WDS END LAB EXAM

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TASK - Implement Bell-Lapadula Model for Electronic Voting

ASSUMPTIONS-

Every democratic country election is very important part of choosing leader and privacy of voters is also very important here we assume three subject's 1st voter (Voters are people who have the legal right to vote in elections) 2nd is booth election commissioner (particular election center in charge and eligible citizens to become voters and obtain voter card) and 3rd is system admin who control all election centers and conduct free and fair elections and **objects are 1st voterid(low) 2nd booth number(medium) and 3rd party for vote by voter(high)**

Subjects – voter(low), booth election commissioner(medium) system administrator(high)

I'm using simple and star confidentiality rule

SIMPLE CONFIDENTIALITY RULE: Simple Confidentiality Rule states that the Subject can only Read 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 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 but not the Lower Layer of Secrecy, due to which we call this rule as **NO WRITE-DOWN**

System admin is able to read all objects (check for any false voting) READ DOWN OLNY and unbale to write any objects **NO WRITE DOWN**

booth election commissioner is able to read only voter id and booth number and able to write only booth number (its not able to write voter id) **NO WRITE DOWN**

voter is able to read only voterid and write all objects (because voter will vote) **WRITE UP – NO READ UP**

some commands

//add subject

      addsub voter low

      addsub elecncommissioner medium

      addsub systmadmin high

//add objects

      addobj voterid low

      addobj boothcenternumber medium

      addobj partyvotedfor high

//write objects

      write voter voterid 10000121

      write voter partyvotedfor 5

      write elecncommissioner boothcenternumber 50087

//read objects

      read voter voterid

      read voter boothcenternumber   **//denied command**

      read voter partyvotedfor   **//denied command**

      read elecncommissioner voterid

      read elecncommissioner boothcenternumber

      read elecncommissioner partyvotedfor   **//denied command**

      read systmadmin voterid

      read systmadmin boothcenternumber

      read systmadmin partyvotedfor

Outputs -

```
ankur@ankur-VirtualBox: ~/wds/blp

ankur@ankur-VirtualBox:~/wds/blp$ make
make: 'BLPSecure' is up to date.
ankur@ankur-VirtualBox:~/wds/blp$ ./BLPSecure instructions1
Subject Added       : addsub voter low
Subject Added       : addsub elecncommissioner medium
Subject Added       : addsub systmadmin high
Object Added        : addobj voterid low
Object Added        : addobj boothcenternumber medium
Object Added        : addobj partyvotedfor high
Access Granted      : write voter voterid 10000121
Access Granted      : write voter partyvotedfor 5
Access Granted      : write elecncommissioner boothcenternumber 50087
Access Granted      : read voter voterid
+-------------------------------+
[Current States]
        <Subjects>
                voter <> temp: 10000121
                elecncommissioner <> temp: 0
                systmadmin <> temp: 0
        <Objects>
                voterid <> value: 10000121
                boothcenternumber <> value: 50087
                partyvotedfor <> value: 5
+-------------------------------+
Access Denied       : read voter boothcenternumber
Access Denied       : read voter partyvotedfor
Access Granted      : read elecncommissioner voterid
Access Granted      : read elecncommissioner boothcenternumber
Access Denied       : read elecncommissioner partyvotedfor
```

```
                    <Subjects>
                            voter <> temp: 10000121
                            elecncommissioner <> temp: 0
                            systmadmin <> temp: 0
                    <Objects>
                            voterid <> value: 10000121
                            boothcenternumber <> value: 50087
                            partyvotedfor <> value: 5
+------------------------------+
Access Denied       : read voter boothcenternumber
Access Denied       : read voter partyvotedfor
Access Granted      : read elecncommissioner voterid
Access Granted      : read elecncommissioner boothcenternumber
Access Denied       : read elecncommissioner partyvotedfor
Access Granted      : read systmadmin voterid
Access Granted      : read systmadmin boothcenternumber
Access Granted      : read systmadmin partyvotedfor
+------------------------------+
[Current States]
        <Subjects>
                            voter <> temp: 10000121
                            elecncommissioner <> temp: 50087
                            systmadmin <> temp: 5
        <Objects>
                            voterid <> value: 10000121
                            boothcenternumber <> value: 50087
                            partyvotedfor <> value: 5
+------------------------------+
ankur@ankur-VirtualBox:~/wds/blp$
```