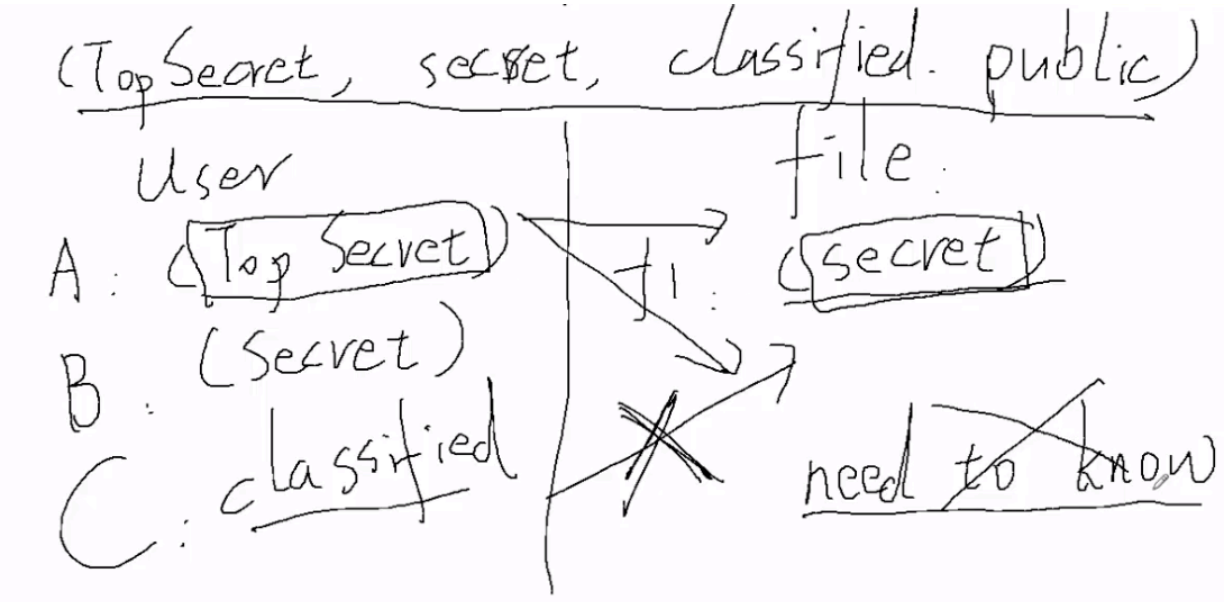
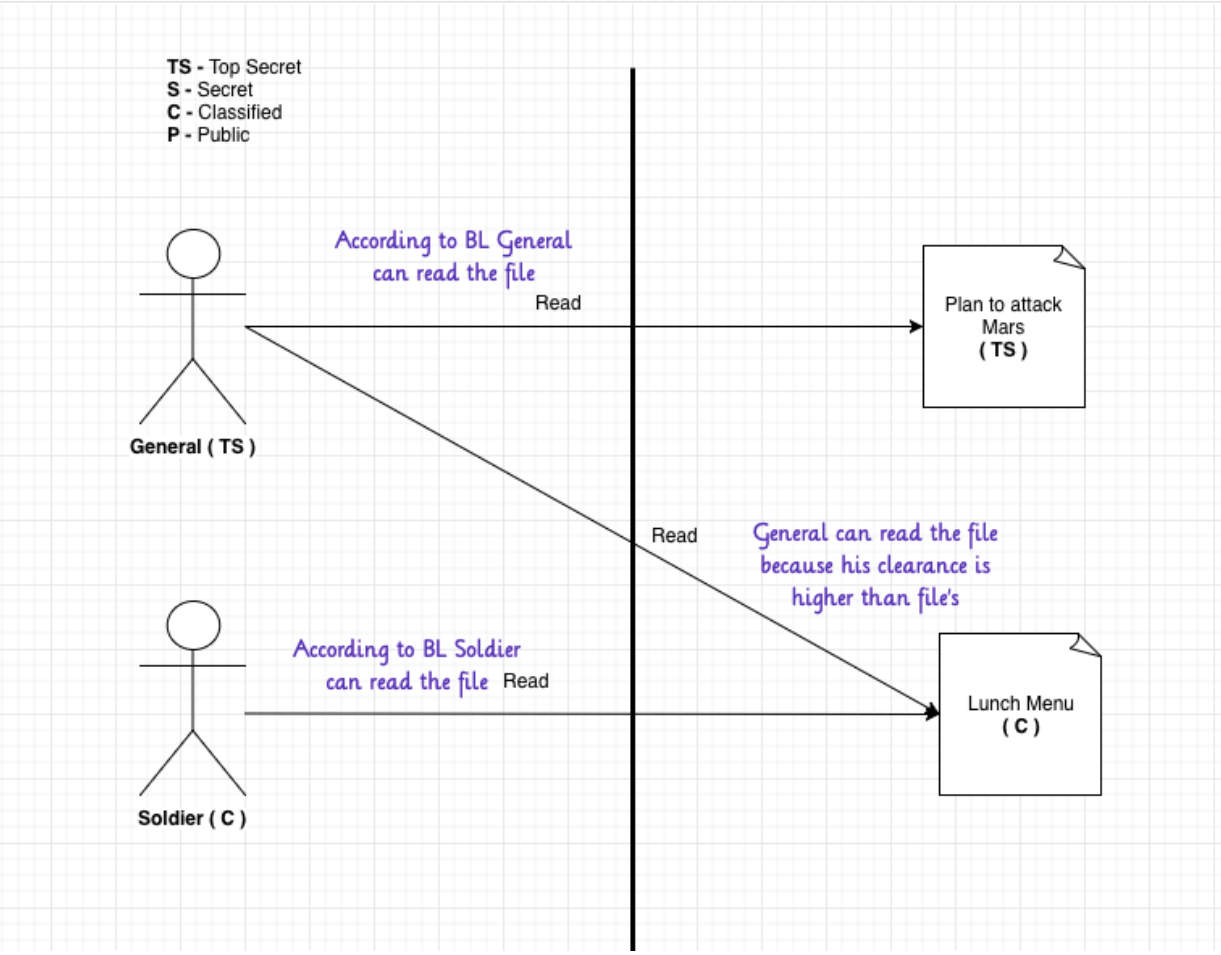
Week 9 - Bell LaPadula Model

