Agenda

- News! (1 min)
- Homework 1 (10 min)
- Hand back SQ 2 (1 min)
- Intro to Biological Sequences

Homework 1

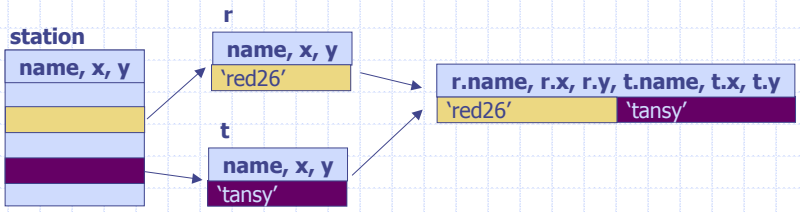
- There were lots of good ideas:
  - User-defined Types
    - Vector(float, float)
  - User-defined functions
    - CloseEnough(t1, t2, epsilon)
    - InRegion(x,y, xmin, xmax, ymin, ymax)
  - Views

```
CREATE VIEW readings AS (
  SELECT D.station, O.salinity
    FROM deployment D, CTD O
   WHERE D.sensor = O.sensor
)
```

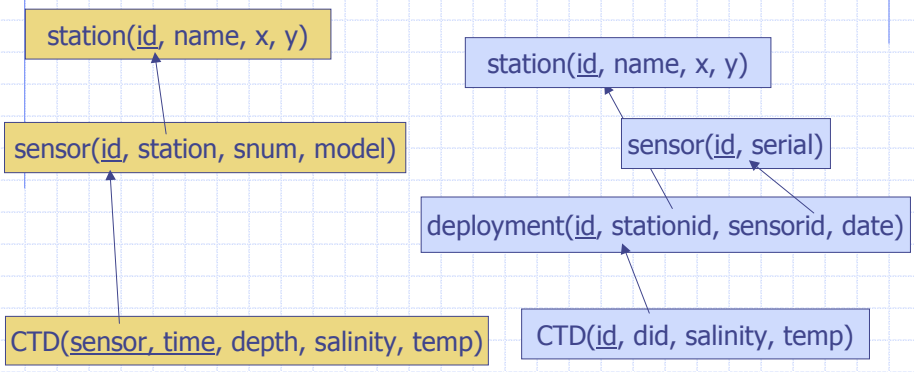
Homework 1

- Q1:

```
SELECT distance(r.x, r.y, t.x, t.y)
  FROM station r, station t
 WHERE r.name = 'red26'
   AND t.name = 'tansy'
```

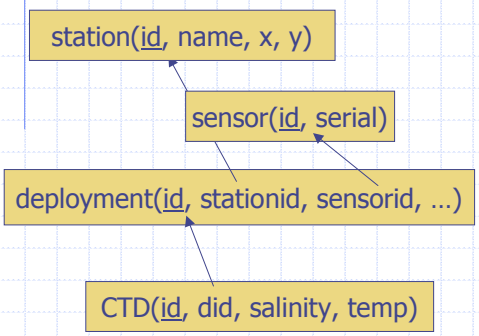


Homework 1



Homework 1: Observations

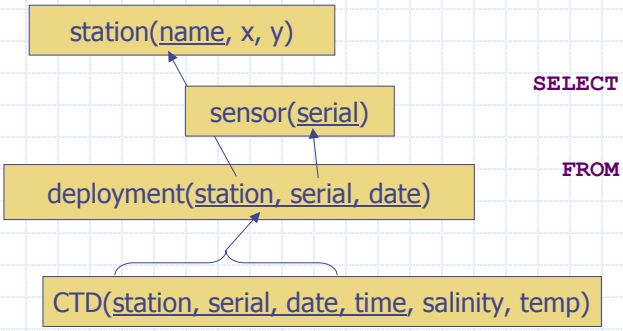
- Surrogate Key Addiction!




```
SELECT S.name,
       I.serial,
       O.salinity
  FROM station S,
       sensor I,
       deployment D,
       CTD O
 WHERE D.id = O.did
   AND D.sensorid = I.id
   AND D.stationid = S.id
```

