Semester : __VI__   Subject : __CSS__   Academic Year: 2023- 2024

When Private Jones sees that nothing is scheduled for hold C on flight 1254, he might attempt to insert a new record to transport some vegetables on that flight.

→ However, when he attempts to insert the record, his insert will fail due to the unique constraint. At this time, private Jones has all the data he needs to infer that there is a secret shipment on flight 1254.

→ He could then cross-reference the flight information table to find out the source and destination of the secret shipment and various other informations.

MULTILEVEL DATABASE SECURITY:

The term multilevel arises from the defense community's security classification: Unclassified, Confidential, Secret and TopSecret

Individuals must be granted appropriate clearances before they can see classified information. Those with Confidential clearance are only authorized to view confidential documents, they are not trusted to look at Secret or Top Secret information. The rules that apply to data flow operate from lower levels to higher levels, and never the reverse. This is illustrated below:
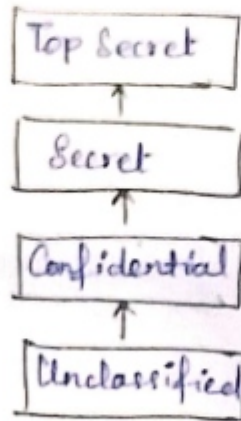
Scanned with OKEN Scanner

```
┌──────────────┐
│  Top Secret  │
└──────────────┘
       ↑
┌──────────────┐
│   Secret     │
└──────────────┘
       ↑
┌──────────────┐
│ Confidential │
└──────────────┘
       ↑
┌──────────────┐
│ Unclassified │
└──────────────┘
```

There are 2 types of model: — Bell LaPadula Model
                              — Biba Model.

Bell LaPadula Model :-

* This model was invented by Scientist David Elliot Bell and Leonard J. LaPadula.

* It is used to maintain the confidentiality of security.

* It is classified as Subjects (Users) and Objects (Files).

* This model deals with the preservation of confidentiality and only confidentiality, because the government is all about keeping secrets.

It has 2 rules:

Simple confidentiality Rule: No Read-Up.

Simple Confidentiality Rule states that the Subject can only read the files of the same layer of secrecy and the lower layer of Secrecy but not the Upper Layer of Secrecy, due to which we call this rule as NO READ-UP.

Star Confidentiality Rule:

Star Confidentiality Rule states that the Subject can only Write the files on the same layer of Secrecy and the Upper
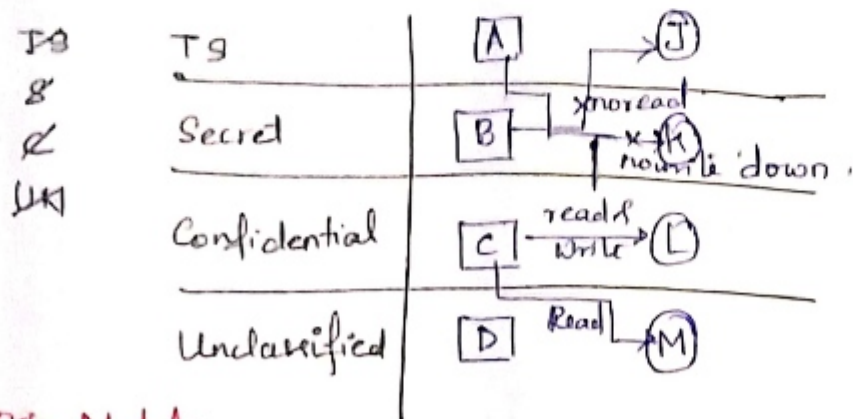
Layer of Secrecy, due to which we call this rule as NO WRITE-DOWN.

Biba Model :-
* This Model was invented by Scientist Kenneth. J. Biba. Thus, this model is called Biba Model.
* This is used to maintain the integrity of security
* This works exact reverse of the Bell-LaPadula Model.

It has mainly 2 rules:

Simple Integrity Rule :- Simple Integrity rule states that the Subject can only Read the files on the same layer of secrecy and the upper layer of secrecy but not the lower layer of Secrecy, due to which we call this as NO READ DOWN:
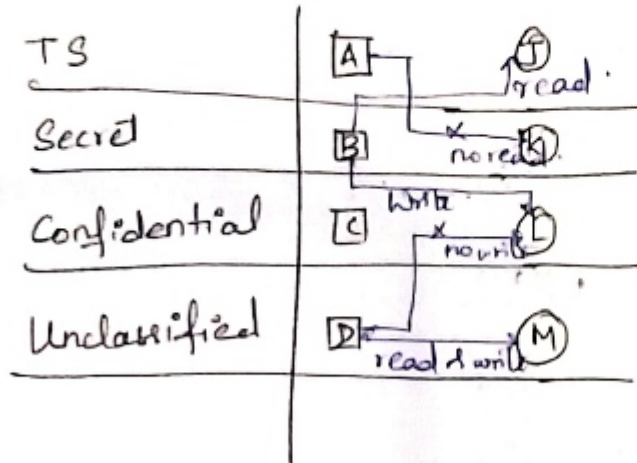
Star Integrity Rule: NO WRITE-UP: Star Integrity Rule states that the subject can only Write the files on the Same layer of Secrecy and the Lower layer of Secrecy but not the upper layer of secrecy, due to which we call this rule as NO WRITE-UP.

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Semester : **VI**   Subject : **C.SS**   Academic Year: 2023 2024

TS

Secret

Confidential

Unclassified

A → J read
B → K no read (×)
C → L write / no write (×)
D → M read & write

A, B, C, D → Subjects (Users)

J, K, L, M → Objects (Files).