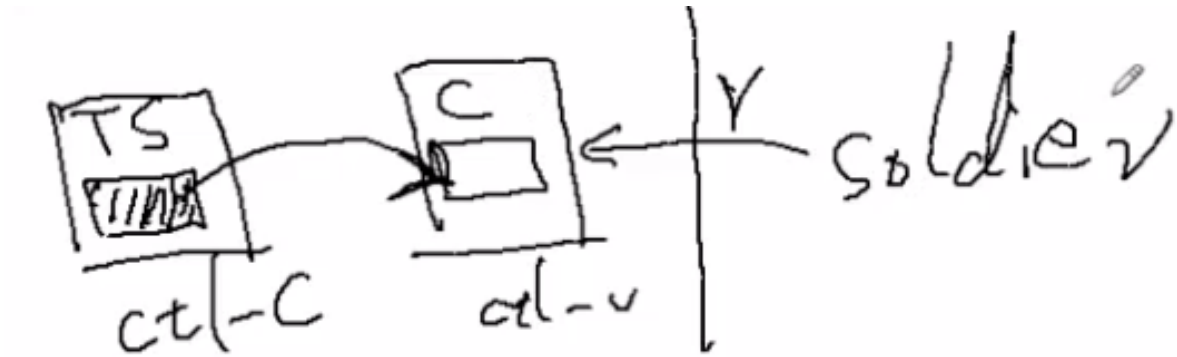
- The Bell-LaPadula model combine mandatory and discretionary AC
  - Simple security condition (in plain English): *S* can read *O* if and only if the classification of *O* is NOT higher than clearance of *S*, and *S* has discretionary read access to *O*.
  - Why do we need another rule?
  - Star-property (*-property in plain English): *S* can write *O* if and only if the classification of *O* is NOT lower than clearance of *S*, and *S* has discretionary write access to *O*.





What happens if we allow write down? That is, if we allow General to write on lunch menu? Say, the General has write access to Lunch Menu, he might open two files at a time that are 'Plan to attack Mars' which is TS and 'Lunch Menu' which is classified. By mistake, the general might copy some information from TS

file to C file. In that case person who has classified clearance can read the TS information which has been pasted into wrong file by mistake. However, that leads to potential information leakage. (If we allow, write down).



Incase, a wife -> W(TS, {Army, Air-Force})

husband -> H(S, {Army})

Now, wife needs to send a message to her husband. The problem is Wife, can't write into

Secret files because No Write Down, If she write in the TS files her husband wouldn't be able to get because he can't read up.

To solve this issue we need to look into two concepts -

MSL - Maximum security level

CSL - Current Security level

Now, wife comes down to CSL, i.e to level S and writes the message in S classified file and send it to husband and now her husband can read the message.

In this case when wife drops to lower clearance level, at that time the system forced to close all the TS classified files and then washes out it from memory, therefore the files are protected.