

Concordia University

Department of Computer Science and Software Engineering

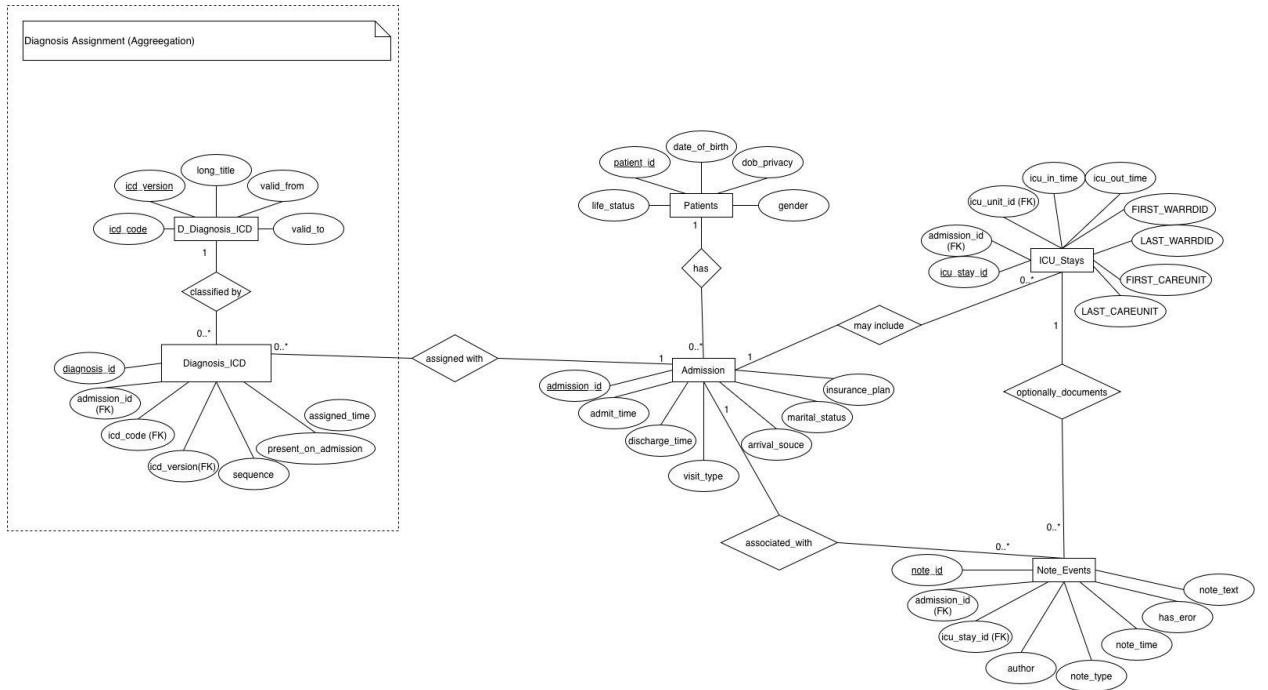
SOEN 363
Data Systems for Software Engineers

Fall 2025
Project (Phase 1)

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ER DIAGRAM



SQL QUERIES

1. List all patients (patient IDs) along with their date of birth and gender.

```
SELECT patient_id, date_of_birth, gender
```

```
FROM Patients;
```

	patient_id	date_of_birth	gender
1			
2	2120-07-17		
3	2025-04-11		M
4	2145-05-12		F
5	2103-02-02		M
6	2109-06-21		F
7	2123-04-23		F
8	2111-01-29		M
9	2100-01-26		M
10	2103-06-28		F
11	2128-02-22		F
12	2032-03-24		M
13	2127-06-27		F
14	2115-01-03		M
15	2087-07-10		M
16	2087-07-14		F
17	2116-11-20		M
18	1880-08-05		M
19	2107-06-13		F
20	2101-05-21		M
21	2123-06-07		M
22	2082-07-17		M
23	2100-07-31		M
24	2101-11-21		M
25	2106-05-04		M
26	2101-11-20		F
27	2103-04-15		M
28	2103-04-15		M
29	1872-10-14		M
30	2036-05-17		M
31	2124-09-29		M
32	2054-06-02		M
33	2145-01-10		M
34	2082-06-01		F
35	2063-08-17		M
36	2114-09-17		M
37	2090-08-31		M
38	2114-09-29		F
39	2103-06-03		M
40	2053-02-25		M
41	2153-12-25		M
42	2112-09-14		M
43	2087-01-13		M
44	2089-01-13		M
45	2106-11-22		M
46	2122-06-23		M
47	2128-11-30		M
48	2152-11-26		M
49	2124-08-31		M

