MIMIC II SQL cook book is a list of useful SQL examples, commands and functions compiled to help MIMIC II users quickly get familiar with the MIMIC II database. The examples were compiled under versions 2.5 and 2.6 of the MIMIC II database. Although not tested, these examples might work in your current version of MIMIC II by modifying the schema names (i.e. changing from mimic2v25 to mimic2v26). Additionally, many of the examples shown here were developed using Oracle and the SQL code provided may not be compatible with the PostgreSQL database server software.

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Chapter 1

Basic information
1.1 Patient’s ID, sex and date of birth

```sql
select subject_id, sex, dob
from mimic2v26.d_patients
where rownum < 10
```
1.2 Number of Subject IDs in the Database

```sql
select count(*) from mimic2v26.d_patients
```
Chapter 2

Database Histograms
2.1 Age Histogram

```
select bucket+15, count(*) from (  
    select months_between(ad.adm_dt, dp.dob)/12, width_bucket(months_between(ad.adm_dt, dp.dob)/12, 15, 100, 85) as bucket  
    from mimic2v26.admissions ad, mimic2v26.d_patients dp  
    where ad.subject_id = dp.subject_id and months_between(ad.adm_dt, dp.dob)/12 between 15 and 199  
) group by bucket order by bucket;
```
2.2 Height Histogram

```
select bucket, count(*) from ( 
    select value1num, width_bucket(value1num, 1, 200, 200) as bucket 
    from mimic2v26.chartevents 
    where itemid = 920 and value1num is not null and value1num > 0 and value1num < 500 
) group by bucket order by bucket;
```
2.3 Blood Urea Nitrogen (BUN) Histogram

```
BEGIN SQL
SELECT bucket, COUNT(*) FROM (
    SELECT width_bucket(valuenum, 0, 280, 280) AS bucket
    FROM mimic2v26.labevents le,
        mimic2v26.d_patients dp
    WHERE itemid IN (50177)
        AND le.subject_id = dp.subject_id
        AND months_between(le.charttime, dp.dob)/12 > 15
) GROUP BY bucket ORDER BY bucket;
END SQL
```
2.4 Get Glasgow Coma Scale (GSC) Histogram

```sql
select bucket, count(*) from ( 
  select width_bucket(value1num, 1, 30, 30) as bucket 
  from mimic2v26.chartevents ce, 
      mimic2v26.d_patients dp 
  where itemid in (198) 
    and ce.subject_id = dp.subject_id 
    and months_between(ce.charttime, dp.dob)/12 > 15 
  ) group by bucket order by bucket;
```
2.5 Serum Glucose Histogram

```sql
select bucket, count(*) from (  
    select width_bucket(valuenum, 0.5, 1000, 1000) as bucket  
    from mimic2v26.labevents le,  
        mimic2v26.d_patients dp  
    where itemid in (50006, 50112) and valuenum is not null  
        and le.subject_id = dp.subject_id  
        and months_between(le.charttime, dp.dob)/12 > 15  
) group by bucket order by bucket;
```
2.6 Serum HCO3 Histogram

```
select bucket, count(*) from (  
    select width_bucket(valuenum, 0, 231, 231) as bucket from mimic2v26.labevents  
    where itemid in (50022, 50025, 50172)  
) group by bucket order by bucket;
```
2.7 Hematocrit (%) Histogram

```sql
select bucket, count(*) from ( 
    select width_bucket(value1num, 0, 150, 150) as bucket 
    from mimic2v26.chartevents ce, 
    mimic2v26.d_patients dp 
    where itemid in (813) 
    and ce.subject_id = dp.subject_id 
    and months_between(ce.charttime, dp.dob)/12 > 15 
) group by bucket order by bucket;
```
2.8 Heart Rate Histogram

```sql
select bucket, count(*) from (
    select width_bucket(value1num, 0, 300, 301) as bucket
    from mimic2v26.chartevents ce,
    mimic2v26.d_patients dp
    where itemid = 211
    and ce.subject_id = dp.subject_id
    and months_between(ce.charttime, dp.dob)/12 > 15
) group by bucket order by bucket;
```

spool off
exit;

2.9 Serum Potassium Histogram

```sql
select bucket/10, count(*) from (
    select width_bucket(valuenum, 0, 10, 100) as bucket
    from mimic2v26.labevents le,
    mimic2v26.d_patients dp
    where itemid in (50009, 50149)
    and le.subject_id = dp.subject_id
    and months_between(le.charttime, dp.dob)/12 > 15
) group by bucket order by bucket;
```
2.10 RR interval Histogram

```sql
select bucket/10, count(*) from ( 
    select value1num, width_bucket(value1num, 0, 130, 1400) as bucket 
    from mimic2v26.chartevents ce, 
    mimic2v26.d_patients dp 
    where itemid in (219, 615, 618) 
    and ce.subject_id = dp.subject_id 
    and months_between(ce.charttime, dp.dob)/12 > 15 
) group by bucket order by bucket;
```
2.11 Systolic Blood Pressure Histogram

```sql
select bucket, count(*) from (  
    select width_bucket(value1num, 0, 300, 300) as bucket  
    from mimic2v26.chartevents ce,  
        mimic2v26.d_patients dp  
    where itemid in (6, 51, 455, 6701)  
        and ce.subject_id = dp.subject_id  
        and months_between(ce.charttime, dp.dob)/12 > 15  
) group by bucket order by bucket;
```
2.12 Sodium Histogram

```sql
select bucket, count(*) from ( 
  select width_bucket(valuenum, 0, 180, 180) as bucket 
  from mimic2v26.labevents le, 
      mimic2v26.d_patients dp 
  where itemid in (50012, 50159) 
    and le.subject_id = dp.subject_id 
    and months_between(le.charttime, dp.dob)/12 > 15 
) group by bucket order by bucket;
```
2.13 Body temperature Histogram

```
select (bucket/10) + 30, count(*) from (
    select width_bucket(
        case when itemid in (676, 677) then value1num
        when itemid in (678, 679) then (value1num - 32) * 5 / 9
        end, 30, 45, 160) as bucket
    from mimic2v26.chartevents ce,
    mimic2v26.d_patients dp
    where itemid in (676, 677, 678, 679)
    and ce.subject_id = dp.subject_id
    and months_between(ce.charttime, dp.dob)/12 > 15
) group by bucket order by bucket;
```
2.14 Urine Output Histogram

```sql
select bucket*5, count(*) from (  
    select width_bucket(volume, 0, 1000, 200) as bucket  
    from mimic2v26.ioevents ie,  
        mimic2v26.d_patients dp  
    where itemid in (55, 56, 57, 61, 65, 69, 85, 94, 96, 288, 405, 428, 473, 651, 715, 1922, 2042, 2068, 2111, 2119, 2130, 2366, 2463, 2507, 2510, 2592, 2676, 2810, 2859, 3053, 3175, 3462, 3519, 3966, 3987, 4132, 4253, 5927)  
        and ie.subject_id = dp.subject_id  
        and months_between(ie.charttime, dp.dob)/12 > 15  
    ) group by bucket order by bucket;
```
2.15 White Blood Cell Count Histogram

```sql
select bucket/10, count(*) from (
    select width_bucket(valuenum, 0, 100, 1001) as bucket
    from mimic2v26.labevents le,
        mimic2v26.d_patients dp
    where itemid in (50316, 50468) and valuenum is not null
    and le.subject_id = dp.subject_id
    and months_between(le.charttime, dp.dob)/12 > 15
) group by bucket order by bucket;
```
Chapter 3

Specific medications
3.1 Insulin Doses

```sql
select distinct doses_per_24hrs, dose_val_rx
from mimic2v26.poe_order, mimic2v26.poe_med
where mimic2v26.poe_order.poe_id=mimic2v26.poe_med.poe_id
AND lower(mimic2v26.poe_order.medication) like 'insulin%'
AND lower(mimic2v26.poe_med.drug_name_generic) like 'insulin%';

-- Find the first ICU admission

select *
from
(select min(intime) over (partition by subject_id) as min_intime, ie.*
from icustayevents ie)
where min_intime = intime
```
Chapter 4

Co-morbidity and mortality scores
4.1 Elixhauser Comorbidities

/*
Valid for MIMIC II database schema version 2.6 This scripts calculates elixhauser comorbidity scores from ICD9 and DRG codes. Code developed and provided by JoonWu Lee (joonlee@mit.edu).

Citation:
http://www.jstor.org/pss/3766985
Comorbidity measures for use with administrative data
A Elixhauser, C Steiner, DR Harris - Medical Care, 1998 - JSTOR
*/