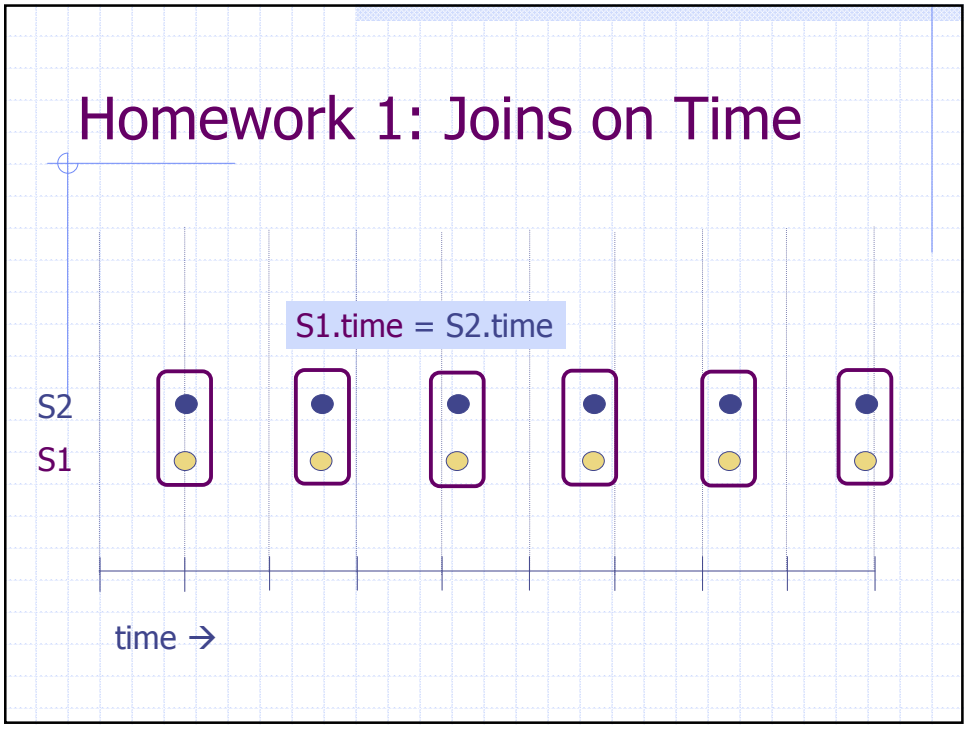
Homework 1: Observations

- Compare

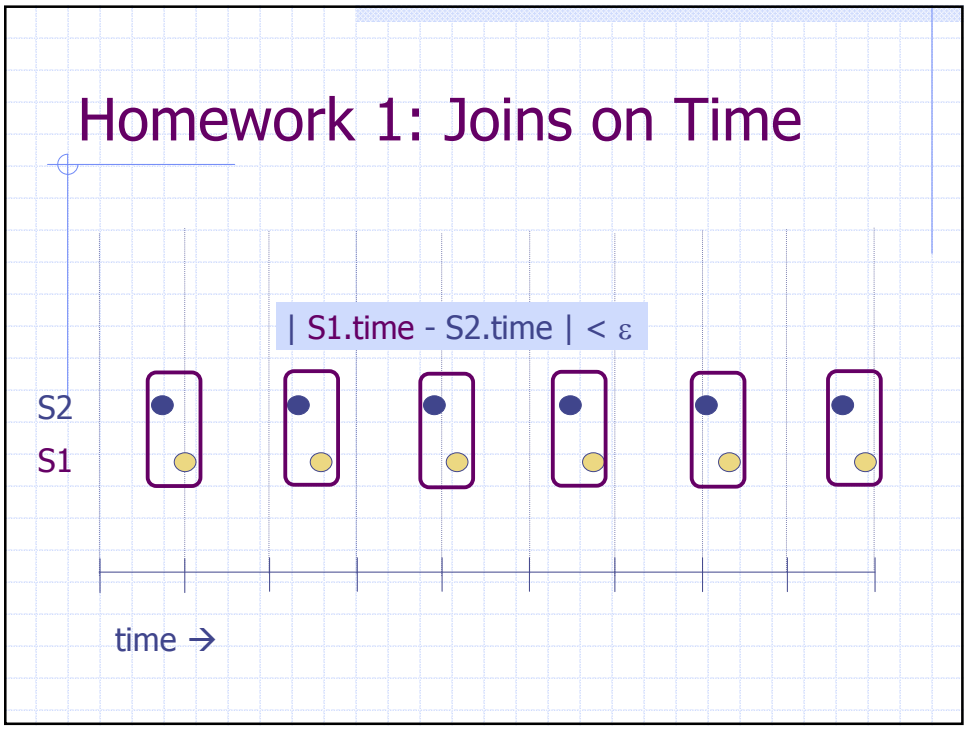



```
SELECT station,
       serial,
       salinity
  FROM CTD
```