2. Find all admissions for a given patient (use a sample patient ID) showing all the information.

```
SELECT *\nFROM Admission\nWHERE patient_id = 123
```

3. Retrieve the number of admissions for each patient.

```
SELECT patient_id, COUNT(*) AS admission_count
FROM Admission
GROUP BY patient_id
```

	patient_id	admission_count
1	2	1
2	3	1
3	4	1
4	5	1
5	0	1
6	7	1
7	8	1
8	9	1
9	10	1
10	11	1
11	12	1
12	13	1
13	16	1
14	17	2
15	18	1
16	19	1
17	20	1
18	21	2
19	22	1
20	23	2
21	24	1
22	25	1
23	26	1
24	27	1
25	28	1
26	30	1
27	31	1
28	32	1
29	33	1
30	34	2
31	35	1
32	36	3
33	37	1
34	38	1
35	39	1
36	41	1
37	42	1
38	43	1
39	44	1
40	45	1
41	46	1
42	49	1
43	50	1
44	51	1
45	52	1
46	53	1

4. Show all the patients who were discharged to "home".

```
SELECT DISTINCT *
FROM Patients p
JOIN Admission a ON p.patient_id = a.patient_id
WHERE a.discharge_time IS NOT NULL;
```

	patient_id	date_of_birth	dob_privacy	gender	life_status	admission_id	patient_id	admit_time	discharge_time	visit_type	insurance_plan	marital_status	arrival_source	discharge_location
1	2185	2081-05-30	F	M	Expired	19476	2185	2159-10-17 08:00:00	2159-10-18 14:25:00	ELECTIVE	Medicare	MARRIED	PWS REFERRAL/NORMAL DELI	REHAB/DISTINCT PART HOSP
4	5909	2125-09-30	F	M	Expired	150804	5909	2183-04-09 11:45:00	2183-04-13 10:15:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	DEAD/EXPIRED
5	3182	2051-05-10	F	F	Expired	192879	3182	2125-11-29 12:50:00	2125-12-03 21:21:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	DEAD/EXPIRED
6	2623	2106-10-13	F	M	Expired	113272	2623	2106-05-10 15:30:00	2106-05-28 16:30:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	SNF
7	4805	2097-06-06	F	F	Alive	150814	4805	2188-04-13 10:15:00	2188-04-13 15:35:00	ELECTIVE	Private	MARRIED	PWS REFERRAL/NORMAL DELI	HOME HEALTH CARE
8	582	2140-08-12	F	M	Alive	108161	582	2140-08-12 07:00:00	2140-08-12 12:00:00	EMERGENCY	Medicaid	UNKNOWM (DEFAULT)	CLINIC REFERRAL/PREMATRE	HOME
9	198	2109-11-27	F	F	Alive	131286	198	2181-10-18 22:04:00	2181-10-24 16:40:00	EMERGENCY	Medicare	MARRIED	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
10	9688	2132-05-03	F	M	Alive	131543	9688	2186-05-26 07:15:00	2186-05-26 11:54:00	ELECTIVE	Private	MARRIED	PWS REFERRAL/NORMAL DELI	HOME
11	8388	2124-07-23	F	M	Alive	171391	8388	2178-05-17 22:58:00	2178-05-17 23:30:00	EMERGENCY	Medicare	SINGLE	EMERGENCY ROOM ADMIT	SNF
12	18175	2177-01-07	F	F	Expired	134572	18175	2178-05-17 22:36:00	2178-07-25 16:10:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	LONG TERM CARE HOSPITAL
13	5909	2072-10-01	F	F	Alive	108172	5909	2125-07-23 10:00:00	2125-07-23 10:00:00	EMERGENCY	Medicare	UNKNOWM (DEFAULT)	PWS REFERRAL/NORMAL DELI	HOME
