1.

Technicians(SSN, tech_name, address, phone_number)

Tests(FAAid, test_name, max_score)

Planes(Pid, model)

Examine(SSN, FAAid, Pid, date, score).

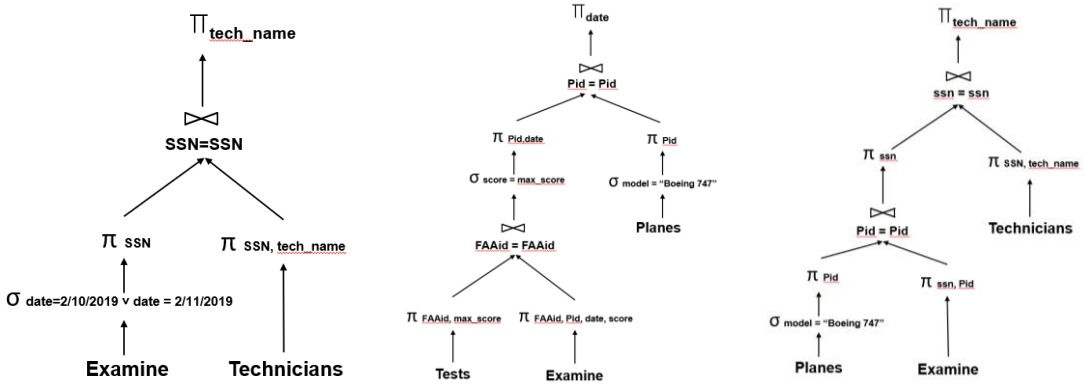
(a)

$\pi_{\text{tech\_name}}(\sigma_{\text{date = 2/10/2019} \vee \text{date = 2/11/2019}}(\text{Technicians} \bowtie \text{Examine}))$

$\pi_{\text{date}}(\sigma_{\text{model= “Boeing 747”}}(\sigma_{\text{score = max\_score}}(\text{Tests} \bowtie \text{Planes} \bowtie \text{Examine})))$

$\pi_{\text{SSN, tech\_name}}(\sigma_{\text{model= “Boeing 747”}}(\text{Tests} \bowtie (\text{Technicians} \bowtie \text{Examine})))$

(b)



(c) 4! = 24

2.

Sailors (sid, sname, rating, age)

Boats(bid, bname, color)

Reserve(sid, bid, day)

(a)

π sname (σ bname = Odyssey (**Sailors** ⋈ (**Reserve** ⋈ **Boats**)))

π sname (σ day = 05/15/2016 (**Sailors** ⋈ **Reserve**))

π sname (π sid(**Sailors**) - π sid (**Sailors** ⋈ **Reserve**))