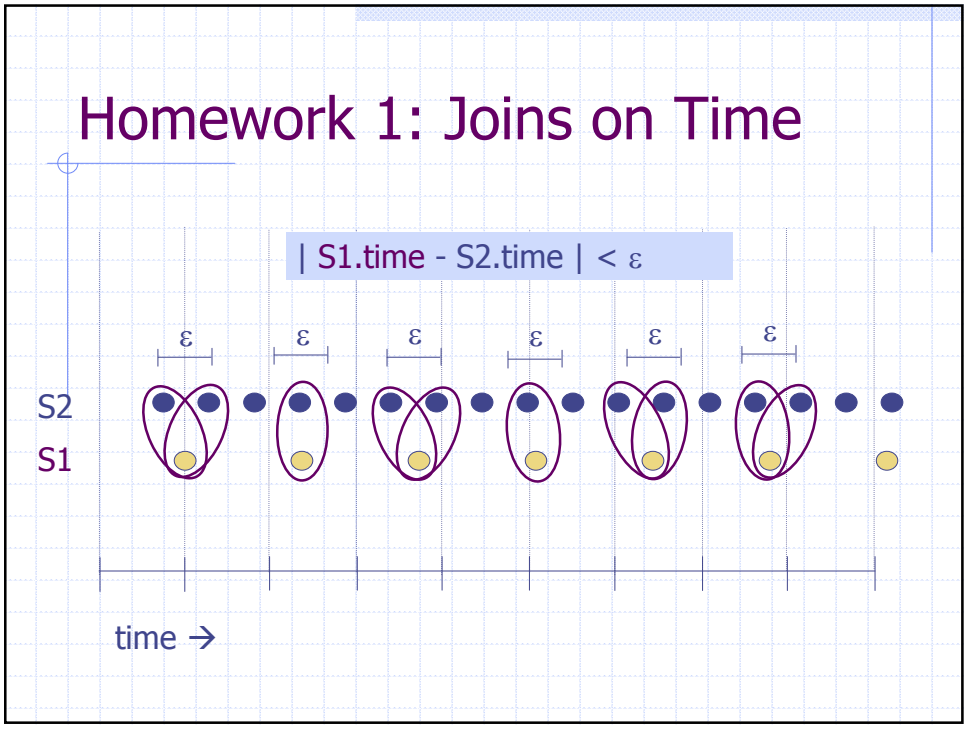
Homework 1: Joins on Time



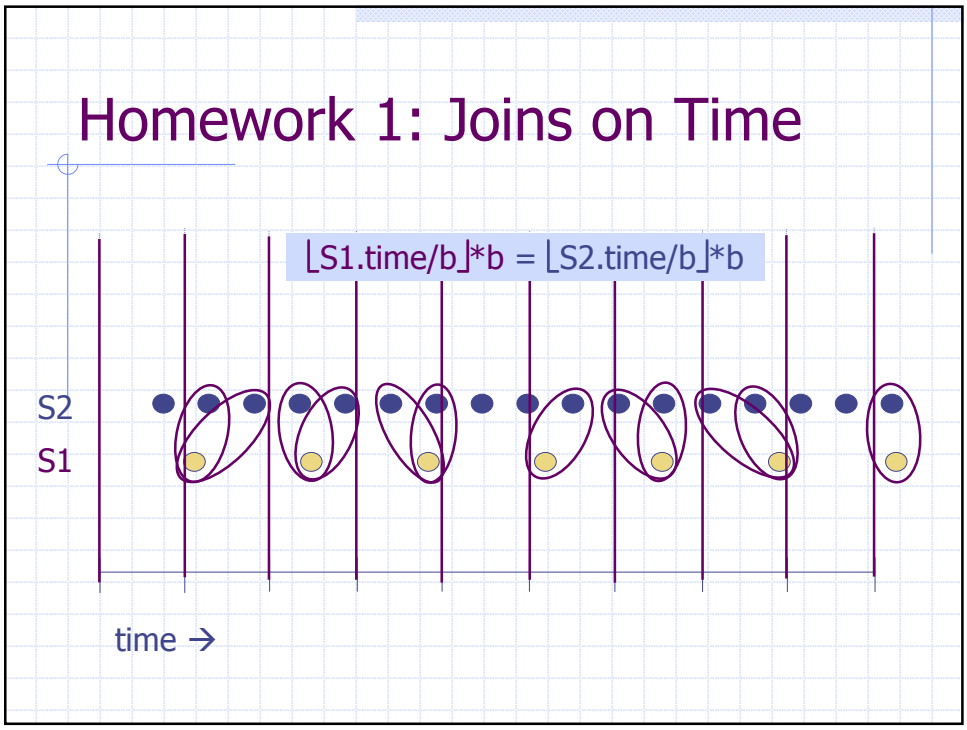
Homework 1: Joins on Time



Homework 1: Joins on Time



Homework 1: Joins on Time



Homework 1: T, T+1

- Q5: *At station tansy, compute the change in velocity from time t to time t+1 for each depth and each time t.*
- How do you get the "next" time, t+1?

```
SELECT t.depth, t.time,
       t1.u - t.u as delta_u,
       t1.v - t.v as delta_v
  FROM tansy_obs t, tansy_obs t1
 WHERE t.depth = t1.depth
   AND t1.time = (?????)
```

```
SELECT MIN(next.time)
  FROM tansy_obs next
 WHERE next.depth = t.depth
   AND next.time > t.time
```

tansy_obs(depth, time, u, v)

Homework 1

- Grading:
  - Design/Schema: 20pts
  - Each Query: 4pts
  - up to 5 bonus pts