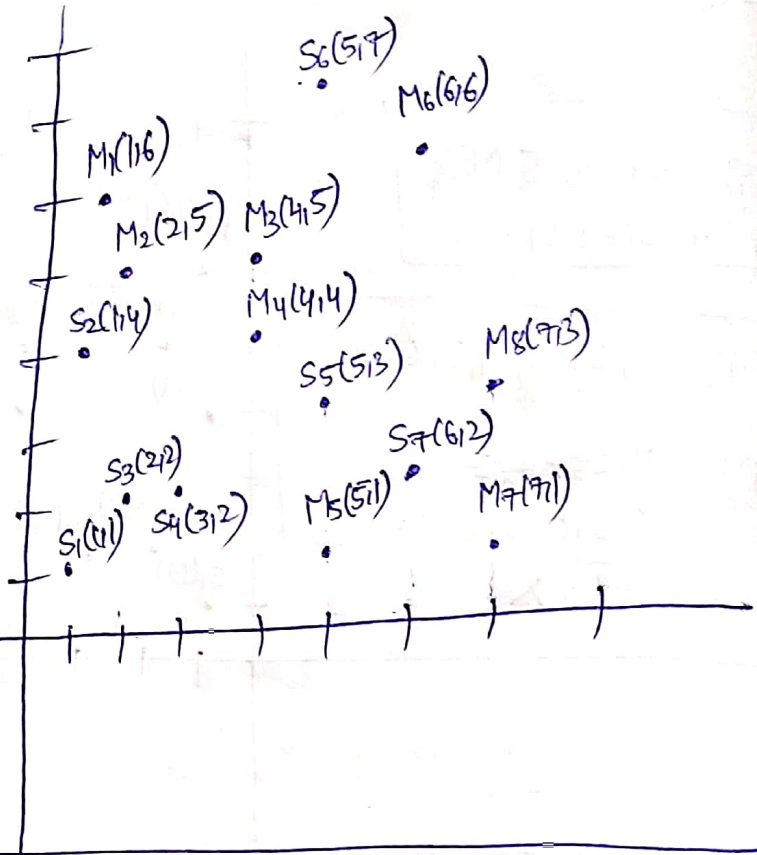
Source, Mic Configuration

7 Sour, 8 mic  
in open space

Ti given: 1, 2, 3, 4, 5, 6, 7

Ti o/p: 1, 2, 0, 4, 5, 6, 0

X



## ii) Results

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	1.8114	1.8114
Sour - mic	1.8114	1.8114
Sour - Sour	1.8114	1.8114

Script 1

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	1.8114	1.8639
Sour - mic	1.8114	0.1186
Sour - Sour	1.8114	1.1403

Script 2

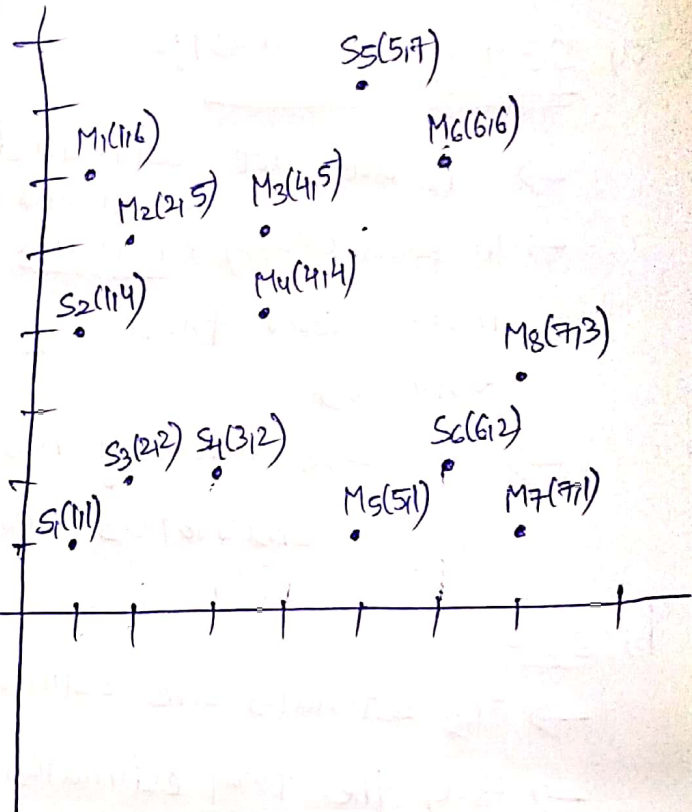
### Example (3)

i) Source-Mic Configuration:-

6 Source, 8 mic  
in open space

Ti given:- 1, 2, 3, 4, 5, 6

Ti o/p:- 1, 2, 3, 4, 5, 6



### ii) Results

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	0.7072	0.7072
Source - mic	0.7072	0.7072
Source - Source	0.7072	0.7072

Script 1

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	0.7072	0.6570
Source - mic	0.7072	0.0635
Source - Source	0.7072	0.7072

Script 2



## Conclusion:-

i) For  $m = 8$  (no. of microphones), [fixing done with true values]

a)  $S \geq 7$  (no. of sources):-

→  $T_{is}$  are not estimated to be true.

→ In such cases,  $x_{\text{mic-mic}}$  is estimated to be more closer than source-source to the initial estimates.

→ This case, actually has to be ruled out, as per the observations made.

b)  $S = 6$ :-

→  $T_{is}$  estimates are estimated well (true values).

→ Here, the final estimates of source-source case is more closer to initial estimates, compared to that of mic-mic case with initial estimates.

c)  $S = 5$ :-

→ same observations as that of  $S = 6$ .

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Final conclusion:- [fixing done with true values : case (b)]

- The final estimates of source-source case is more closer than ~~mic~~ mic-mic case, to the initial estimates in our codes, because the number of microphones are more in number, as compared to that of no. of sources. So, when we fix source-source part, not much change is visible. Whereas when we fix mic-mic part, there's a significant change, as in the EDM, major part is consisting of mic-mic part.

- When we fix the source-mic part in Algorithm (2), the resultant EDM is very similar / closer to the true EDM.
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