WITH icd9list AS (
  SELECT adm.subject_id, 
      adm.hadm_id, 
      code, 
      sequence, 
      regexp_substr(code, '^D') as icd9_alpha, 
      to_number(regexp_substr(code, '[D\d+.\d+]')) as icd9_numeric 
  FROM mimic2v26.admissions adm, 
       mimic2v26.icd9 icd 
  WHERE adm.hadm_id = icd.hadm_id 
      --AND adm.hadm_id < 100 
)
--SELECT * FROM icd9list;
, drglist AS (
  SELECT adm.subject_id, 
      adm.hadm_id, 
      to_number(ci.code) AS codenum, 
      ci.description 
  FROM mimic2v26.admissions adm, 
       mimic2v26.drgevents drg, 
       mimic2v26.d_codeditems ci 
  WHERE adm.hadm_id = drg.hadm_id 
      AND drg.itemid = ci.itemid 
      AND ci.type = 'HFCA_DRG' 
)
--SELECT * FROM drglist;
, drg_category AS ( 
  SELECT subject_id, 
      hadm_id, 
  CASE 
      WHEN (drglist.codenum >= 103 AND drglist.codenum <= 108)
OR (drglist.codenum >= 110 AND drglist.codenum <= 112)
OR (drglist.codenum >= 115 AND drglist.codenum <= 118)
OR (drglist.codenum >= 120 AND drglist.codenum <= 127)
OR drglist.codenum = 129
OR (drglist.codenum >= 132 AND drglist.codenum <= 133)
OR (drglist.codenum >= 135 AND drglist.codenum <= 143)
THEN 1
ELSE 0
END AS cardiac,
CASE
  WHEN (drglist.codenum >= 302 AND drglist.codenum <= 305)
  OR (drglist.codenum >= 315 AND drglist.codenum <= 333)
  THEN 1
  ELSE 0
END AS renal,
CASE
  WHEN (drglist.codenum >= 199 AND drglist.codenum <= 202)
  OR (drglist.codenum >= 205 AND drglist.codenum <= 208)
  THEN 1
  ELSE 0
END AS liver,
CASE
  WHEN (drglist.codenum >= 400 AND drglist.codenum <= 414)
  OR drglist.codenum = 473
  OR drglist.codenum = 492
  THEN 1
  ELSE 0
END AS leukemia_lymphoma,
CASE
  WHEN drglist.codenum = 10
  OR drglist.codenum = 11
  OR drglist.codenum = 64
  OR drglist.codenum = 82
  OR drglist.codenum = 172
  OR drglist.codenum = 173
  OR drglist.codenum = 199
  OR drglist.codenum = 203
  OR drglist.codenum = 239
  OR (drglist.codenum >= 257 AND drglist.codenum <= 260)
  OR drglist.codenum = 274
  OR drglist.codenum = 275
  OR drglist.codenum = 303
  OR drglist.codenum = 318
  OR drglist.codenum = 319
  OR drglist.codenum = 338
  OR drglist.codenum = 344
OR drglist.codenum = 346
OR drglist.codenum = 347
OR drglist.codenum = 354
OR drglist.codenum = 355
OR drglist.codenum = 357
OR drglist.codenum = 363
OR drglist.codenum = 366
OR drglist.codenum = 367
OR (drglist.codenum >= 406 AND drglist.codenum <= 414)
THEN 1
ELSE 0
END AS cancer,
CASE
  WHEN drglist.codenum = 88
  THEN 1
  ELSE 0
END AS copd,
CASE
  WHEN (drglist.codenum >= 130 AND drglist.codenum <= 131)
  THEN 1
  ELSE 0
END AS peripheral_vascular,
CASE
  WHEN drglist.codenum = 134
  THEN 1
  ELSE 0
END AS hypertension,
CASE
  WHEN (drglist.codenum >= 14 AND drglist.codenum <= 17)
  OR drglist.codenum=5
  THEN 1
  ELSE 0
END AS cerebrovascular,
CASE
  WHEN (drglist.codenum >= 1 AND drglist.codenum <= 35)
  THEN 1
  ELSE 0
END AS nervous_system,
CASE
  WHEN (drglist.codenum >= 96 AND drglist.codenum <= 98)
  THEN 1
  ELSE 0
END AS asthma,
CASE
  WHEN (drglist.codenum >= 294 AND drglist.codenum <= 295)
  THEN 1
ELSE 0
END AS diabetes,
CASE
  WHEN drglist.codenum = 290
  THEN 1
  ELSE 0
END AS thyroid,
CASE
  WHEN (drglist.codenum >= 300 AND drglist.codenum <= 301)
  THEN 1
  ELSE 0
END AS endocrine,
CASE
  WHEN drglist.codenum = 302
  THEN 1
  ELSE 0
END AS kidney_transplant,
CASE
  WHEN (drglist.codenum >= 316 AND drglist.codenum <= 317)
  THEN 1
  ELSE 0
END AS renal_failure_dialysis,
CASE
  WHEN (drglist.codenum >= 174 AND drglist.codenum <= 178)
  THEN 1
  ELSE 0
END AS gi_hemorrhage_ulcer,
CASE
  WHEN (drglist.codenum >= 488 AND drglist.codenum <= 490)
  THEN 1
  ELSE 0
END AS hiv,
CASE
  WHEN (drglist.codenum >= 240 AND drglist.codenum <= 241)
  THEN 1
  ELSE 0
END AS connective_tissue,
CASE
  WHEN drglist.codenum = 397
  THEN 1
  ELSE 0
END AS coagulation,
CASE
  WHEN drglist.codenum = 288
  THEN 1
  ELSE 0
END AS obesity_procedure,
CASE
  WHEN (drglist.codenum >= 396 AND drglist.codenum <= 298) THEN 1
  ELSE 0
END AS nutrition_metabolic,
CASE
  WHEN (drglist.codenum >= 395 AND drglist.codenum <= 396) THEN 1
  ELSE 0
END AS anemia,
CASE
  WHEN (drglist.codenum >= 433 AND drglist.codenum <= 437) THEN 1
  ELSE 0
END AS alcohol_drug,
CASE
  WHEN drglist.codenum = 430 THEN 1
  ELSE 0
END AS psychoses,
CASE
  WHEN drglist.codenum = 426 THEN 1
  ELSE 0
END AS depression
FROM drglist
)
--SELECT * FROM drg_category;
, elixhauser AS (SELECT icd.subject_id,
                    icd.hadm_id,
                    MAX(
                      CASE
                        WHEN icd.icd9_alpha IS NULL
                          AND (icd.icd9_numeric = 398.91
                          OR icd.icd9_numeric = 402.11
                          OR icd.icd9_numeric = 402.91
                          OR icd.icd9_numeric = 404.11
                          OR icd.icd9_numeric = 404.13
                          OR icd.icd9_numeric = 404.91
                          OR icd.icd9_numeric = 404.93
                          OR icd.icd9_numeric BETWEEN 428 AND 428.9)
                          AND drg.cardiac = 0
                          THEN 1
                          ELSE 0
                      END)
                      AS elixhauser
FROM icd
)
AS congestive_heart_failure,
MAX(
CASE
  WHEN ((icd.icd9_alpha IS NULL
    AND (icd.icd9_numeric = 426.1
    OR icd.icd9_numeric = 426.11
    OR icd.icd9_numeric = 426.13
    OR icd.icd9_numeric BETWEEN 426.2 AND 426.53
    OR icd.icd9_numeric BETWEEN 426.6 AND 426.89
    OR icd.icd9_numeric = 427
    OR icd.icd9_numeric = 427.2
    OR icd.icd9_numeric = 427.31
    OR icd.icd9_numeric = 427.6
    OR icd.icd9_numeric = 427.9
    OR icd.icd9_numeric = 785))
    OR (icd.icd9_alpha = 'V'
     AND (icd.icd9_numeric = 42.2
     OR icd.icd9_numeric = 43.3))
     AND drg.cardiac = 0
    THEN 1
    ELSE 0
END)
) AS cardiac_arrhythmias,
MAX(
CASE
  WHEN ((icd.icd9_alpha IS NULL
    AND (icd.icd9_numeric BETWEEN 93.2 AND 93.24
    OR icd.icd9_numeric BETWEEN 394 AND 397.1
    OR icd.icd9_numeric BETWEEN 424 AND 424.91
    OR icd.icd9_numeric BETWEEN 746.3 AND 746.6))
    OR (icd.icd9_alpha = 'V'
     AND (icd.icd9_numeric = 42.2
     OR icd.icd9_numeric = 43.3))
     AND drg.cardiac = 0
    THEN 1
    ELSE 0
END)
) AS valvular_disease,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
    AND (icd.icd9_numeric BETWEEN 416 AND 416.9
    OR icd.icd9_numeric = 417.9)
    AND (drg.cardiac = 0 AND drg.copd = 0)
    THEN 1
ELSE 0
END
) AS pulmonary_circulation,
MAX(
CASE
WHEN ((icd.icd9_alpha IS NULL
AND (icd.icd9_numeric BETWEEN 440 AND 440.9
OR icd.icd9_numeric = 441.2
OR icd.icd9_numeric = 441.4
OR icd.icd9_numeric = 441.7
OR icd.icd9_numeric = 441.9
OR icd.icd9_numeric BETWEEN 443.1 AND 443.9
OR icd.icd9_numeric = 447.1
OR icd.icd9_numeric = 557.1
OR icd.icd9_numeric = 557.9))
OR (icd.icd9_alpha = 'V'
AND icd.icd9_numeric = 43.4))
AND drg.peripheral_vascular = 0
THEN 1
ELSE 0
END
) AS peripheral_vascular,
MAX(
CASE
WHEN icd.icd9_alpha IS NULL
AND (icd.icd9_numeric = 401.1
OR icd.icd9_numeric = 401.9
OR icd.icd9_numeric = 402.1
OR icd.icd9_numeric = 402.9
OR icd.icd9_numeric = 404.1
OR icd.icd9_numeric = 404.9
OR icd.icd9_numeric = 405.11
OR icd.icd9_numeric = 405.19
OR icd.icd9_numeric = 405.91
OR icd.icd9_numeric = 405.99)
AND (drg.hypertension = 0 AND drg.cardiac = 0 AND drg.renal = 0)
THEN 1
ELSE 0
END
) AS hypertension,
MAX(
CASE
WHEN icd.icd9_alpha IS NULL
AND (icd.icd9_numeric BETWEEN 342 AND 342.12
OR icd.icd9_numeric BETWEEN 342.9 AND 344.9)
AND drg.cerebrovascular = 0
THEN 1
ELSE 0
END
) AS paralysis,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric = 331.9
  OR icd.icd9_numeric = 332
  OR icd.icd9_numeric = 333.4
  OR icd.icd9_numeric = 333.5
  OR icd.icd9_numeric BETWEEN 334 AND 335.9
  OR icd.icd9_numeric = 340
  OR icd.icd9_numeric BETWEEN 341.1 AND 341.9
  OR icd.icd9_numeric BETWEEN 345 AND 345.11
  OR icd.icd9_numeric BETWEEN 345.4 AND 345.51
  OR icd.icd9_numeric BETWEEN 345.8 AND 345.91
  OR icd.icd9_numeric = 348.1
  OR icd.icd9_numeric = 348.3
  OR icd.icd9_numeric = 780.3
  OR icd.icd9_numeric = 784.3)
  AND drg.nervous_system = 0
  THEN 1
  ELSE 0
END
) AS other_neurological,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric BETWEEN 490 AND 492.8
  OR icd.icd9_numeric BETWEEN 493 AND 493.91
  OR icd.icd9_numeric = 494
  OR icd.icd9_numeric BETWEEN 495 AND 505
  OR icd.icd9_numeric = 506.4)
  AND (drg.copd = 0 AND drg.asthma = 0)
  THEN 1
  ELSE 0
END
) AS chronic_pulmonary,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND icd.icd9_numeric BETWEEN 250 AND 250.33
  AND drg.diabetes = 0
  THEN 1
ELSE 0
END
) AS diabetes_uncomplicated,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric BETWEEN 250.4 AND 250.73
  OR icd.icd9_numeric BETWEEN 250.9 AND 250.93)
  AND drg.diabetes = 0
  THEN 1
  ELSE 0
END
) AS diabetes_complicated,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric BETWEEN 243 AND 244.2
  OR icd.icd9_numeric = 244.8
  OR icd.icd9_numeric = 244.9)
  AND (drg.thyroid = 0 AND drg.endocrine = 0)
  THEN 1
  ELSE 0
END
) AS hypothyroidism,
MAX(
CASE
  WHEN ((icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric = 403.11
  OR icd.icd9_numeric = 403.91
  OR icd.icd9_numeric = 404.12
  OR icd.icd9_numeric = 404.92
  OR icd.icd9_numeric = 585
  OR icd.icd9_numeric = 586))
  OR (icd.icd9_alpha = 'V'
  AND (icd.icd9_numeric = 42
  OR icd.icd9_numeric = 45.1
  OR icd.icd9_numeric = 56
  OR icd.icd9_numeric = 56.8)))
  AND (drg.kidney_transplant = 0 AND renal_failure_dialysis = 0)
  THEN 1
  ELSE 0
END
) AS renal_failure,
WHEN ((icd.icd9_alpha IS NULL AND (icd.icd9_numeric = 70.32 OR icd.icd9_numeric = 70.33 OR icd.icd9_numeric = 70.54 OR icd.icd9_numeric = 456 OR icd.icd9_numeric = 456.1 OR icd.icd9_numeric = 456.2 OR icd.icd9_numeric = 456.21 OR icd.icd9_numeric = 571 OR icd.icd9_numeric = 571.2 OR icd.icd9_numeric = 571.3 OR icd.icd9_numeric BETWEEN 571.4 AND 571.49 OR icd.icd9_numeric = 571.5 OR icd.icd9_numeric = 571.6 OR icd.icd9_numeric = 571.8 OR icd.icd9_numeric = 571.9 OR icd.icd9_numeric = 572.3 OR icd.icd9_numeric = 572.8)) OR (icd.icd9_alpha = 'V' AND icd.icd9_numeric = 42.7)) AND drg.liver = 0 THEN 1 ELSE 0 END ) AS liver_disease,

