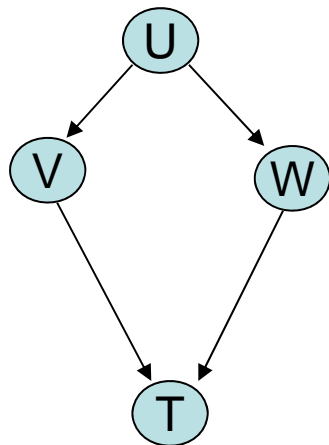


# Review on DAC

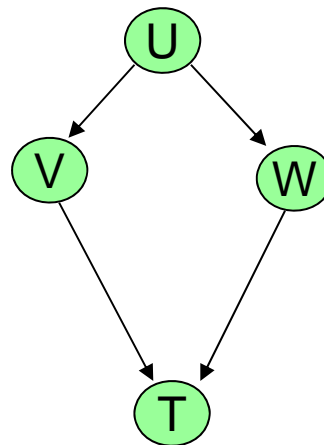
# DAC

- Draw the grant diagram for the following sequences of grant statements

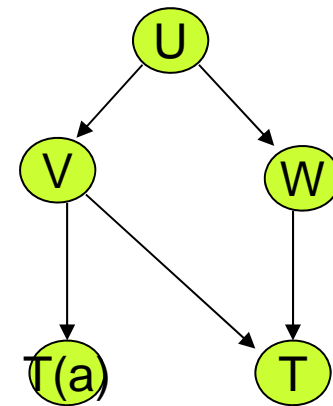
User	Action
U	Grant p, q, r to V, W with grant option
V	Grant p, q, r to T with grant option
V	<b>Grant r(a) to T</b>
W	Grant p, q, r to T



Grant on p



Grant on q

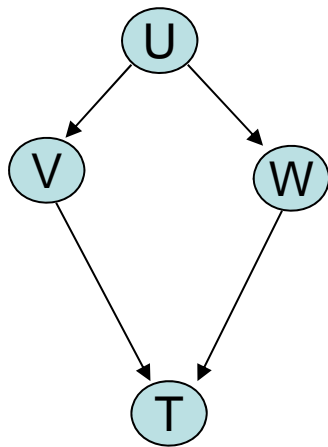


Grant on r

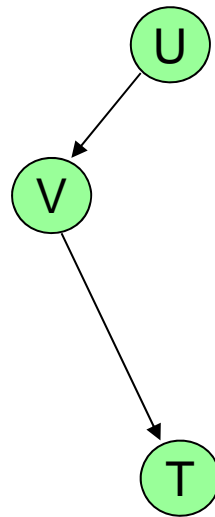
# DAC

- Now, consider the following revocation statements

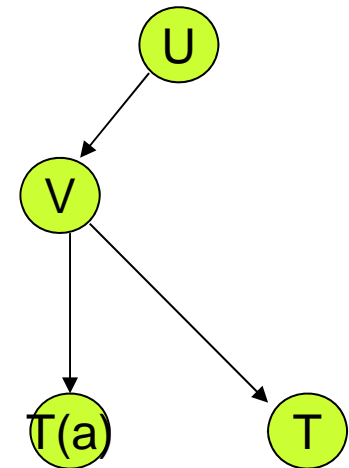
User	Action
U	Revoke p from W cascade
U	Revoke q, r from W cascade
V	<b>Revoke r from T</b>



Grant on p



Grant on q



Grant on r

# More Examples

- Specifying INSERT privilege in a GRANT command is not the same as specifying INSERT(column-name) for each column *currently* in the table
  - GRANT INSERT ON Sailors TO Michael
  - GRANT INSERT ON Sailors(sid), Sailors(name), Sailors(rating), Sailors(age) TO Michael
- What if you add a new column (using ALTER TABLE), say *address*?

# More Examples

- Boats(bid, ...) where bid is key
  - GRANT **SELECT** ON Boats TO Bill
  - Bill can CREATE TABLE Reserves(  
sid INT,  
**bid INT**,  
day DATE,  
PRIMARY KEY (bid,day),  
)
  - bid **cannot** be defined as a foreign key
- Why bother to introduce REFERENCES?**
- GRANT **REFERENCES** (bid) ON Boats TO Bill
  - Bill can CREATE TABLE Reserves(  
sid INT,  
bid INT,  
day DATE,  
PRIMARY KEY (bid,day),  
**FOREIGN KEY (bid) REFERENCES Boats**  
**ON DELETE NO ACTION**  
)
  - If Bill loses the REFERENCES privilege at a later time, then ...foreign key constraint in Reserves is dropped but Reserves is not dropped

# More Examples

- Sailors(sid, name, rating, age)
- Boats(bid, ...)
  
- GRANT UPDATE(rating) ON Sailors TO Leah
- Leah
  - UPDATE Sailors S SET S.rating = 10
  - UPDATE Sailors S SET S.rating = S.rating+1

# More Examples

- Sailors(sid, name, rating, age)
- Boats(bid, ...)
  
- GRANT UPDATE(rating) ON Sailors TO Leah
- Leah
  - UPDATE Sailors S SET S.rating = 10
  - UPDATE Sailors S SET S.rating = S.rating+1 **(incorrect!! – unless Leah also has SELECT privilege)**

# More examples

- A view may be dropped because a SELECT privilege is revoked from the user who created the view
  - Joe: GRANT SELECT ON Sailors TO Michael with GRANT OPTION
  - Mich: CREATE VIEW YoungSailors(name,age,rating) AS SELECT S.name, S.age, S.rating FROM Sailors WHERE age < 18
  - Mich: GRANT SELECT ON YoungSailors TO Eric
  - Eric: CREATE VIEW FineYoungSailors (name,age,rating) AS SELECT S.name, S.age, S.rating FROM YoungSailors WHERE rating > 6
- What if Joe revokes the SELECT privilege on Sailors from Michael?



# More examples

- If the creator of a view gains additional privileges on the underlying tables, (s)he automatically gains additional privileges on the view
- What if Joe gives Michael INSERT on Sailors from Michael?
  - Michael's view is (becomes) updatable.
  - What about Eric's view?