(Big) Data Engineering In Depth

From Beginner to Professional

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The Definitive Guide to Big Data Engineering Tasks

Videos classification

Watching Method / Audience	Computer	Mobile/Tablet	Just listening
Developer	●		
DevOps	●		
Business	●		

Table: Video classification
The green circle ● means short video.
The blue circle ● means medium video.
The red circle ● means long video

Dimensions Types: Multi-valued dimensions (Many-To-Many Dimension)

Multi-valued dimensions

- When the relationships between the dimension member and the fact are many to many which means the dimension members are lower granularity than the facts.
- Fact table should contains one-to-one relationship with the dimension. So, we introduce the ***Bridge table*** when we need to related multiple dimensions values with one record.

Example

- Patients can have multiple diagnoses.
- Students can have multiple majors.
- customers can have multiple account.
- Authors can have multiple publications.

Multi-valued dimensions

Example (Sales of Articles)

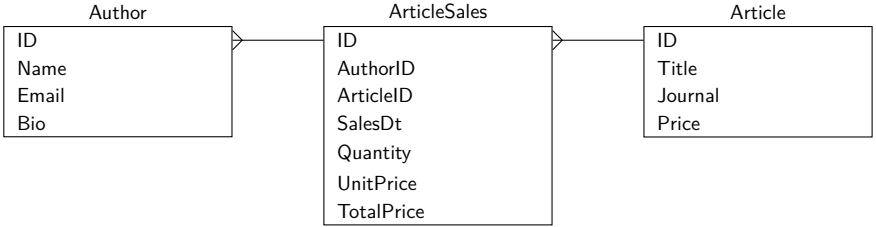
- Assume we need to report the sales of article and we have some articles has more than one author.
- Each author has weighting factor for each article.
- According to the report we need to check each author and associate with the articles they have authored. How can we model this case?
- Assume the first article has only one author *Moustafa*, and the second article has two authors *Ahmed & Amr*.

ID	Name	Email	Bio
123	Moustafa	abc@gability.com	S-Engineer
234	Ahmed	def@gability.com	L-Engineer
345	Amr	geh@gability.com	S-Manager

ID	Title	Journal	Price
11	50	IEEE	110.0
22	55	ACM	130.0

Table: author and articles sample data.

Multi-valued dimensions (Implementation-1)



Multi-valued dimensions (Implementation-1)

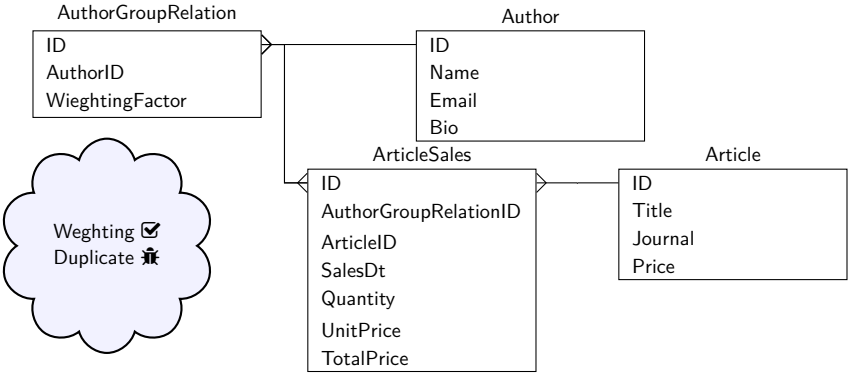
ID	AuthorID	ArticleID	SalesDt	Quantity	UnitPrice	TotalOrder
1	123	11	20200303	3	10	30
2	234	22	20200304	1	20	20
3	345	22	20200304	1	20	20

Table: Output of wrong implementation of ArticleSales

What are the problems in this implementation?

- We can't get the weighting factor for each author.
- Duplicated rows in sales.

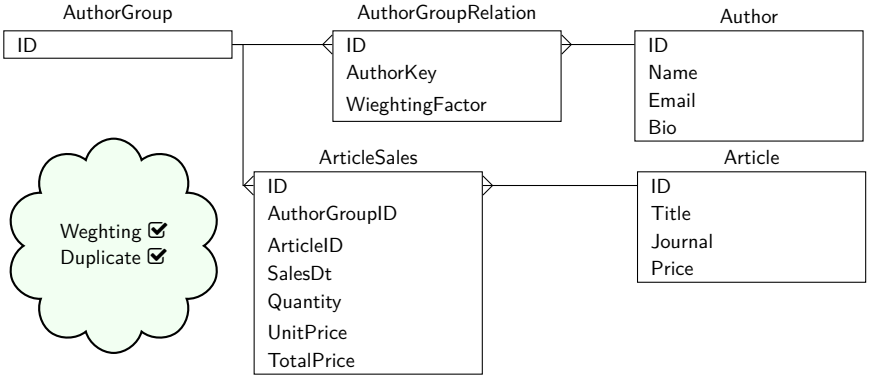
Multi-valued dimensions (Implementation-2)



ID	AuthorGroupRelationID	ArticleID	SalesDt	Quantity	UnitPrice	TotalOrder
1	321	11	20200303	3	10	30
2	432	22	20200304	1	20	20
3	432	22	20200304	1	20	20

Table: Output of wrong implementation of ArticleSales

Multi-valued dimensions (Final Implementation)



ID	AuthorGroupID	ArticleID	SalesDt	Quantity	UnitPrice	TotalOrder
1	321	11	20200303	3	10	30
2	432	22	20200304	1	20	20

Table: Expected output of ArticleSales

Example Reference

- Example in this video taken from this link https://www.nuwavesolutions.com/bridge-tables/