MIMIC II SQL Cookbook

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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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Contents

Chapter 1

Basic information

1.1 Patient's ID, sex and date of birth

```
select subject_id, sex, dob
  from mimic2v26.d_patients
where rownum < 10
```

1.2 Number of Subject IDs in the Database

```
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

```
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;
```

2.4 Get Glasgow Coma Scale (GSC) Histogram

```
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

```
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

```
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

```
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

```
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

```
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

```
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

```
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

```
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

```
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

```
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 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 = 45
  OR icd.icd9_numeric = 53.3)))
  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,
    MAX(
    CASE
```

```
  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
```

```
  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,
MAX(
```

```
      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 = 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_UNCOMPLICATED,
  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 returs 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.

 Calucation 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


*/

   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;
```

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

ELSIF p_category = 'TEMPERATURE' THEN

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

ELSIF p_category = 'SYS ABP' THEN

    IF p_val < 55 THEN
        retValue := 4;
    ELSIF p_val <= 79 THEN
        retValue := 2;
    ELSIF p_val <= 149 THEN
        retValue := 0;
    ELSIF p_val <= 189 THEN
        retValue := 2;
    ELSIF p_val >= 190 THEN
        retValue := 4;
    END IF;

ELSIF p_category = 'VENTILATED_RESP' THEN
```

```
    retValue := 3;

ELSIF p_category = 'SPONTANEOUS_RESP' THEN

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

ELSIF p_category = 'BUN' THEN

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

ELSIF p_category = 'HCT' THEN

    IF p_val < 20 THEN
        retValue := 4;
    ELSIF p_val < 30 THEN
        retValue := 2;
    ELSIF p_val < 46 THEN
        retValue := 0;
    ELSIF p_val < 50 THEN
        retValue := 1;
```

```
    ELSIF p_val < 60 THEN
        retValue := 2;
    ELSIF p_val >= 60 THEN
        retValue := 4;
    END IF;

ELSIF p_category = 'WBC' THEN

    IF p_val < 1 THEN
        retValue := 4;
    ELSIF p_val < 3 THEN
        retValue := 2;
    ELSIF p_val < 15 THEN
        retValue := 0;
    ELSIF p_val < 20 THEN
        retValue := 1;
    ELSIF p_val < 40 THEN
        retValue := 2;
    ELSIF p_val >= 40 THEN
        retValue := 4;
    END IF;

ELSIF p_category = 'GLUCOSE' THEN

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

ELSIF p_category = 'POTASSIUM' THEN

    IF p_val < 2.5 THEN
        retValue := 4;
    ELSIF p_val <= 2.9 THEN
        retValue := 2;
```

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

ELSIF p_category = 'SODIUM' THEN

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

ELSIF p_category = 'HCO3' THEN

    IF p_val < 5 THEN
        retValue := 4;
    ELSIF p_val < 10 THEN
        retValue := 3;
    ELSIF p_val < 20 THEN
        retValue := 1;
    ELSIF p_val < 30 THEN
        retValue := 0;
    ELSIF p_val < 40 THEN
        retValue := 1;
    ELSIF p_val >= 40 THEN
        retValue := 3;
```

```
    END IF;

ELSIF p_category = 'GCS' THEN

    IF p_val < 4 THEN
        retValue := 4;
    ELSIF p_val < 7 THEN
        retValue := 3;
    ELSIF p_val < 10 THEN
        retValue := 2;
    ELSIF p_val < 13 THEN
        retValue := 1;
    ELSIF p_val >= 13 THEN
        retValue := 0;
    END IF;

ELSIF p_category = 'AGE' THEN

    IF p_val <= 45 THEN
        retValue := 0;
    ELSIF p_val < 55 THEN
        retValue := 1;
    ELSIF p_val <= 65 THEN
        retValue := 2;
    ELSIF p_val <= 75 THEN
        retValue := 3;
    ELSIF p_val > 75 THEN
        retValue := 4;
    END IF;

ELSIF p_category = 'URINE' THEN

    IF p_val < 0.2 THEN
        retValue := 4;
    ELSIF p_val <= 0.49 THEN
        retValue := 3;
    ELSIF p_val <= 0.69 THEN
        retValue := 2;
    ELSIF p_val <= 3.49 THEN
        retValue := 0;
    ELSIF p_val <= 4.99 THEN
        retValue := 1;
    ELSIF p_val >= 5 THEN
        retValue := 2;
    END IF;
```