MAX(
CASE WHEN ((icd.icd9_alpha IS NULL AND (icd.icd9_numeric = 531.7 OR icd.icd9_numeric = 531.9 OR icd.icd9_numeric = 532.7 OR icd.icd9_numeric = 532.9 OR icd.icd9_numeric = 533.7 OR icd.icd9_numeric = 533.9 OR icd.icd9_numeric = 534.7 OR icd.icd9_numeric = 534.9)) OR (icd.icd9_alpha = 'V' AND icd.icd9_numeric = 12.71)) AND drg.gi_hemorrhage_ulcer = 0 THEN 1 ELSE 0 END ) AS peptic_ulcer,

MAX(
CASE WHEN icd.icd9_alpha IS NULL

34
AND icd.icd9_numeric BETWEEN 42 AND 44.9
AND drg.hiv = 0
THEN 1
ELSE 0
END
) AS aids,
MAX(
CASE
  WHEN (icd.icd9_alpha IS NULL
    AND icd.icd9_numeric BETWEEN 200 AND 202.38
    OR icd.icd9_numeric BETWEEN 202.5 AND 203.01
    OR icd.icd9 Numeric BETWEEN 203.8 AND 203.81
    OR icd.icd9_numeric = 238.6
    OR icd.icd9_numeric = 273.3)
  OR (icd.icd9_alpha = 'V'
    AND icd.icd9_numeric = 10.71
    OR icd.icd9_numeric = 10.72
    OR icd.icd9_numeric = 10.79))
  AND drg.leukemia_lymphoma = 0
  THEN 1
  ELSE 0
END
) AS lymphoma,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
    AND icd.icd9_numeric BETWEEN 196 AND 199.1
    AND drg.cancer = 0
  THEN 1
  ELSE 0
END
) AS metastatic_cancer,
MAX(
CASE
  WHEN ((icd.icd9_alpha IS NULL
    AND icd.icd9_numeric BETWEEN 140 AND 172.9
    OR icd.icd9_numeric BETWEEN 174 AND 175.9
    OR icd.icd9_numeric BETWEEN 179 AND 195.8)
  OR (icd.icd9_alpha = 'V'
    AND icd.icd9_numeric BETWEEN 10 AND 10.9))
  AND drg.cancer = 0
  THEN 1
  ELSE 0
END
) AS solid_tumor,
CASE
WHEN icd.icd9_alpha IS NULL
AND (icd.icd9_numeric = 701
OR icd.icd9_numeric BETWEEN 710 AND 710.9
OR icd.icd9_numeric BETWEEN 714 AND 714.9
OR icd.icd9_numeric BETWEEN 720 AND 720.9
OR icd.icd9_numeric = 725)
AND drg.connective_tissue = 0
THEN 1
ELSE 0
END
) AS rheumatoid_arthritis,
MAX(
CASE
WHEN icd.icd9_alpha IS NULL
AND (icd.icd9_numeric BETWEEN 2860 AND 2869
OR icd.icd9_numeric = 287.1
OR icd.icd9_numeric BETWEEN 287.3 AND 287.5)
AND drg.coagulation = 0
THEN 1
ELSE 0
END
) AS coagulopathy,
MAX(
CASE
WHEN icd.icd9_alpha IS NULL
AND icd.icd9_numeric = 278
AND (drg.obesity_procedure = 0 AND drg.nutrition_metabolic = 0)
THEN 1
ELSE 0
END
) AS obesity,
MAX(
CASE
WHEN icd.icd9_alpha IS NULL
AND icd.icd9_numeric BETWEEN 260 AND 263.9
AND drg.nutrition_metabolic = 0
THEN 1
ELSE 0
END
) AS weight_loss,
MAX(
CASE
WHEN icd.icd9_alpha IS NULL
AND icd.icd9_numeric BETWEEN 276 AND 276.9
AND drg.nutrition_metabolic = 0
THEN 1
ELSE 0
END
) AS fluid_electrolyte,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND icd.icd9_numeric = 2800
  AND drg.anemia = 0
  THEN 1
  ELSE 0
END
) AS blood_loss_anemia,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric BETWEEN 280.1 AND 281.9
  OR icd.icd9_numeric = 285.9)
  AND drg.anemia = 0
  THEN 1
  ELSE 0
END
) AS deficiency_anemias,
MAX(
CASE
  WHEN ((icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric = 291.1
  OR icd.icd9_numeric = 291.2
  OR icd.icd9_numeric = 291.5
  OR icd.icd9_numeric = 291.8
  OR icd.icd9_numeric = 291.9
  OR icd.icd9_numeric BETWEEN 303.9 AND 303.93
  OR icd.icd9_numeric BETWEEN 305 AND 305.03))
  OR (icd.icd9_alpha = 'V'
  AND icd.icd9_numeric = 113))
  AND drg.alcohol_drug = 0
  THEN 1
  ELSE 0
END
) AS alcohol_abuse,
MAX(
CASE
  WHEN icd.icd9_alpha IS NULL
  AND (icd.icd9_numeric = 292
  OR icd.icd9_numeric BETWEEN 292.82 AND 292.89
  OR icd.icd9_numeric BETWEEN 292.89 AND 292.93)
  AND drg.alcohol_drug = 0
  THEN 1
  ELSE 0
END
) AS alcohol_abuse,
OR icd.icd9_numeric = 292.9
OR icd.icd9_numeric BETWEEN 304 AND 304.93
OR icd.icd9_numeric BETWEEN 305.2 AND 305.93)
AND drg.alcohol_drug = 0
THEN 1
ELSE 0
END
) AS drug_abuse,
MAX(
CASE
 WHEN icd.icd9_alpha IS NULL
 AND (icd.icd9_numeric BETWEEN 295 AND 298.9
 OR icd.icd9_numeric BETWEEN 299.1 AND 299.11)
 AND drg.psychoses = 0
 THEN 1
 ELSE 0
 END
) AS psychoses,
MAX(
CASE
 WHEN icd.icd9_alpha IS NULL
 AND (icd.icd9_numeric = 300.4
 OR icd.icd9_numeric = 301.12
 OR icd.icd9_numeric = 309
 OR icd.icd9_numeric = 309.1
 OR icd.icd9_numeric = 311)
 AND drg.depression = 0
 THEN 1
 ELSE 0
 END
) AS depression
FROM icd9list icd, drg_category drg
WHERE icd.hadm_id = drg.hadm_id
GROUP BY icd.subject_id, icd.hadm_id
)
SELECT
 SUBJECT_ID,
 HADM_ID,
 'ELIXHAUSER',
 CONGESTIVE_HEART_FAILURE,
 CARDIAC.ARRHYTHMIAS,
 VALVULAR_DISEASE,
 PULMONARY_CIRCULATION,
 PERIPHERAL_VASCULAR,
 HYPERTENSION,
 PARALYSIS,
OTHER_NEUROLOGICAL,
CHRONIC_PULMONARY,
DIABETES_UNCOMPILCATED,
DIABETES_COMPLICATED,
HYPOTHYROIDISM,
RENAL_FAILURE,
LIVER_DISEASE,
PEPTIC_ULCER,
AIDS,
LYMPHOMA,
METASTATIC_CANCER,
SOLID_TUMOR,
RHEUMATOID_ARTHRITIS,
COAGULOPATHY,
OBESITY,
WEIGHT_LOSS,
FLUID_ELECTROLYTE,
BLOOD_LOSS_ANEMIA,
DEFICIENCY_ANEMIAS,
ALCOHOL_ABUSE,
DRUG_ABUSE,
PSYCHOSES,
DEPRESSION
FROM elixhauser ;
4.2 Create SAPS Formula

create or replace FUNCTION merge25.GET_SAPS_FOR_PARAMETER ( 
    p_category IN VARCHAR2, p_val IN NUMBER) 
return NUMBER IS 
/*
 create_saps_formula.sql

 Created on : November 2008 by Mauricio Villarroel
 Last updated :
 $Author: djscott@ECG.MIT.EDU$
 $Date: 2010-05-18 11:58:55 -0400 (Tue, 18 May 2010)$
 $Rev: 113$

 Using MIMIC2 version 2.5

 Function that returns the weight of a particular saps-I parameter
 This is used in the calculation for saps-I score.
 Formula given by Mohammed Saeed, some units have been converted.