14	3216	1872-07-15	F	F	Expired	198299	3216	2172-07-15 19:02:00	2172-07-31 18:01:00	EMERGENCY	Medicare	WIDOWED	EMERGENCY ROOM ADMIT	HOME
15	4619	2112-05-08	F	F	Expired	129599	4619	2185-02-12 16:27:00	2185-02-12 15:19:00	URGENT	Medicare	UNKNOWM (DEFAULT)	TRANSFER FROM HOSP/EXTRAM	HOME
16	594	2097-10-15	F	F	Expired	114388	594	2178-04-13 18:14:00	2178-04-13 02:11:00	EMERGENCY	Private	MARRIED	EMERGENCY ROOM ADMIT	REHAB/DISTINCT PART HOSP
17	3691	1878-08-05	F	M	Expired	189969	3691	2170-08-05 15:50:00	2170-08-11 15:11:00	EMERGENCY	Medicare	WIDOWED	EMERGENCY ROOM ADMIT	HOME HEALTH CARE
18	593	2109-06-10	F	M	Alive	132882	593	2186-06-10 14:00:00	2186-06-10 14:00:00	EMERGENCY	Medicare	UNKNOWM (DEFAULT)	CLINIC REFERRAL/PREMATRE	HOME
19	4416	2085-08-26	F	M	Expired	183389	4416	2155-01-31 14:24:00	2155-02-18 13:50:00	EMERGENCY	Medicare	MARRIED	TRANSFER FROM HOSP/EXTRAM	SNF
20	1478	2090-01-30	F	F	Alive	151978	1478	2141-01-06 02:51:00	2141-01-06 16:13:00	EMERGENCY	Private	MARRIED	EMERGENCY ROOM ADMIT	HOME
21	1201	2177-01-10	F	M	Alive	184601	1201	2177-01-10 08:32:00	2177-01-18 16:59:00	NEWBORN	Medicaid	UNKNOWM (DEFAULT)	PWS REFERRAL/NORMAL DELI	HOME
22	8845	2115-06-27	F	M	Alive	108716	8845	2115-06-27 03:56:00	2115-07-07 16:12:00	NEWBORN	Private	UNKNOWM (DEFAULT)	PWS REFERRAL/NORMAL DELI	SHORT TERM HOSPITAL
23	4502	2128-01-08	F	M	Alive	178493	4502	2128-01-08 21:10:00	2128-01-08 22:36:00	EMERGENCY	Medicaid	SINGLE	TRANSFER FROM HOSP/EXTRAM	DISCH FROM TO PSW HOSP
24	9379	2124-11-01	F	F	Expired	135452	9379	2124-11-01 14:00:00	2124-11-01 14:00:00	EMERGENCY	Medicare	UNKNOWM (DEFAULT)	TRANSFER FROM HOSP/EXTRAM	REHAB/DISTINCT PART HOSP
25	5678	2023-02-27	F	M	Expired	168808	5678	2106-07-30 13:22:00	2106-08-13 16:36:00	URGENT	Medicare	UNKNOWM (DEFAULT)	TRANSFER FROM HOSP/EXTRAM	DISC-TRAM CANCER CHILDREN II
26	9952	2123-06-10	F	M	Expired	124580	9952	2192-06-17 06:13:00	2192-06-18 15:06:00	EMERGENCY	Private	MARRIED	EMERGENCY ROOM ADMIT	HOME
27	3802	2088-01-05	F	M	Alive	196646	3802	2155-11-18 12:47:00	2155-11-24 15:40:00	EMERGENCY	Medicare	MARRIED	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
28	4132	2133-04-22	F	M	Expired	134865	4132	2172-04-06 07:39:00	2172-05-05 09:44:00	EMERGENCY	Medicaid	SINGLE	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
29	2089	2124-06-25	F	M	Alive	155291	2089	2160-06-25 13:00:00	2160-06-25 13:00:00	EMERGENCY	Private	UNKNOWM (DEFAULT)	CLINIC REFERRAL/PREMATRE	SHORT TERM HOSPITAL
30	6440	2141-06-17	F	F	Alive	111801	6440	2160-06-04 13:37:00	2160-06-04 16:30:00	EMERGENCY	Private	SINGLE	EMERGENCY ROOM ADMIT	HOME