```
    END IF;

    return retValue;

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;
```

```
, DailyICUStays as (
  SELECT subject_id, icustay_id, icustay_day,
         intime, outtime, age
    FROM ICUstays
    MODEL RETURN UPDATED ROWS
    PARTITION BY (subject_id, icustay_id)
    DIMENSION BY (0 icustay_day)
    MEASURES (intime, outtime, dob, age)
    RULES ITERATE(1000)
        UNTIL (ITERATION_NUMBER > trunc(outtime[0] - intime[0]) - 1)
    --RULES ITERATE(icustay_daysnum)
    (
      intime[ITERATION_NUMBER + 1] = intime[0] + ITERATION_NUMBER,
      -- Make sure we stay within the time bounds of the ICU stay
      outtime[ITERATION_NUMBER + 1] =
            case
             when (intime[0] + ITERATION_NUMBER + 1 > outtime[0])
               then outtime[0]
             else   intime[0] + ITERATION_NUMBER + 1
            end,
      age[ITERATION_NUMBER + 1] =
        round(months_between(intime[ITERATION_NUMBER + 1], dob[0]) /
12, 0)
    )
    order by subject_id, icustay_id, intime
)
select * from DailyICUStays;
, ChartedParams as (
  -- Group each c.itemid in meaninful category names
  -- also performin 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'     -- Invasive/noninvasive BP
            when c.itemid in (781) then
                'BUN'
            when c.itemid in (198) then
                'GCS'
         end category,
         case
            when c.itemid in (678, 679) then
```

```
            (5/9)*(c.value1num-32)
        else
            c.value1num
    end valuenum
  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 (
  -- Group each c.itemid in meaninful category names
  -- also performin some metric conversion (temperature, etc...)
  select 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 meaninful category names
  -- also performin 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 (50383)
              then 'HCT'
            when c.itemid in (50316, 50468)
              then 'WBC'
            when c.itemid in (50112)
              then 'GLUCOSE'
            when c.itemid in (50172)
              then 'HCO3' -- 'TOTAL CO2'
            when c.itemid in (50149) then
                'POTASSIUM'
            when c.itemid in (50159) then
                'SODIUM'
         end category,
         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_for_parameter(category, min_valuenum)
             as min_valuenum_score,
          max_valuenum,
          merge25.get_saps_for_parameter(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

PARAMETER	ACCEPTABLE_MAX	ACCEPTABLE_MIN	UNITS
HR	250	10	BPM
SYS ABP	300	20	mmHg
TEMPERATURE	45	15	C
RESPIRATION_RATE	80	2	breaths per min
URINE	20	0	liters
BUN	100	1	mg/dl
CREATININE	30	0	mg/dl
HCT	80	5	%
WBC	200000	100	per cubic mm
GLUCOSE	1000	0.5	mg/dl
POTASSIUM	20	0.5	mEq/liter
SODIUM	300	50	mEq/liter
HCO3	100	2	mEq/liter

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 $
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 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_PRO;

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.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;
,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;
,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;
,p_f_daily_ratio as(
/* 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
,ss_daily_raw_resp as (
select
  subject_id,
  20002 itemid,
  icustay_day_outtime charttime, -- CHARTTIME
  0 elemid, --ELEMID
  icustay_day_outtime realtime, -- REALTIME
  -1 cgid, -- CGID
  20001 cuid, -- CUID
  case when (p_f_ratio < 100) then 4
            when (p_f_ratio < 200) then 3
            when (p_f_ratio < 300) then 2
            when (p_f_ratio < 400) then 1
       else 0 end
  as value1num,
  null value1uom, -- VALUE1UOM
  icustay_id
from p_f_daily_ratio
)
select * from ss_daily_raw_resp;--64,221 rows inserted

-- Hepatic 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
    --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
```

```
      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.labevents le
  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 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
```

```
  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.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
),
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
```

```
  0 elemid, --ELEMID
  icustay_day_outtime realtime, -- REALTIME
  -1 cgid, -- CGID
  20001 cuid, -- CUID
  cardiovascular_score_pres,
  null value1uom, -- VALUE1UOM
  icustay_id
FROM
  ss_daily_raw_press;--18,354 rows inserted

-- Cardiovascular score ABP
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 p.subject_id < 10
)
--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
    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
```

```
    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;
, 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_renal_creat
      )
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, CATE-
GORY, 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, CATE-
```

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;
