*To prepare document for Vertical and Horizontal Fragmentation. Consider 3 Nodes. – for 2 Tables*

*Vertical Fragmentation - User Side:*

|  |  |
| --- | --- |
| ***Column*** | ***Data Type*** |
| *UserID* | *INT* |
| *Username* | *VARCHAR (50)* |
| *Email* | *VARCHAR (100)* |
| *First Name* | *VARCHAR (50)* |
| *Last Name* | *VARCHAR (50)* |
| *Age* | *INT* |
| *Gender* | *VARCHAR (10)* |
| *Location* | *VARCHAR (100)* |
| *Subscription Status* | *VARCHAR (20)* |

*"User Profile Table"*

*Fragmentation Criteria –*

*Node 1: user identification*

*Node 2: personal details*

*Node 3: geographical location*

***Node 1: : user identification***

|  |  |  |
| --- | --- | --- |
| ***Column*** | ***Data Type*** | ***Description*** |
| *UserID* | *INT* | *Unique identifier for each user* |
| *Username* | *VARCHAR (255)* | *User's login name* |
| *Email* | *VARCHAR (255)* | *User's email address* |
| *Subscription Status* | *VARCHAR (20)* | *User's subscription status (active, inactive, etc.)* |

***Node 1: : user identification***

|  |  |  |  |
| --- | --- | --- | --- |
| *UserID* | *Username* | *Email* | *Subscription Status* |
| *1* | *Zilean* | [*aryan@gmail.com*](mailto:aryan@gmail.com) | *NO* |
| *2* | *Raj* | [*Raj.P@gmail.com*](mailto:Raj.P@gmail.com) | *Yes* |

***Node 2 :: personal details***

|  |  |  |
| --- | --- | --- |
| ***Column*** | ***Data Type*** | ***Description*** |
| *UserID* | *INT* | *Unique identifier for each user* |
| *First Name* | *VARCHAR (255)* | *User's first name* |
| *Last Name* | *VARCHAR (255)* | *User's last name* |
| *Gender* | *VARCHAR (10)* | *User's Gender ("M", "F", "NA")* |
| *Age* | *INT* | *User's age* |

***Node 2 :: personal details***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *UserID* | *First Name* | *Last Name* | *Gender* | *Age* |
| *1* | *Aryan* | *Sharma* | *M* | *19* |
| *2* | *Raja* | *Pandey* | *M* | *21* |

***Node 3 :: geographical location***

|  |  |  |
| --- | --- | --- |
| ***Column*** | ***Data Type*** | ***Description*** |
| UserID | INT | Unique identifier for each user |
| Location | VARCHAR (255) | User's geographical location |

***Node 3 :: geographical location***

|  |  |
| --- | --- |
| ***User ID*** | ***Location*** |
| ***1*** | ***Thane*** |
| ***2*** | ***Kalyan*** |

*Vertical Fragmentation - User Side:*

|  |  |
| --- | --- |
| ***Column*** | ***Data Type*** |
| *UserID* | *INT* |
| *Username* | *VARCHAR (50)* |
| *Email* | *VARCHAR (100)* |
| *First Name* | *VARCHAR (50)* |
| *Last Name* | *VARCHAR (50)* |
| *Age* | *INT* |
| *Gender* | *VARCHAR (10)* |
| *Location* | *VARCHAR (100)* |
| *Subscription Status* | *VARCHAR (20)* |

*"* *Song Library Table"*

*Fragmentation Criteria –*

*Node 1: basic song information*

*Node 2: genre information*

*Node 3: detailed song information*

***Node 1:: Basic Song Information***

|  |  |  |
| --- | --- | --- |
| ***Column*** | ***Data Type*** | ***Description*** |
| *SongID* | *INT* | *Primary key for the song.* |
| *Title* | *VARCHAR (100)* | *Title of the song.* |
| *ArtistID* | *INT* | *Foreign key referencing artists.* |

***Node 2:: Genre Information***

|  |  |  |
| --- | --- | --- |
| ***Column*** | ***Data Type*** | ***Description*** |
| *SongID* | *INT* | *Primary key for the song.* |
| *GenreID* | *INT* | *Foreign key referencing genres.* |
| *Release Date* | *DATE* | *Date when the song was released.* |

***Node 3:: Detailed Song Information***

|  |  |  |
| --- | --- | --- |
| ***Column*** | ***Data Type*** | ***Description*** |
| *SongID* | *INT* | *Primary key for the song.* |
| *Duration* | *INT* | *Duration of the song in seconds.* |
| *Album* | *VARCHAR (100)* | *Album to which the song belongs.* |
| *Language* | *VARCHAR (50)* | *Language of the song.* |
| *Play Count* | *INT* | *Number of times the song played.* |
| *URL* | *VARCHAR (200)* | *URL or link to the song.* |