31	1371	2125-08-05	F	M	Expired	108498	1371	2197-02-19 21:28:00	2197-03-15 26:57:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	DEAD/EXPIRED
32	3563	2068-04-13	F	M	Expired	117768	3563	2118-12-14 05:50:00	2118-12-16 16:26:00	EMERGENCY	Medicaid	SINGLE	EMERGENCY ROOM ADMIT	REHAB/DISTINCT PART HOSP
33	7929	2048-03-10	F	M	Alive	118867	7929	2114-05-20 03:56:00	2114-06-01 13:15:00	EMERGENCY	Medicare	SINGLE	EMERGENCY ROOM ADMIT	REHAB/DISTINCT PART HOSP
34	3793	2147-01-23	F	M	Expired	178657	3793	2208-10-16 04:24:00	2208-10-16 06:06:00	EMERGENCY	Medicare	DIVORCED	CLINIC REFERRAL/PREMATRE	HOME
35	3727	2147-11-09	F	F	Alive	133197	3727	2126-07-13 13:00:00	2126-07-13 13:00:00	EMERGENCY	Medicare	SINGLE	CLINIC REFERRAL/PREMATRE	HOME
36	5712	2062-07-03	F	M	Expired	159696	5712	2108-12-13 14:41:00	2108-12-17 18:00:00	EMERGENCY	Medicaid	SINGLE	EMERGENCY ROOM ADMIT	HOME
37	2952	2088-02-10	F	M	Expired	147722	2952	2172-01-24 22:02:00	2172-02-11 18:10:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	REHAB/DISTINCT PART HOSP
38	3748	2095-07-16	F	M	Alive	150802	3748	2178-08-03 17:02:00	2178-08-11 13:20:00	URGENT	Medicare	WIDOWED	PWS REFERRAL/NORMAL DELI	REHAB/DISTINCT PART HOSP
39	8954	2098-04-19	F	M	Expired	190832	8954	2164-11-14 08:00:00	2164-11-20 13:00:00	ELECTIVE	Private	MARRIED	PWS REFERRAL/NORMAL DELI	HOME HEALTH CARE
40	8869	2144-06-18	F	F	Alive	172723	8869	2160-06-02 13:00:00	2160-06-02 13:00:00	EMERGENCY	Private	DIVORCED	CLINIC REFERRAL/PREMATRE	HOME
41	3799	2164-09-20	F	F	Alive	130881	3799	2139-11-05 15:00:00	2139-11-13 15:27:00	EMERGENCY	Private	UNKNOWM (DEFAULT)	CLINIC REFERRAL/PREMATRE	HOME
42	3927	2144-12-17	F	F	Alive	131361	3927	2197-12-17 09:58:00	2198-01-17 12:45:00	EMERGENCY	Private	MARRIED	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
43	7492	2072-11-27	F	F	Expired	184035	7492	2128-02-24 12:06:00	2128-02-28 14:30:00	EMERGENCY	Private	MARRIED	EMERGENCY ROOM ADMIT	REHAB/DISTINCT PART HOSP
44	1893	2082-11-25	F	F	Expired	148089	1893	2169-08-09 14:53:00	2169-08-17 17:15:00	URGENT	Medicare	WIDOWED	TRANSFER FROM SKILLED NUR	REHAB/DISTINCT PART HOSP
45	3879	2093-01-01	F	M	Expired	160346	3879	2118-01-21 19:30:00	2118-02-01 15:30:00	EMERGENCY	Medicare	MARRIED	EMERGENCY ROOM ADMIT	DEAD/EXPIRED
46	6555	2108-01-12	F	F	Alive	172895	6555	2106-08-08 15:00:00	2106-08-27 15:00:00	EMERGENCY	Medicaid	WIDOWED	EMERGENCY ROOM ADMIT	CLINIC REFERRAL/PREMATRE
47	269	2138-09-30	F	M	Alive	106296	269	2170-11-05 18:00:00	2170-11-22 18:00:00	EMERGENCY	Medicaid	SINGLE	EMERGENCY ROOM ADMIT	HOME HEALTH CARE
48	1255	2199-09-23	F	M	Alive	169830	1255	2199-09-25 05:41:00	2199-10-02 15:45:00	EMERGENCY	Private	SINGLE	TRANSFER FROM HOSP/EXTRAM	SHORT TERM HOSPITAL

