

Ahmet Faruk ULUTAŞ - 21803717

Q1) a-  $\sigma$  birth year  $> 1997 \wedge$  year = 2022 (Album  $\bowtie$  Singer)  
 $\bowtie$  Song  $\Pi$  s-name, nationality ( $\sigma$  birth-year  $> 1997 \wedge$  year = 2022  
(Album  $\bowtie$  Singer)  $\bowtie$  Song)

b-  $\Pi$  s-title, written-by ( $\sigma$  rating  $> 4.0 \wedge$  year = 2022  
SongInAlbum  $\bowtie$  Song)  $\bowtie$  ( $\Pi$  a-title ( $\sigma$  rating  $> 4.0 \wedge$   
year = 2022 Album))

c-  $\Pi$  s-name ( $\sigma$  nationality = 'Turkish'  $\wedge$  s-name NOT IN  
( $\Pi$  s-name ( $\sigma$  year = 2022 Album)))

d-  $\Pi$  a-title, s-name ( $\sigma$  year = 2022 Album)  $\bowtie$  Singer  $\bowtie$   
( $\sigma$  rating = MAX ( $\Pi$  rating ( $\sigma$  year = 2022 Album)))

e-  $\Pi$  a-title ( $\sigma$  year = 2022 Album)  $\bowtie$  ( $\gamma$  a-title  
(COUNT(s-title)  $> 10$  Album))

f-  $\Pi$  s-title, track-number ( $\sigma$  a-title = 'ABC' SongInAlbum)  
 $\bowtie$  ( $\gamma$  length (MIN(length)) Song)

Q2) a-  $\Pi$  name, price ( $\sigma$  company = 'Pfizer'  $\wedge$   
production-year = 2022 Drug)

b-  $\Pi$  TCK, name (Patient  $\bowtie$   $\sigma$  date = '20/02/2023'  $\wedge$   
doctor-TCK = primary-doctor-TCK Prescription)

c-  $\Pi$  name, company (Drug  $\bowtie$   $\Pi$  drug-name ( $\sigma$  date =  
'20/02/2023' Prescription) DrugInPrescription)

d.  $\Pi$  TCK, name (Patient  $\bowtie$   $\sigma$  date = '20/02/2023'  
 $\wedge$  city = 'Ankara'  $\wedge$  birthyear < 1953 Prescription  $\bowtie$  Doctor)

e.  $\Pi$  name, company (Drug)  $\div$  ( $\gamma$  production-year (MAX(price)  
Drug))

f.  $\Pi$  id ( $\sigma$  date = '20/02/2023' Prescription)  $\bowtie$   $\gamma$  presc-id  
(MAX(count(drug-name)) DrugInPrescription)

g.  $\Pi$  name, company ( $\sigma$  presc-id IN ( $\gamma$  presc-id (count(\*)  
 $\geq 100$  Prescription  $\bowtie$  DrugInPrescription)) Drug)

h.  $\Pi$  TCK, name (Patient  $\bowtie$   $\sigma$  birthyear = MIN(birthyear)  
 $\wedge$  COUNT(DISTINCT id)  $\geq 10$  Prescription)