*Horizontal Fragmentation*

*Song Library Table*

|  |  |  |
| --- | --- | --- |
| *Column* | *Data Type* | *Description* |
| *SongID* | *INT* | *Primary key for the song.* |
| *Title* | *VARCHAR (100)* | *Title of the song.* |
| *ArtistID* | *INT* | *Foreign key referencing artists.* |
| *GenreID* | *INT* | *Foreign key referencing genres.* |
| *Release Date* | *DATE* | *Date when the song was released.* |
| *Duration* | *INT* | *Duration of the song in seconds.* |
| *Album* | *VARCHAR (100)* | *Album to which the song belongs.* |
| *Language* | *VARCHAR (50)* | *Language of the song.* |
| *Play Count* | *INT* | *Number of times the song played.* |
| *URL* | *VARCHAR (200)* | *URL or link to the song.* |

*Fragmentation Criteria –*

*Node 1: Language - Hindi*

*Node 2: Language - English*

*Node 3: Language - Punjabi*

***Node 1: Language - Punjabi***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *SongID* | *Title* | *ArtistID* | *GenreID* | *Release Date* | *Duration* | *Album* | *Language* | *Play Count* | *URL* |
| *101* | *With You* | *1* | *20* | *11-Aug-23* | *195* | *AP Dhillon* | *Punjabi* | *5400000* | [*Youtube*](https://www.youtube.com/watch?v=mZQH8CPQ-wo) |
| *102* | *Bachke Bachke* | *2* | *21* | *25-Sept-23* | *199* | *Karan Aujla* | *Punjabi* | *6400000* | [*Youtube*](https://www.youtube.com/watch?v=Oqy9KfrdBOc) |

***Node 2: Language - Hindi***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *SongID* | *Title* | *ArtistID* | *GenreID* | *Release Date* | *Duration* | *Album* | *Language* | *Play Count* | *URL* |
| *103* | *Tum Se Hi* | *3* | *22* | *11-Aug-07* | *195* | *Mohit Chauhan* | *Hindi* | *5400000* | [*Youtube*](https://www.youtube.com/watch?v=mZQH8CPQ-wo) |
| *104* | *Kaise Hua* | *4* | *23* | *25-Sept-19* | *199* | *Vishal Mishra* | *Hindi* | *6400000* | [*Youtube*](https://www.youtube.com/watch?v=Oqy9KfrdBOc) |

***Node 3: Language - English***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *SongID* | *Title* | *ArtistID* | *GenreID* | *Release Date* | *Duration* | *Album* | *Language* | *Play Count* | *URL* |
| *104* | *FIFTY FIFTY* | *5* | *24* | *11-Aug-22* | *195* | *Cupid* | *English* | *1400000* | [*Youtube*](https://www.youtube.com/watch?v=mZQH8CPQ-wo) |
| *105* | *No Lie* | *6* | *25* | *25-Sept-17* | *199* | *Sean Paul* | *English* | *9400000* | [*Youtube*](https://www.youtube.com/watch?v=Oqy9KfrdBOc) |

*Horizontal Fragmentation*

*Fragmentation Criteria –*

*Node 1: Location - India*

*Node 2: Location - China*

*Node 3: Location – USA*

*Node 1: Location - India*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *UserID* | *Username* | *Email* | *First Name* | *Last Name* | *Age* | *Gender* | *Location* | *Subscription Status* |
| *1* | *Zilean* | [*aryan@gmail.com*](mailto:aryan@gmail.com) | *Aryan* | *Sharma* | *19* | *M* | *India* | *NO* |
| *2* | *Raj* | [*Raj.P@gmail.com*](mailto:Raj.P@gmail.com) | *Raja* | *Pandey* | *21* | *M* | *India* | *Yes* |

*Node 2: Location - China*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *UserID* | *Username* | *Email* | *First Name* | *Last Name* | *Age* | *Gender* | *Location* | *Subscription Status* |
| *3* | *Ju* | [Ju.jing*@gmail.com*](mailto:Ju.jing@gmail.com) | *Ju* | *Jing* | *19* | *F* | *China* | *yes* |
| *4* | *Fang* | [Fang*@gmail.com*](mailto:Fang@gmail.com) | *Fang* | *Chang* | *21* | *F* | *China* | *Yes* |

*Node 3: Location - USA*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *UserID* | *Username* | *Email* | *First Name* | *Last Name* | *Age* | *Gender* | *Location* | *Subscription Status* |
| *5* | *Brown* | [*David.@gmail.com*](mailto:David.@gmail.com) | *David* | *Brown* | *25* | *M* | *USA* | *NO* |
| *6* | *John* | [*John@gmail.com*](mailto:John@gmail.com) | *John* | *Smith* | *29* | *M* | *USA* | *Yes* |