5. Show the list of all the patients who have private insurance.

```
SELECT DISTINCT p.*  
FROM Patients p  
JOIN Admission a ON p.patient_id = a.patient_id  
WHERE a.insurance_plan = 'Private';
```

	patient_id	date_of_birth	dob_privacy	gender	life_status
1	8875	2075-08-12	F	M	Expired
2	1292	2165-01-03	F	M	Alive
3	4069	2192-09-25	F	F	Alive
4	4802	2114-07-07	F	M	Expired
5	6878	2059-01-05	F	M	Alive
6	3638	2191-06-08	F	M	Alive
7	4148	2080-01-11	F	F	Alive
8	4839	2040-01-01	F	M	Expired
9	2216	2051-01-29	F	F	Alive
10	11	2128-02-22	F	F	Expired
11	3452	2186-05-01	F	M	Alive
12	8722	2123-01-24	F	F	Expired
13	7173	2140-11-12	F	M	Alive
14	4168	2124-06-30	F	M	Expired
15	8336	2186-05-16	F	M	Alive
16	5779	2139-09-02	F	F	Alive
17	4579	2136-04-29	F	M	Expired
18	8527	2134-01-31	F	F	Alive
19	3375	2054-11-15	F	M	Alive
20	3198	2078-07-30	F	F	Alive
21	1837	2061-06-11	F	F	Alive
22	1577	2093-01-29	F	M	Alive
23	6801	2167-12-25	F	M	Alive
24	7682	2130-04-10	F	F	Alive
25	4089	2157-07-15	F	F	Alive
26	3284	2150-12-13	F	M	Alive
27	9375	2119-05-15	F	F	Expired
28	8646	2199-10-20	F	M	Alive
29	4677	2115-05-13	F	M	Alive
30	1189	2080-08-09	F	F	Expired
31	3083	2055-05-22	F	M	Expired
32	478	2194-07-15	F	M	Alive
33	4388	2159-05-04	F	M	Alive
34	4884	2127-07-18	F	M	Alive
35	1175	2131-03-06	F	F	Alive
36	7690	2100-05-10	F	M	Alive
37	9987	2146-12-10	F	M	Alive
38	2303	2037-02-02	F	M	Alive
39	4227	2114-05-04	F	M	Alive
40	3175	2105-05-30	F	F	Alive
41	4791	2131-09-08	F	M	Expired
42	4414	2111-01-29	F	M	Expired
43	8433	2121-03-19	F	M	Alive
44	10868	2281-04-18	F	M	Alive
45	8174	2128-12-04	F	M	Alive
46	8555	2208-10-29	F	M	Alive

6. Show the list of all the patients who transferred from one location to another location in the hospital.

```

SELECT DISTINCT p.patient_id, a.admission_id, a.arrival_source AS from_location,
a.discharge_location AS to_location
FROM Admission a
JOIN Patients p ON p.patient_id = a.patient_id
WHERE a.arrival_source IS NOT NULL
AND a.discharge_location IS NOT NULL
AND LOWER(a.arrival_source) <> LOWER(a.discharge_location)
ORDER BY p.patient_id, a.admission_id;