 Calculation taken from:
 * GALL, JEAN-ROGER LE MD, et al. A simplified acute physiology
   score for ICU patients, Critical Care,
   November 1984 - Volume 12 - Issue 11
 http://journals.lww.com/ccmjournal/Abstract/1984/11000/A_simplified_acute_physiology_score_for_ICU.12.aspx

 */

 retValue NUMBER := -1;

BEGIN

 IF (p_val IS NULL) THEN 
 RETURN retValue;
 END IF;

 IF p_category = 'HR' THEN 
 IF p_val < 40 THEN 
 retValue := 4;
 ELSIF p_val <= 54 THEN 
 retValue := 3;
 ELSIF p_val <= 69 THEN 
 retValue := 2;

END IF;
ELSIF p_val <= 109 THEN
    retVal := 0;
ELSIF p_val <= 139 THEN
    retVal := 2;
ELSIF p_val <= 179 THEN
    retVal := 3;
ELSIF p_val >= 180 THEN
    retVal := 4;
END IF;

ELSIF p_category = 'TEMPERATURE' THEN

    IF p_val < 30 THEN
        retVal := 4;
    ELSIF p_val < 32 THEN
        retVal := 3;
    ELSIF p_val < 34 THEN
        retVal := 2;
    ELSIF p_val < 36 THEN
        retVal := 1;
    ELSIF p_val <= 38.4 THEN
        retVal := 0;
    ELSIF p_val <= 38.9 THEN
        retVal := 1;
    ELSIF p_val < 41 THEN
        retVal := 3;
    ELSIF p_val >= 41 THEN
        retVal := 4;
    END IF;

ELSIF p_category = 'SYS ABP' THEN

    IF p_val < 55 THEN
        retVal := 4;
    ELSIF p_val <= 79 THEN
        retVal := 2;
    ELSIF p_val <= 149 THEN
        retVal := 2;
    ELSIF p_val <= 189 THEN
        retVal := 2;
    ELSIF p_val >= 190 THEN
        retVal := 4;
    END IF;

ELSIF p_category = 'VENTILATED_RESP' THEN
retValue := 3;

ELSIF p_category = 'SPONTANEOUS_RESP' THEN

   IF p_val < 6 THEN
      retval := 4;
   ELSIF p_val <= 9 THEN
      retval := 2;
   ELSIF p_val <= 11 THEN
      retval := 1;
   ELSIF p_val <= 24 THEN
      retval := 0;
   ELSIF p_val <= 34 THEN
      retval := 1;
   ELSIF p_val <= 49 THEN
      retval := 3;
   ELSIF p_val > 50 THEN
      retval := 4;
   END IF;

ELSIF p_category = 'BUN' THEN

   IF p_val < 10 THEN
      retval := 1;
   ELSIF p_val < 21 THEN
      retval := 0;
   ELSIF p_val <= 81 THEN
      retval := 1;
   ELSIF p_val <= 101 THEN
      retval := 2;
   ELSIF p_val < 154 THEN
      retval := 3;
   ELSIF p_val >= 154 THEN
      retval := 4;
   END IF;

ELSIF p_category = 'HCT' THEN

   IF p_val < 20 THEN
      retval := 4;
   ELSIF p_val < 30 THEN
      retval := 2;
   ELSIF p_val < 46 THEN
      retval := 0;
   ELSIF p_val < 50 THEN
      retval := 1;
   END IF;
ELSIF p_val < 60 THEN
  retval := 2;
ELSIF p_val >= 60 THEN
  retval := 4;
END IF;

ELSIF p_category = 'WBC' THEN
  IF p_val < 1 THEN
    retval := 4;
  ELSIF p_val < 3 THEN
    retval := 4;
  ELSIF p_val < 15 THEN
    retval := 0;
  ELSIF p_val < 20 THEN
    retval := 1;
  ELSIF p_val < 40 THEN
    retval := 2;
  END IF;

ELSIF p_category = 'GLUCOSE' THEN
  IF p_val < 29 THEN
    retval := 4;
  ELSIF p_val <= 49 THEN
    retval := 3;
  ELSIF p_val <= 69 THEN
    retval := 2;
  ELSIF p_val <= 249 THEN
    retval := 0;
  ELSIF p_val <= 499 THEN
    retval := 1;
  ELSIF p_val <= 799 THEN
    retval := 3;
  ELSIF p_val >= 800 THEN
    retval := 4;
  END IF;

ELSIF p_category = 'POTASSIUM' THEN
  IF p_val < 2.5 THEN
    retval := 4;
  ELSIF p_val <= 2.9 THEN
    retval := 2;

ELSIF p_val <= 3.4 THEN
  retval := 1;
ELSIF p_val <= 5.4 THEN
  retval := 0;
ELSIF p_val <= 5.9 THEN
  retval := 1;
ELSIF p_val <= 6.9 THEN
  retval := 3;
ELSIF p_val >= 7 THEN
  retval := 4;
END IF;

ELSIF p_category = 'SODIUM' THEN
  IF p_val < 110 THEN
    retval := 4;
  ELSIF p_val < 120 THEN
    retval := 3;
  ELSIF p_val <= 129 THEN
    retval := 2;
  ELSIF p_val <= 150 THEN
    retval := 0;
  ELSIF p_val <= 155 THEN
    retval := 1;
  ELSIF p_val <= 160 THEN
    retval := 2;
  ELSIF p_val <= 179 THEN
    retval := 3;
  ELSIF p_val >= 180 THEN
    retval := 4;
  END IF;

ELSIF p_category = 'HCO3' THEN
  IF p_val < 5 THEN
    retval := 4;
  ELSIF p_val < 10 THEN
    retval := 3;
  ELSIF p_val < 20 THEN
    retval := 3;
  ELSIF p_val < 30 THEN
    retval := 1;
  ELSIF p_val < 40 THEN
    retval := 0;
  ELSIF p_val >= 40 THEN
    retval := 3;
  END IF;

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END IF;

ELSIF p.category = 'GCS' THEN

IF p.val < 4 THEN
    retval := 4;
ELSIF p.val < 7 THEN
    retval := 3;
ELSIF p.val < 10 THEN
    retval := 2;
ELSIF p.val < 13 THEN
    retval := 1;
ELSIF p.val >= 13 THEN
    retval := 0;
END IF;

ELSIF p.category = 'AGE' THEN

IF p.val <= 45 THEN
    retval := 0;
ELSIF p.val < 55 THEN
    retval := 1;
ELSIF p.val <= 65 THEN
    retval := 2;
ELSIF p.val <= 75 THEN
    retval := 3;
ELSIF p.val > 75 THEN
    retval := 4;
END IF;

ELSIF p.category = 'URINE' THEN

IF p.val < 0.2 THEN
    retval := 4;
ELSIF p.val <= 0.49 THEN
    retval := 3;
ELSIF p.val <= 0.69 THEN
    retval := 2;
ELSIF p.val <= 3.49 THEN
    retval := 0;
ELSIF p.val <= 4.99 THEN
    retval := 1;
ELSIF p.val >= 5 THEN
    retval := 2;
END IF;
END IF;

return retval;

END;

/*****************
 saps_create_24hr_minmax.sql
 Created on : September 2009 by Mauricio Villarroel
 Last updated :
 $Author: djscott@ECG.MIT.EDU$
 $Date: 2010-11-04 15:36:31 -0400 (Thu, 04 Nov 2010)$
 $Rev: 123$

Valid for MIMIC II database schema version 2.5

Creates the minimum and maximum values for each of the SAPS I parameters
for the first 24hr of each ICUStay for adult patients.

*/

--delete from merge25.SAPS_SCORE;
--
--delete from merge25.SAPS_DAILY_PARAM;
--
--INSERT INTO merge25.SAPS_DAILY_PARAM
-- (SUBJECT_ID, ICUSTAY_ID, CALC_DT, CATEGORY,
-- MIN_VAL, MIN_VAL_SCORE,
-- MAX_VAL, MAX_VAL_SCORE, PARAM_SCORE)
-- Find the score for min/max value for each parameter
-- and choose the highest saps as the parameter representative

WITH ICUstays as (  
select subject_id, icustay_id, dob, icustay_intime as intime,  
icustay_outtime as outtime,  
icustay_admit_age as age  
from mimic2v26.icustay_detail  
where icustay_age_group = 'adult'
  --and subject_id in (13, 17, 21, 41, 61, 68, 91, 109, 377, 4412, 21369)
  --and subject_id in (13)
)
--select * from ICUstays;
params as (  
-- Group each c.itemid in meaningful category names  
-- also perform some metric conversion (temperature, etc...)  
select s.subject_id, s.icustay_id, s.icustay_day,  
s.outtime as calc_dt,  
case  
  when c.itemid in (211) then  
    'HR'  
  when c.itemid in (676, 677, 678, 679) then  
    'TEMPERATURE'  
  when c.itemid in (51, 455) then  
    'SYS ABP'  
  when c.itemid in (781) then  
    'BUN'  
  when c.itemid in (198) then  
    'GCS'  
end category,  
case  
  when c.itemid in (678, 679) then
from DailyICUStays s,
mimic2v26.chartevents c
where c.subject_id = s.subject_id
and c.itemid in (211,
676, 677, 678, 679,
51,455,
781,
198)
and c.charttime >= s.intime
and c.charttime < s.outtime
and c.value1num is not null
)

, VentilatedRespParams as (select distinct s.subject_id, s.icustay_id, s.icustay_day,
s.outtime as calc_dt,
'VENTILATED_RESP' as category,
-1 as valuenum -- force invalid number
from DailyICUStays s,
mimic2v26.chartevents c
where c.subject_id = s.subject_id
and c.itemid in (543, 544, 545, 619, 39, 535, 683, 720, 721, 722,
732)
and c.charttime >= s.intime
and c.charttime < s.outtime
)

