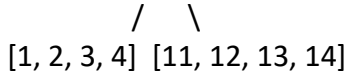
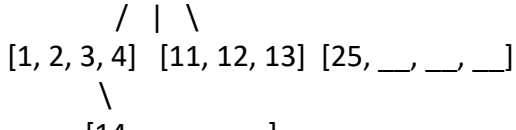
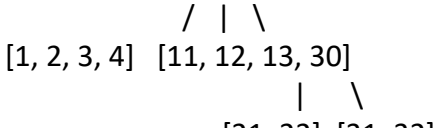
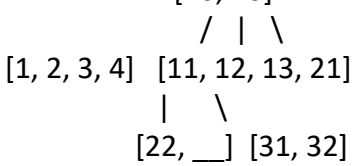
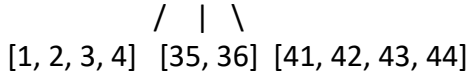
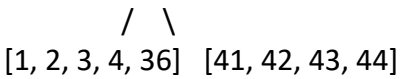
Mohamad Salaam
4/28/23
COMP 5120

**COMP 5120 HW4**

1. DAC is a type of access control where the owner or creator of an object (such as a file or database record) has full control over who can access and modify that object. Here, control, access decisions are based on the identity of the user or group attempting to access the object and the access rights assigned by the object's owner.
   A scenario where this is needed is in a laboratory or research facility where the labs techs or scientists need to store data. Mandatory access controls alone may not be sufficient to enforce this security policy, as the access requirements may be too complex to specify using just a set of rules that apply to all users uniformly.

2. Yes, even if a DBMS supports both discretionary and mandatory access controls, there is still a need for encryption to ensure the security and confidentiality of sensitive data. Other reasons are: Protection against unauthorized access, Compliance with regulations, Protection against insider threats, Protection of data in transit.

3. Ans
   a. Before:
   
   
   b. After:
   
   
   c. Before:
   
   
   d. After:
   
   
   e. Before:
   
   
   f. After:
   
   

Mohamad Salaam
4/28/23
COMP 5120

4. Ans:
    a. Linear Hashing provides an average-case search cost of only slightly more than one disk I/O by dynamically splitting the hash table into more buckets as needed. When a bucket becomes too full due to overflow, it is split into two, and the records are redistributed between the old and new buckets. This process continues as needed, so that each bucket contains a manageable number of records.

    b. No, Linear Hashing does not guarantee at most one disk access to retrieve a record with a given key value. While it is true that the average-case search cost is only slightly more than one disk I/O, in worst-case scenarios, multiple disk accesses may be required to retrieve a record with a given key value.