```

	patient_id	admission_id	from_location	to_location
1				
2				
3	3	143534	EMERGENCY ROOM/ADMIT	HOME
4	4	145534	EMERGENCY ROOM/ADMIT	SHF
5	5	145777	PHYS REFERRAL/NORMAL DELI	HOME
6	6	178908	PHYS REFERRAL/NORMAL DELI	HOME HEALTH CARE
7	7	187086	PHYS REFERRAL/NORMAL DELI	HOME HEALTH CARE
8	8	181080	PHYS REFERRAL/NORMAL DELI	HOME
9	9	181084	PHYS REFERRAL/NORMAL DELI	HOME
10	9	150758	EMERGENCY ROOM/ADMIT	DEAD/EXPIRED
11	10	184167	PHYS REFERRAL/NORMAL DELI	SHORT TERM HOSPITAL
12	11	194543	EMERGENCY ROOM/ADMIT	HOME HEALTH CARE
13	12	112213	PHYS REFERRAL/NORMAL DELI	DEAD/EXPIRED
14	13	181085	PHYS REFERRAL/NORMAL DELI	HOME HEALTH CARE
15	16	181267	PHYS REFERRAL/NORMAL DELI	HOME
16	17	161687	EMERGENCY ROOM/ADMIT	HOME HEALTH CARE
17	17	194923	PHYS REFERRAL/NORMAL DELI	HOME HEALTH CARE
18	18	188822	PHYS REFERRAL/NORMAL DELI	HOME
19	19	181081	PHYS REFERRAL/NORMAL DELI	REHAB/DISTINCT PART HOSP
20	20	157481	EMERGENCY ROOM/ADMIT	HOME
21	21	180451	EMERGENCY ROOM/ADMIT	REHAB/DISTINCT PART HOSP
22	21	111978	EMERGENCY ROOM/ADMIT	DEAD/EXPIRED
23	22	165313	EMERGENCY ROOM/ADMIT	DISC-TRAN/CANCER/CHDRN H
24	23	124330	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
25	23	130223	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
26	24	181059	TRANSFER FROM HOSP/EXTRAM	HOME
27	25	129635	EMERGENCY ROOM/ADMIT	HOME
28	26	197676	TRANSFER FROM HOSP/EXTRAM	HOME
29	27	134931	PHYS REFERRAL/NORMAL DELI	HOME
30	28	181083	PHYS REFERRAL/NORMAL DELI	HOME HEALTH CARE
31	29	184557	EMERGENCY ROOM/ADMIT	HOME HEALTH CARE
32	31	128652	TRANSFER FROM HOSP/EXTRAM	DEAD/EXPIRED
33	32	175413	PHYS REFERRAL/NORMAL DELI	HOME
34	33	176176	EMERGENCY ROOM/ADMIT	HOME
35	34	115799	TRANSFER FROM HOSP/EXTRAM	HOME
36	34	130221	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
37	35	156747	PHYS REFERRAL/NORMAL DELI	HOME HEALTH CARE
38	36	122659	EMERGENCY ROOM/ADMIT	REHAB/DISTINCT PART HOSP
39	36	165656	PHYS REFERRAL/NORMAL DELI	LONG TERM CARE HOSPITAL
40	36	182184	CLINIC REFERRAL/PREMATURE	HOME HEALTH CARE
41	37	184558	EMERGENCY ROOM/ADMIT	HOME HEALTH CARE
42	38	138518	TRANSFER FROM HOSP/EXTRAM	LONG TERM CARE HOSPITAL
43	39	186256	PHYS REFERRAL/NORMAL DELI	HOME
44	41	181757	PHYS REFERRAL/NORMAL DELI	DISC-TRAN TO FEDERAL HC
45	42	119203	TRANSFER FROM HOSP/EXTRAM	HOME HEALTH CARE
46	43	146828	EMERGENCY ROOM/ADMIT	REHAB/DISTINCT PART HOSP
47	44	181758	CLINIC REFERRAL/PREMATURE	SHF
48	45	157907	EMERGENCY ROOM/ADMIT	REHAB/DISTINCT PART HOSP