, SpontaneousRespParams as (select distinct s.subject_id, s.icustay_id, s.icustay_day,
s.outtime as calc_dt,
'SPONTANEOUS_RESP' as category,
c.value1num as valuenum
from DailyICUStays s,
mimic2v26.chartevents c
where c.subject_id = s.subject_id
and c.itemid in (615, 618) -- 3603 was for NICU, 614 spontaneous useless
and c.charttime >= s.intime
and c.charttime < s.outtime
and c.value1num is not null
and not exists (select 'X'
from VentilatedRespParams nv
where nv.icustay_id = s.icustay_id
and nv.calc_dt = s.outtime)
)
, LabParams as (  
  -- Group each c.itemid in meaningful category names  
  -- also performin some metric conversion (temperature, etc...)
  select s.subject_id, s.icustay_id, s.icustay_day,
    s.outtime as calc_dt,
    c.valuenum from DailyICUStays s,
    mimic2v26.labevents c
  where c.subject_id = s.subject_id
  and c.itemid in (  
    50383,
    50316, 50468,
    50112,
    50172,
    50149,
    50159
  )
  and c.charttime >= s.intime
  and c.charttime < s.outtime
  and c.valuenum is not null
)
, AgeParams as (  
  -- The age (in years) at the admission day  
  select subject_id, icustay_id, icustay_day, outtime as calc_dt,  
    'AGE' as category, age as valuenum
  from DailyICUStays
)
, UrineParams as (
select s.subject_id, s.icustay_id, s.icustay_day, 
    s.outtime as calc_dt,
    'URINE' as category,
    sum(c.volume)/1000 as valuenum
from DailyICUStays s,
    mimic2v26.ioevents c
where c.subject_id = s.subject_id
    and c.itemid IN ( 651, 715, 55, 56, 57, 61, 65, 69, 85, 94, 96, 288, 405, 428, 473, 2042, 2068, 2111, 2119, 2130, 1922, 2810, 2859, 3053, 3462, 3519, 3175, 2366, 2463, 2507, 2510, 2592, 2676, 3966, 3987, 4132, 4253, 5927 )
    and c.charttime >= s.intime
    and c.charttime < s.outtime
    and c.volume is not null
GROUP BY s.subject_id, s.icustay_id, s.icustay_day, s.outtime
),
CombinedParams as (
    select subject_id, icustay_id, icustay_day, calc_dt, category, valuenum
    from ChartedParams
    UNION
    select subject_id, icustay_id, icustay_day, calc_dt, category, valuenum
    from VentilatedRespParams
    UNION
    select subject_id, icustay_id, icustay_day, calc_dt, category, valuenum
    from SpontaneousRespParams
    UNION
    select subject_id, icustay_id, icustay_day, calc_dt, category, valuenum
    from AgeParams
    UNION
    select subject_id, icustay_id, icustay_day, calc_dt, category, valuenum
    from UrineParams
    UNION
    select subject_id, icustay_id, icustay_day, calc_dt, category, valuenum
    from LabParams
) ,
MinMaxValues as (  -- find the min and max values for each category and calc_dt
    select subject_id, icustay_id, icustay_day, calc_dt, category,
        min(valuenum) min_valuenum, max(valuenum) max_valuenum
    from CombinedParams
    GROUP BY subject_id, icustay_id, icustay_day, calc_dt, category
) ,
CalcSapsParams as (  -- find the min and max values for each category and calc_dt
    select subject_id, icustay_id, icustay_day, calc_dt, category,
        min_valuenum,
merge25.get_saps_forParameter(category, min_valuenum) as min_valuenum_score, max_valuenum, merge25.get_saps_forParameter(category, max_valuenum) as max_valuenum_score from MinMaxValues)

select subject_id, icustay_id, calc_dt, category, min_valuenum, min_valuenum_score, max_valuenum, max_valuenum_score, case when min_valuenum_score >= max_valuenum_score then min_valuenum_score else max_valuenum_score end as param_score from CalcSapsParams order by subject_id, icustay_id, category, calc_dt;

-- Calculate the SAPS score for every patient record
INSERT INTO merge25.SAPS_SCORE (SUBJECT_ID, ICUSTAY_ID, calc_dt, SCORE, PARAM_COUNT)
select d.subject_id, d.icustay_id, d.calc_dt, SUM(param_score) SAPS_SCORE, count(*) param_count from merge25.SAPS_DAILY_PARAM D where d.param_score is not null and d.param_score >= 0 group by d.subject_id, d.icustay_id, d.calc_dt;

-- Insert the values into chartevents
/*
delete from mimic2v26.chartevents where itemid = 20001;

insert into mimic2v26.chartevents(
             subject_id, itemid, charttime, elemid, realtime, cgid, cuid, value1num)
select subject_id, 20001, calc_dt, 1, calc_dt, -1, 20001, score from merge25.SAPS_SCORE where param_count = 14;
*/
### 4.3 SAPS Variables

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>ACCEPTABLE_MAX</th>
<th>ACCEPTABLE_MIN</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>250</td>
<td>10</td>
<td>BPM</td>
</tr>
<tr>
<td>SYS ABP</td>
<td>300</td>
<td>20</td>
<td>mmHg</td>
</tr>
<tr>
<td>TEMPERATURE</td>
<td>45</td>
<td>15</td>
<td>°C</td>
</tr>
<tr>
<td>RESPIRATION_RATE</td>
<td>80</td>
<td>2</td>
<td>breaths per min</td>
</tr>
<tr>
<td>URINE</td>
<td>20</td>
<td>0</td>
<td>liters</td>
</tr>
<tr>
<td>BUN</td>
<td>100</td>
<td>1</td>
<td>mg/dl</td>
</tr>
<tr>
<td>CREATININE</td>
<td>30</td>
<td>0</td>
<td>mg/dl</td>
</tr>
<tr>
<td>HCT</td>
<td>80</td>
<td>5</td>
<td>%</td>
</tr>
<tr>
<td>WBC</td>
<td>200000</td>
<td>100</td>
<td>per cubic mm</td>
</tr>
<tr>
<td>GLUCOSE</td>
<td>1000</td>
<td>0.5</td>
<td>mg/dl</td>
</tr>
<tr>
<td>POTASSIUM</td>
<td>20</td>
<td>0.5</td>
<td>mEq/liter</td>
</tr>
<tr>
<td>SODIUM</td>
<td>300</td>
<td>50</td>
<td>mEq/liter</td>
</tr>
<tr>
<td>HCO3</td>
<td>100</td>
<td>2</td>
<td>mEq/liter</td>
</tr>
</tbody>
</table>
4.4 Create SOFA Scores

```
/*
sofa_score Inserts.sql

Created on : April 2010 by Daniel Scott and Tal Mandelbaum
Last updated :
  $Author: djscott@ECG.MIT.EDU$
  $Date: 2011-04-20 11:14:15 -0400 (Wed, 20 Apr 2011)$
  $Rev: 235$

Valid for MIMIC II database schema version 2.6

This script generates daily sofa (Sequential Organ Failure Assessment) scores
for each patient in the ICU.

*/
--DROP TABLE MERGE26.SOFA_SCORE;

CREATE TABLE MERGE26.SOFA_SCORE AS (SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ROWNUM < 0);

GRANT ALL PRIVILEGES ON MERGE26.SOFA_SCORE TO MIMIC_PRG;

SELECT count(*) FROM MERGE26.SOFA_SCORE; --625755

DELETE FROM MERGE26.SOFA_SCORE;

SELECT itemid, count(*) FROM MERGE26.SOFA_SCORE GROUP BY itemid;

INSERT INTO MERGE26.SOFA_SCORE (SUBJECT_ID, ITEMID, CHARTTIME, ELEMID, REALTIME, CGID, CUID, VALUE1NUM, VALUE1UOM, ICUSTAY_ID)
With
icustays as (SELECT
   icue.subject_id, a.hadm_id,
```
icue.icustay_id,
icue.icustay_intime,
icue.icustay_outtime
FROM mimic2v26.icustayevents icue,
mimic2v26.d pacientes p,
mimic2v26.admissions a
WHERE months_between(icue.icustay_intime, p.dob) / 12  >=  15
AND p.subject_id = icue.subject_id
AND a.subject_id = p.subject_id
AND icue.icustay_intime  >= a.admit_dt
AND icue.icustay_outtime  <= a.disch_dt + 1
AND a.hadm_id is not null
--and icue.subject_id between 1 and 50
)
--select * from icustays;
icustay_population as ( SELECT
icue.icustay_id,
icue.icustay_intime,
icue.icustay_outtime,
icud.begintime as icustay_day_intime,
icud.endtime as icustay_day_outtime,
icud.seq
FROM icustays icue,
mimic2v26.icustay_days icud
WHERE icud.icustay_id = icue.icustay_id
--and icud.subject_id between 1 and 50
)
--select * from icustay_population;
,Fio2 as ( select i.subject_id, i.icustay_id,
'FiO2' parameter,
c.charttime as charttime,
case
when itemid in (3420)
then c.value1num / 100
else c.value1num
end as value
from IcuStays i,
mimic2v26.chartevents c
where c.subject_id = i.subject_id
and c.icustay_id = i.icustay_id
and c.value1num is not null
and ( c.itemid in (189, 190, 2981, 7570) )
- FiO2
and c.value1num >= 0.2
and c.value1num <= 1.0
)
OR ( c.itemid = 3420  -- FiO2 %
and c.value1num >= 20
and c.value1num <= 100
)
)
order by icustay_id, charttime
)
--select * from FiO2;
,Pao2 as (select i.subject_id, i.icustay_id, i.seq, i.icustay_day_intime, i.icustay_day_outtime, 'PaO2' parameter,
c.charttime as charttime,
c.value1num as value from icustay_population i,
mimic2v26.chartevents c
where c.subject_id = i.subject_id
and c.icustay_id = i.icustay_id
and c.charttime >= i.icustay_day_intime
and c.charttime < i.icustay_day_outtime
and c.value1num is not null
and ( ( c.itemid in (490, 779) -- Pao2
and c.value1num >= 40
and c.value1num <= 500
)
)
--select * from Pao2 where subject_id = 3;
,Pao2Fio2Ratio as ( /* Get the ratio of each pao2 value with the most recent prior fi02 */
select distinct p.icustay_id, p.subject_id, p.seq,
p.icustay_day_intime,
p.icustay_day_outtime,
p.charttime p.charttime, p.value as p.value,
p.charttime - 1,
p.value / first_value(f.value)
over (partition by p.icustay_id, p.seq, p.charttime
order by f.charttime desc)
as pao2_fio2_ratio
from Pao2 p,
Fio2 f
where f.icustay_id = p.icustay_id
and f.charttime <= p.charttime
and f.charttime > (p.charttime - 1)
-- select * from Pao2Fio2Ratio;

