

*Auseren*

$$a) \pi_{\text{Baslik}, \text{Yil}} (\text{KITAP})$$

$$b) \pi_{\text{OgrID}, \text{OgrAdi}, \text{Bolum}, \text{Yas}} (\sigma_{\text{Bolum} = 'IIS'} (\text{OGRENCI}))$$

$$c) \pi_{\text{KitapID}, \text{Baslik}, \text{Yayinci}, \text{Yil}, \text{OgrID}, \text{OgrAdi}, \text{Bolum}, \text{Yas}} (\text{OGRENCI} \times (\text{KITAP} - (\text{KITAP} \times \pi_{\text{KitapID}} (\text{ODUNC}))))$$

$$d) \pi_{\text{KitapID}, \text{Baslik}, \text{Yayinci}, \text{Yil}} (\sigma_{\text{Yayinci} = 'SAD' \wedge \text{Yil} < 1990} (\text{KITAP}))$$

$$e) \pi_{\text{YAdi}} (\sigma_{\text{Adres} = 'Sakarya'} (\text{YAZAR}))$$

$$f) \pi_{\text{OgrAdi}} (\sigma_{\text{Yas} \geq 30} (\text{OGRENCI})) \cap \pi_{\text{OgrAdi}} (\sigma_{\text{Bolum} = 'IIS'} (\text{OGRENCI}))$$

$$g) \text{YAZAR} (\underline{\text{Adi}}, \text{Adres})$$

$$h) \pi_{\text{OgrID}, \text{OgrAdi}, \text{Bolum}, \text{Yas}} (\sigma_{\text{Bolum} = 'IIS'} (\text{OGRENCI})) \cap \pi_{\text{OgrID}, \text{OgrAdi}, \text{Bolum}, \text{Yas}} (\text{OGRENCI} \times \pi_{\text{OgrID}} (\text{ODUNC}))$$

$$i) \pi_{\text{Baslik}} (\sigma_{\text{YAdi} = 'Ali'} (\text{KITAP} \bowtie \text{YAZILMIS})) \quad (\text{Join olmadan yapamadım})$$

$$\pi_{\text{Baslik}} (\sigma_{\text{YAdi} = 'Ali'} (\text{KITAP} \times \text{YAZILMIS})) \cap \pi_{\text{Baslik}} (\sigma_{\text{KITAP.KitapID} = \text{YAZILMIS.KitapID}} (\text{KITAP} \times \text{YAZILMIS}))$$

$$j) \pi_{\text{Baslik}} (\pi_{\text{KitapID}} (\sigma_{\text{YAdi} = 'Ali'} (\text{YAZILMIS}))) \times \sigma_{\text{Anahlar} = 'Veritabani'} (\text{ACIKLAMA}) \times \text{KITAP}$$

$$k) \pi_{\text{KitapID}, \text{Baslik}, \text{Yayinci}, \text{Yil}, \text{Anahlar}} (\sigma_{\text{Anahlar} = \text{Null}} (\text{KITAP} \times \text{ACIKLAMA}))$$



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L)  $\pi_{OgrID, OgrAdi, Bolun, Yast, KitapID, Baslik, Yayıncı, Yıl} (OGRENCI \bowtie \pi_{KitapID, OgrID}$

(ODUNC)  $\bowtie KITAP$ )

M)  $\pi_{Baslik} (\pi_{KitapID} (\sigma_{Yadi = 'YASIN'} (YAZILMIS)) \bowtie KITAP)$

N)  $\pi_{Yadi} (\pi_{OgrID} (\sigma_{OgrAdi = 'VELI'} (OGRENCI)) \bowtie \pi_{OgrID, KitapID} (ODUNC) \bowtie YAZILMIS)$

O)  $\pi_{KitapID, Baslik, Yayıncı, Yıl} (KITAP \bowtie \pi_{KitapID} (\sigma_{Anahar = 'veritabanı'} \wedge Anahar = 'programlama' (ACIKLAMAMA)))$