-- Get the minimum pao2/fio2 ratio for each day of ICU Stay */
select
  subject_id,
  icustay_id,
  icustay_day_outtime,
  min (pao2_fio2_ratio) as p_f_ratio
from
  Pao2Fio2Ratio
GROUP BY
  subject_id, icustay_id, icustay_day_outtime

-- select * from p_f_daily_ratio;

-- Respiratory system failure: PaO2/FiO2 ratio

--64,221 rows inserted

-- Hepatic failure

INSERT INTO MERGE26.SOFA_SCORE (  
  SUBJECT_ID,  
  ITEMID,  
  CHARTTIME,  
  ELEMID,  
  REALTIME,  
  CGID,  
  CUID,  
  VALUE1NUM,  
  VALUE1UOM  
)  
select * from ss_daily_raw_resp;--64,221 rows inserted
VALUE1UOM,
ICUSTAY_ID
)

With
icustays as (  
SELECT
    icue.subject_id,
    a.hadm_id,
    icue.icustay_id,
    icue.intime icustay_intime,
    icue.outtime icustay_outtime
FROM mimic2v26.icustayevents icue,
     mimic2v26.d_patients p,
     mimic2v26.admissions a
WHERE months_between(icue.intime, p.dob) / 12 >= 15
AND p.subject_id = icue.subject_id
AND a.subject_id = p.subject_id
AND icue.intime >= a.admit_dt
AND icue.outtime <= a.disch_dt + 1
AND a.hadm_id is not null
--and icue.subject_id between 1 and 50
)

icustay_population as (  
SELECT
    icue.subject_id,
    icue.icustay_id,
    icue.icustay_intime,
    icue.icustay_outtime,
    icud.begintime as icustay_day_intime,
    icud.endtime as icustay_day_outtime,
    icud.seq
FROM icustays icue,
     mimic2v26.icustay_days icud
WHERE icud.icustay_id = icue.icustay_id
)

-- select * from icustay_population;

-- Liver (bilirubin) and Coagulation
ss_daily_raw_hepatic as (  
SELECT
    icud.subject_id,
    icud.icustay_id,
    icud.icustay_day_outtime,
    max(
        case
            when (le.valuenum >= 12) then 4
    
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when (le.valuenum >= 6 and le.valuenum<=11.9) then 3
when (le.valuenum >= 2 and le.valuenum<= 5.9) then 2
when (le.valuenum >= 1.2 and le.valuenum<= 1.9) then 1
else 0
end) as hepatic_score
from
icustay_population icud,
mimic2v26.labevevents le
where le.subject_id = icud.subject_id
AND le.icustay_id = icud.icustay_id
AND le.chrttime >= icud.icustay_day_intime
AND le.chrttime <= icud.icustay_day_outtime
AND le.itemid in (50170)
GROUP BY icud.subject_id, icud.icustay_id, icud.icustay_day_outtime
ORDER BY icud.subject_id, icud.icustay_id
)
SELECT
subject_id,
20003 itemid,
icustay_day_outtime charttime, -- CHARTTIME
0 elemid, -- ELEMID
icustay_day_outtime realtime, -- REALTIME
-1 cgid, -- CGID
20001 cuid, -- CUID
hepatic_score,
null value1uom, -- VALUE1UOM
icustay_id
FROM
ss_daily_raw_hepatic;--31,690 rows inserted

-- Hematologic failure
INSERT INTO MERGE26.SOFA_SCORE (SUBJECT_ID, ITEMID, CHARTTIME, ELEMID, REALTIME, CGID, CUID, VALUE1NUM, VALUE1UOM, ICUSTAY_ID)
With icustays as (SELECT
icue.subject_id,  
a.hadm_id,  
icue.icustay_id,  
icue.intime icustay_intime,  
icue.outtime icustay_outtime  
FROM mimic2v26.icustayevents icue,  
mimic2v26.d_patients p,  
mimic2v26.admissions a  
WHERE months_between(icue.intime, p.dob) / 12 >= 15  
AND p.subject_id = icue.subject_id  
AND a.subject_id = p.subject_id  
AND icue.intime >= a.admit_dt  
AND icue.outtime <= a.disch_dt + 1  
AND a.hadm_id is not null  
),  
icustay_population as (  
SELECT  
icue.subject_id,  
icue.icustay_id,  
icue.icustay_intime,  
icue.icustay_outtime,  
icud.begintime as icustay_day_intime,  
icud.endtime as icustay_day_outtime,  
icud.seq  
FROM icustays icue,  
mimic2v26.icustay_days icud  
WHERE icud.icustay_id = icue.icustay_id  
),  
-- Liver (bilirubin) and Coagulation  
ss_raw_hema as (  
SELECT  
icud.subject_id,  
icud.icustay_id,  
icud.seq,  
icud.icustay_day_outtime,  
case  
  when le.valuenum < 20 then 4  
  when le.valuenum < 50 then 3  
  when le.valuenum < 100 then 2  
  when le.valuenum < 150 then 1  
  else 0  
end as hematologic_score  
FROM icustay_population icud,  
mimic2v26.labevents le  
WHERE le.subject_id = icud.subject_id  
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AND le.icustay_id = icud.icustay_id
AND le.charttime >= icud.icustay_day_intime
AND le.charttime <= icud.icustay_day_outtime
AND le.itemid in (50428)
)
--select * from ss_raw_hema where subject_id = 21;
,ss_daily_raw_hema as (  
SELECT     
    subject_id, 
    icustay_id, 
    seq, 
    icustay_day_outtime, 
    max(hematologic_score) as hematologic_score
from
    ss_raw_hema
GROUP BY subject_id, icustay_id, seq, icustay_day_outtime
)  
--select * from ss_daily_raw_hema where subject_id = 21;
SELECT  
    subject_id, 
    20004 itemid, 
    icustay_day_outtime charttime, -- CHARTTIME 
    0 elemid, --ELEMID 
    icustay_day_outtime realtime, -- REALTIME 
    -1 cgid, -- CGID 
    20001 cuid, -- CUID 
    hematologic_score, 
    null value1uom, -- VALUE1UOM 
    icustay_id
FROM    
    ss_daily_raw_hema;--121,115 rows inserted

--select * from merge26.sofa_score where itemid = 20004 order by subject_id, charttime;--115185
--select * from mimic2v26.chartevents where itemid = 20004 order by subject_id, charttime;--103684

-- Cardiovascular failure - Pressors
INSERT INTO MERGE26.SOFASCORE (
    SUBJECT_ID, 
    ITEMID, 
    CHARTTIME, 
    ELEMID, 
    REALTIME, 
    CGID, 
    CUID,
VALUE1NUM,
VALUE1UOM,
ICUSTAY_ID
)

With
icustays as (  
SELECT  
  icue.subject_id,  
a.hadm_id,  
icue.icustay_id,  
icue.intime icustay_intime,  
icue.outtime icustay_outtime  
FROM mimic2v26.icustayevents icue,  
mimic2v26.d_patients p,  
mimic2v26.admissions a  
WHERE months_between(icue.intime, p.dob) / 12 >= 15  
AND p.subject_id = icue.subject_id  
AND a.subject_id = p.subject_id  
AND icue.intime >= a.admit_dt  
AND icue.outtime <= a.disch_dt + 1  
AND a.hadm_id is not null  
--and icue.subject_id between 1 and 50
),

icustay_population as (  
SELECT  
  icue.subject_id,  
icue.icustay_id,  
icue.icustay_intime,  
icue.icustay_outtime,  
icud.begintime as icustay_day_intime,  
icud.endtime as icustay_day_outtime,  
icud.seq  
FROM icustays icue,  
mimic2v26.icustay_days icud  
WHERE icud.icustay_id = icue.icustay_id  
--and icud.subject_id between 1 and 50
),

max_icustay_weight AS (  
SELECT DISTINCT  
  icud.subject_id,  
icud.icustay_id,  
  MAX ( ce.value1num ) weight  
FROM mimic2v26.chartevents ce,  
icustays icud  
WHERE
itemid  IN ( 580, 1393, 762, 1395 )
AND ce.subject_id = icud.subject_id
AND ce.icustay_id = icud.icustay_id
AND ce.value1num   IS NOT NULL
AND ce.value1num   >= 30 -- Arbitrary value to eliminate 0
GROUP BY
    icud.subject_id,
    icud.icustay_id
ORDER BY
    icud.icustay_id
),
-- Pressors, used in cardiovascular
ss_daily_raw_press as (  
    SELECT
        icud.subject_id,
        icud.icustay_id,
        icud.seq,
        icud.icustay.day_outtime,
        max(case
            when ((me.itemid in (43,307) and (me.dose > 0 and me.dose <= 5)) or (me.itemid in (42,306) and me.dose > 0)) then 2
            when ((me.itemid in (43,307) and (me.dose > 5 and me.dose <= 15)) or (me.itemid in (44,119,309,47,120) and (me.dose > 0 and (me.dose/miw.weight) <= 0.1))) then 3
            when ((me.itemid in (43,307) and me.dose > 15) or (me.itemid in (44,119,309,47,120) and (me.dose/miw.weight) > 0.1)) then 4
            else 0
        end
    ) as cardiovascular_score_pres
FROM
    mimic2v26.medevents me,
    max_icustay_weight miw,
    icustay_population icud
where miw.icustay_id = icud.icustay_id
AND me.subject_id = icud.subject_id
AND me.icustay_id = icud.icustay_id
AND me.charttime >= icud.icustay_day_intime
AND me.charttime <= icud.icustay_day_outtime
AND me.itemid in (43,307,42,306,44,119,309,47,120)
GROUP BY icud.subject_id, icud.icustay_id, icud.seq, icud.icustay_day_outtime
)
--select * from ss_daily_raw_press where subject_id = 21;
SELECT
    subject_id,
    20005 itemid,
    icustay_day_outtime charttime, -- CHARTTIME

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CREATE TABLE SOFA_SCORE (
  SUBJECT_ID, ITEMID, CHARTTIME, ELEMID, REALTIME, CGID, CUID, VALUE1NUM, VALUE1UOM, ICUSTAY_ID
)


--select * from icustays;
, icustay_population as (SELECT icue.subject_id,
icue.icustay_id,
icue.icustay_intime,
icue.icustay_outtime,
icud.begintime as icustay_day_intime,
icud.endtime as icustay_day_outtime,
icud.seq
FROM icustays icue,
mimic2v26.icustay_days icud
WHERE icud.icustay_id = icue.icustay_id
--and icud.subject_id between 1 and 50
)
--select * from icustay_population;

, min_daily_abp AS (
   SELECT
      icud.subject_id,
icud.icustay_id,
icud.icustay_day_outtime,
      MIN(ce.value1num) as min_daily_abp_val
   FROM icustay_population icud
   JOIN mimic2v26.chartevents ce
   ON (icud.subject_id = ce.subject_id and icud.icustay_id = ce.icustay_id)
   WHERE ce.itemid in (52,456)
   AND ce.charttime >= icud.icustay_day_intime
   AND ce.charttime <= icud.icustay_day_outtime
   AND ce.value1num IS NOT NULL
   GROUP BY icud.subject_id, icud.icustay_id, icud.icustay_day_outtime
)
--select * from min_daily_abp;

--ABP - used in cardiovascular
, ss_daily_raw_abp as ( 
   SELECT
      mda.subject_id,
      mda.icustay_id,
      mda.icustay_day_outtime,
      case
         when (mda.min_daily_abp_val < 70) then 1
         else 0
      end
      as cardiovascular_score_abp
   FROM
      min_daily_abp mda
)
--select * from ss_daily_raw_abp;

SELECT
   subject_id,
   20006 itemid,
icustay_day_outtime charttime, -- CHARTTIME
0 elemid, -- ELEMID
icustay_day_outtime realtime, -- REALTIME
-1 cgid, -- CGID
20001 cuid, -- CUID
cardiovascular_score_abp,
null value1uom, -- VALUE1UOM
icustay_id
FROM
ss_daily_raw_abp; -- 134,791 rows inserted

-- DELETE FROM MERGE26.SOFA_SCORE WHERE ITEMID = 20007;

-- Neurological failure (GCS)
INSERT INTO MERGE26.SOFA_SCORE (
    SUBJECT_ID,
    ITEMID,
    CHARTTIME,
    ELEMID,
    REALTIME,
    CGID,
    CUID,
    VALUE1NUM,
    VALUE1UOM,
    ICUSTAY_ID
) With
icustays as ( 
    SELECT
        icue.subject_id,
        a.hadm_id,
        icue.icustay_id,
        icue.intime icustay_intime,
        icue.outtime icustay_outtime
    FROM
        mimic2v26.icustayevents icue,
        mimic2v26.d_patients p,
        mimic2v26.admissions a
    WHERE
        months_between(icue.intime, p.dob) / 12 >= 15
        AND p.subject_id = icue.subject_id
        AND a.subject_id = p.subject_id
        AND icue.intime >= a.admit_dt
        AND icue.outtime <= a.disch_dt + 1
        AND a.hadm_id is not null
        -- and icue.subject_id between 1 and 50
) 
-- select * from icustays where subject_id = 21;
icustay_population as (  
SELECT  
icue.subject_id,  
icue.icustay_id,  
icue.icustay_intime,  
icue.icustay_outtime,  
icud.begintime as icustay_day_intime,  
icud.endtime as icustay_day_outtime,  
icud.seq  
FROM icustays icue,  
mimic2v26.icustay_days icud  
WHERE icud.icustay_id = icue.icustay_id  
  --and icud.subject_id between 1 and 50  
)  
--select * from icustay_population where subject_id = 21;  

ss_raw_neuro as (  
SELECT  
icud.subject_id,  
icud.icustay_id,  
icud.seq,  
icud.icustay_day_outtime,  
ce.value1num,  
case  
  when (ce.value1num >= 13 and ce.value1num <= 14) then 1  
  when (ce.value1num >= 10 and ce.value1num <= 12) then 2  
  when (ce.value1num >= 6 and ce.value1num <= 9) then 3  
  when (ce.value1num < 6) then 4  
  else 0 end  
as neurological_score  
FROM  
mimic2v26.chartevents ce,  
icustay_population icud  
WHERE ce.subject_id = icud.subject_id  
  AND ce.icustay_id = icud.icustay_id  
  AND ce.charttime >= icud.icustay_day_intime  
  AND ce.charttime <= icud.icustay_day_outtime  
  AND ce.itemid = 198  
)  
--select * from ss_raw_neuro where subject_id = 21;  

ss_daily_raw_neuro as (  
SELECT  
subject_id,  
icustay_id,  
icustay_day_outtime,  
max(neurological_score) as neurological_score  
FROM icustay_population  
  icustay_population as (  
SELECT  
icue.subject_id,  
icue.icustay_id,  
icue.icustay_intime,  
icue.icustay_outtime,  
icud.begintime as icustay_day_intime,  
icud.endtime as icustay_day_outtime,  
icud.seq  
FROM icustays icue,  
mimic2v26.icustay_days icud  
WHERE icud.icustay_id = icue.icustay_id  
  --and icud.subject_id between 1 and 50  
)  
--select * from icustay_population where subject_id = 21;  

ss_raw_neuro as (  
SELECT  
icud.subject_id,  
icud.icustay_id,  
icud.seq,  
icud.icustay_day_outtime,  
ce.value1num,  
case  
  when (ce.value1num >= 13 and ce.value1num <= 14) then 1  
  when (ce.value1num >= 10 and ce.value1num <= 12) then 2  
  when (ce.value1num >= 6 and ce.value1num <= 9) then 3  
  when (ce.value1num < 6) then 4  
  else 0 end  
as neurological_score  
FROM  
mimic2v26.chartevents ce,  
icustay_population icud  
WHERE ce.subject_id = icud.subject_id  
  AND ce.icustay_id = icud.icustay_id  
  AND ce.charttime >= icud.icustay_day_intime  
  AND ce.charttime <= icud.icustay_day_outtime  
  AND ce.itemid = 198  
)  
--select * from ss_raw_neuro where subject_id = 21;
FROM
  ss_raw_neuro
GROUP BY subject_id, icustay_id, icustay_day_outtime )
-- select * from ss_daily_raw_neuro where subject_id = 21;
SELECT
  subject_id,
  20007 itemid,
  icustay_day_outtime charttime, -- CHARTTIME
  0 elemid, -- ELEMID
  icustay_day_outtime realtime, -- REALTIME
  -1 cgid, -- CGID
  20001 cuid, -- CUID
  neurological_score,
  null value1uom, -- VALUE1UOM
  icustay_id
FROM
  ss_daily_raw_neuro;
-- 132,140 rows inserted

-- Renal failure creatinine or urine
INSERT INTO MERGE26.SOFA_SCORE ( 
  SUBJECT_ID,
  ITEMID,
  CHARTTIME,
  ELEMID,
  REALTIME,
  CGID,
  CUID,
  VALUE1NUM,
  VALUE1UOM,
  ICUSTAY_ID )
WITH
  icustays as ( 
    SELECT
      icue.subject_id,
      a.hadm_id,
      icue.icustay_id,
      icue.intime icustay_intime,
      icue.outtime icustay_outtime
    FROM mimic2v26.icustayevents icue,
         mimic2v26.d_patients p,
         mimic2v26.admissions a
    WHERE months_between(icue.intime, p.dob) / 12 >= 15
    AND p.subject_id = icue.subject_id
    AND a.subject_id = p.subject_id
  )
  SELECT
    icue.subject_id,
    a.hadm_id,
    icue.icustay_id,
    icue.intime icustay_intime,
    icue.outtime icustay_outtime
  FROM mimic2v26.icustayevents icue,
       mimic2v26.d_patients p,
       mimic2v26.admissions a
  WHERE months_between(icue.intime, p.dob) / 12 >= 15
  AND p.subject_id = icue.subject_id
  AND a.subject_id = p.subject_id
AND icue.intime >= a.admit_dt
AND icue.outtime <= a.disch_dt + 1
AND a.hadm_id is not null
--and icue.subject_id between 1 and 50
)
--select * from icustays where subject_id = 21;
,icustay_population as (  
SELECT
   icue.subject_id,
   icue.icustay_id,
   icue.icustay_intime,
   icue.icustay_outtime,
   icud.begintime as icustay_day_intime,
   icud.endtime as icustay_day_outtime,
   icud.seq
FROM icustays icue,
    mimic2v26.icustay_days icud
WHERE icud.icustay_id = icue.icustay_id
--and icud.subject_id between 1 and 50
)
--select * from icustay_population where subject_id = 21;
, ss_raw_renal_creat as (  
SELECT
   icud.subject_id,
   icud.icustay_id,
   icud.seq,
   icud.icustay_day_outtime,
   'CREATININE',
   le.valuenum,
--  le.valueuom,
   case
     when (le.valuenum >= 1.2 and le.valuenum < 2.0) then 1
     when (le.valuenum >= 2.0 and le.valuenum < 3.5) then 2
     when (le.valuenum >= 3.5 and le.valuenum < 5.0) then 3
     when (le.valuenum >= 5.0) then 4
     else 0 end
   as renal_score
FROM mimic2v26.labevents le,
    icustay_population icud
WHERE le.subject_id = icud.subject_id
AND le.icustay_id = icud.icustay_id
AND le.charttime >= icud.icustay_day_intime
AND le.charttime <= icud.icustay_day_outtime
AND le.itemid = 50090
--select * from ss_raw_renal creat;--161

ss_raw_renal_urine as (  
    SELECT  
        icud.subject_id,  
        icud.icustay_id,  
        icud.seq,  
        icud.icustay_day_outtime,  
        'URINE',  
        SUM(ie.volume),  
        case  
            when (SUM(ie.volume) >= 200 and SUM(ie.volume) < 500) then 3  
            when (SUM(ie.volume) < 200) then 4  
            else 0 end  
    as renal_score  
    FROM  
        mimic2v26.ioevents ie,  
        icustay_population icud  
    WHERE ie.subject_id = icud.subject_id  
        AND ie.icustay_id = icud.icustay_id  
        AND ie.charttime >= icud.icustay_day_intime  
        AND ie.charttime <= icud.icustay_day_outtime  
        AND ie.itemid IN ( 651, 715, 55, 56, 57, 61, 65, 69, 85, 94, 96, 288, 405, 428, 473, 2042, 2068, 2111, 2119, 2130, 1922, 2810, 2859, 3053, 3462, 3519, 3175, 2366, 2463, 2507, 2510, 2592, 2676, 3966, 3987, 4132, 4253, 5927 )  
    GROUP BY icud.subject_id, icud.icustay_id, icud.seq, icud.icustay_day_outtime,  
        'URINE'  
)

--select * from ss_raw_renal_urine union select * from ss_raw_renal creat;--122

, ss_daily_raw_renal as (  
    select  
        subject_id,  
        icustay_id,  
        seq,  
        icustay_day_outtime,  
        MAX(renal_score) as renal_score  
    FROM  
        (  
            select * from ss_raw_renal_urine--122  
            union  
            select * from ss_raw_renalcreat  
        )  
    GROUP BY subject_id, icustay_id, seq, icustay_day_outtime  
)
-- select * from ss_daily_raw_renal;

SELECT
subject_id,
20008 itemid,
icustay_day_outtime charttime, -- CHARTTIME
0 elemid, -- ELEMID
icustay_day_outtime realtime, -- REALTIME
-1 cgid, -- CGID
20001 cuid, -- CUID
renal_score,
null value1uom, -- VALUE1UOM
icustay_id
FROM
ss_daily_raw_renal;-- 134,571 rows inserted

SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID > 20001;
-762118

SELECT * FROM MERGE26.SOFA_SCORE;-- 636882

INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION)
VALUES (20008, 'Renal SOFA Score', 'LCP', 'Calculated SOFA score due to renal failure (Creatinine and Urine output) - by the MIMIC2 team');

DELETE FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID BETWEEN 20002 AND 20008;-- 625,755 rows deleted
-- Insert individual scores
INSERT INTO MIMIC2V26.CHARTEVENTS (subject_id, itemid, charttime, elemid, realtime, cgid, cuid, value1num, icustay_id)
SELECT  
  subject_id, 
  itemid, 
  charttime, 
  elemid, 
  realtime, 
  cgid, 
  cuid, 
  value1num, 
  icustay_id 
FROM  MERGE26.SOFA_SCORE; -- 636,882 rows inserted

SELECT * FROM MIMIC2V26.D_CHARTITEMS WHERE ITEMID > 20001;
SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID > 20001;
SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID > 20001
ORDER BY ICUSTAY_ID, ITEMID, CHARTTIME;

-- Insert total
INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION)
VALUES (20009, 'Overall SOFA Score', 'LCP', 'Calculated SOFA score. Sum of sofa scores from individual organ systems (Sum of ITEMIDs 20002 - 20008) - by the MIMIC2 team');

DELETE FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID = 20009;

INSERT INTO MIMIC2V26.CHARTEVENTS (subject_id, itemid, charttime, elemid, realtime, cgid, cuid, value1num, icustay_id)
SELECT SUBJECT_ID, 20009, CHARTTIME, 0, CHARTTIME, -1, 20001, SUM(VALUE1NUM), ICUSTAY_ID
FROM MERGE26.SOFA_SCORE
GROUP BY SUBJECT_ID, 20009, CHARTTIME, 0, CHARTTIME, -1, 20001, ICUSTAY_ID
ORDER BY SUBJECT_ID, ICUSTAY_ID;--137,118 rows inserted

SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID = 20009;

SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID > 20001 AND icustay_id = 4 ORDER BY ICUSTAY_ID, CHARTTIME, ITEMID;

SELECT * FROM MERGE26.SOFA_SCORE WHERE icustay_id = 4;

SELECT * FROM MIMIC2V26.ICUSTAY_DETAIL WHERE ICUSTAY_ID = 4;

SELECT COUNT(*) FROM MERGE26.OVERALL_SOFA_SCORE;--116930
SELECT COUNT(*) FROM MIMIC2V26.CHARTEVENTS;--159972807

INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION)
VALUES (20009, 'Overall SOFA Score', 'LCP', 'Calculated SOFA overall score (Sum of individual system scores) - by the MIMIC2 team');

select * from mimic2v26.d_chartitems where itemid > 20002;

-- Compare with mimic2v26
select 'V2.5 - ' || itemid, count(*) from mimic2v26.chartevents where itemid >= 20002 GROUP BY itemid
union
select 'V2.6 - ' || itemid, count(*) from mimic2v26.chartevents where itemid >= 20002 GROUP BY itemid;

/*ss_daily_raw as (*/
SELECT DISTINCT
  icud.subject_id,
  icud.icustay_id,
  icud.icustay_day,
NVL(sdrl.hepatic_score,0) hepatic_score,
NVL(sdrl.hematologic_score,0) hematologic_score,
NVL(sdrc.cardiovascular_score_abp,0) cardiovascular_score_abp,
NVL(sdrc.cardiovascular_score_pres,0) cardiovascular_score_pres,
case
when (NVL(sdrc.cardiovascular_score_abp,0) > NVL(sdrc.cardiovascular_score_pres,0))
then NVL(sdrc.cardiovascular_score_abp,0)
else NVL(sdrc.cardiovascular_score_pres,0) end as cardiovascular_score,
NVL(sdrn.neurologic_score,0) neurologic_score,
NVL(sdrr.respiratory_score,0) respiratory_score
FROM
icustay_days icud
FULL OUTER JOIN ss_daily_raw_lab sdrl
ON (icud.icustay_id = sdrl.icustay_id AND icud.icustay_day = sdrl.icustay_day)
FULL OUTER JOIN ss_daily_raw_cardio sdrc
ON (icud.icustay_id = sdrc.icustay_id AND icud.icustay_day = sdrc.icustay_day)
FULL OUTER JOIN ss_daily_raw_neuro sdrn
ON (icud.icustay_id = sdrn.icustay_id AND icud.icustay_day = sdrn.icustay_day)
FULL OUTER JOIN ss_daily_raw_resp sdrr
ON (icud.icustay_id = sdrr.icustay_id AND icud.icustay_day = sdrr.icustay_day)
),
non_renal_daily_sofa_score as ( select
sofa.subject_id,
sofa.icustay_id,
sofa.icustay_day,
sofa.hepatic_score,
sofa.hematologic_score,
sofa.neurologic_score,
sofa.cardiovascular_score_abp,
sofa.cardiovascular_score_pres,
sofa.cardiovascular_score,
sofa.respiratory_score,
sofa.respiratory_score + sofa.hepatic_score + sofa.hematologic_score + sofa.neurologic_score
+ sofa.cardiovascular_score as non_renal_score
from ss_daily_raw sofa
join icustay_days icud
on (icud.icustay_id = sofa.icustay_id and icud.icustay_day = sofa.icustay_day)
)
SELECT * FROM non_renal_daily_sofa_score;/*/ --INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION) VALUES (20002, 'Respiratory SOFA Score', 'LCP', 'Calculated SOFA score due to respiratory failure (PaO2/FiO2 ratio) - by the MIMIC2 team'); --INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CAT-
GORY, DESCRIPTION) VALUES (20003, 'Hepatic SOFA Score', 'LCP', 'Calculated SOFA score due to hepatic failure (Bilirubin values) - by the MIMIC2 team');
--INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION) VALUES (20004, 'Hematologic SOFA Score', 'LCP', 'Calculated SOFA score due to hematologic failure (Platelet count) - by the MIMIC2 team');
--INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION) VALUES (20005, 'Pressor Cardiovascular SOFA Score', 'LCP', 'Calculated SOFA score due to cardiovascular failure (Pressors) - by the MIMIC2 team');
--INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION) VALUES (20006, 'MAP Cardiovascular SOFA Score', 'LCP', 'Calculated SOFA score due to cardiovascular failure (MAP) - by the MIMIC2 team');
--INSERT INTO MIMIC2V26.D_CHARTITEMS (ITEMID, LABEL, CATEGORY, DESCRIPTION) VALUES (20007, 'Neurologic SOFA Score', 'LCP', 'Calculated SOFA score due to neurologic failure (Glasgow coma score) - by the MIMIC2 team');
--SELECT subject_id, itemid, charttime, elemid, COUNT(*) FROM MERGE26.SOFA_SCORE GROUP BY subject_id, itemid, charttime, elemid HAVING COUNT(*) > 1;
--select distinct itemid from MERGE26.SOFA_SCORE;
--select itemid, count(*) from MERGE26.SOFA_SCORE GROUP BY itemid;
--SELECT * FROM MERGE26.SOFA_SCORE WHERE SUBJECT_ID = 21;
--SELECT * FROM MERGE26.SOFA_SCORE WHERE ITEMID IN (20007) AND SUBJECT_ID = 21;
--SELECT * FROM MERGE26.SOFA_SCORE WHERE ITEMID IN (20005, 20006) AND SUBJECT_ID = 21;
--SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ICUSTAY_ID = 24;
--SELECT * FROM MIMIC2V26.ICUSTAYEVENTS WHERE ICUSTAY_ID = 24;
--SELECT * FROM MIMIC2V26.ICUSTAY_DAYS WHERE ICUSTAY_ID = 24;
--INSERT INTO MIMIC2V26.CHARTEVENTS SELECT * FROM MERGE26.SOFA_SCORE;
--SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID IN (20002, 20003, 20004, 20005, 20006, 20007);
----DELETE FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID IN (20002, 20003, 20004, 20005, 20006, 20007);
--SELECT * FROM MIMIC2V26.CHARTEVENTS WHERE ITEMID IN (20007)
AND SUBJECT_ID = 21;