7. Find patients who have more than one ICU stay in a single hospital admission.

```
SELECT a.patient_id, i.admission_id, COUNT(*) AS icu_stay_count
FROM ICU_Stays i
JOIN Admission a ON a.admission_id = i.admission_id
GROUP BY a.patient_id, i.admission_id
HAVING COUNT(*) > 1
ORDER BY icu_stay_count DESC, a.patient_id, i.admission_id;
```

	patient_id	admission_id	icu_stay_count
1	7354	109528	6
2	975	175734	4
3	5595	157649	4
4	1788	149672	4
5	269	169326	4
6	3868	157658	4
7	5362	173689	4
8	5595	199188	4
9	6381	176548	4
10	6659	125400	4
11	6702	157559	4
12	8516	160107	4
13	189	183340	3
14	177	183308	3
15	214	197273	3
16	231	198608	3
17	377	139824	3
18	488	173918	3
19	766	183370	3
20	793	183367	3
21	834	153730	3
22	874	191658	3
23	878	192365	3
24	976	191829	3
25	1089	141227	3
26	1204	160202	3
27	1313	146075	3
28	1369	186547	3
29	1684	193058	3
30	1699	146011	3
31	2391	186547	3
32	2553	136108	3
33	2649	197327	3
34	2784	169039	3
35	2892	156147	3
36	2973	188622	3
37	3250	171467	3
38	3371	169272	3
39	3548	177864	3
40	3880	149995	3
41	3847	148864	3
42	3851	107139	3
43	3853	147444	3
44	4453	103256	3
45	4507	155367	3

8. List all the patients that were in the ICU and the first care unit, and the last care unit are "MICU".

```
SELECT DISTINCT p.patient_id, i.icu_stay_id, i.first_careunit, i.last_careunit
FROM ICU_Stays i
JOIN Admission a ON a.admission_id = i.admission_id
JOIN Patients p ON p.patient_id = a.patient_id
WHERE i.first_careunit = 'MICU' AND i.last_careunit = 'MICU'
ORDER BY p.patient_id, i.icu_stay_id;
```

#	patient_id	icu_stay_id	first_careunit	last_careunit
3	3	231552	MICU	MICU
4	4	294682	MICU	MICU
5	5	230397	MICU	MICU
6	21	216859	MICU	MICU
7	22	264798	MICU	MICU
8	31	254478	MICU	MICU
9	33	295681	MICU	MICU
10	34	201202	MICU	MICU
11	36	241249	MICU	MICU
12	37	213503	MICU	MICU
13	46	268816	MICU	MICU
14	52	261857	MICU	MICU
15	59	234448	MICU	MICU
16	61	230502	MICU	MICU
17	61	292348	MICU	MICU
18	63	244541	MICU	MICU
19	64	232593	MICU	MICU
20	68	235771	MICU	MICU
21	68	272694	MICU	MICU
22	69	230502	MICU	MICU
23	71	211832	MICU	MICU
24	78	233158	MICU	MICU
25	85	291697	MICU	MICU
26	91	256972	MICU	MICU
27	54	230502	MICU	MICU
28	101	233111	MICU	MICU
29	105	272898	MICU	MICU
30	105	294988	MICU	MICU
31	107	252542	MICU	MICU
32	107	264253	MICU	MICU
33	109	230502	MICU	MICU
34	109	231610	MICU	MICU
35	109	226238	MICU	MICU
36	109	231823	MICU	MICU
37	109	232807	MICU	MICU
38	109	232807	MICU	MICU
39	109	240251	MICU	MICU
40	109	261206	MICU	MICU
41	109	262589	MICU	MICU
42	109	243532	MICU	MICU
43	109	243688	MICU	MICU
44	109	260102	MICU	MICU
45	109	246183	MICU	MICU
46	109	269219	MICU	MICU
47	109	253139	MICU	MICU
48	109	256584	MICU	MICU

9. Retrieve all notes written for a specific admission ID, including the author and whether an error was flagged.

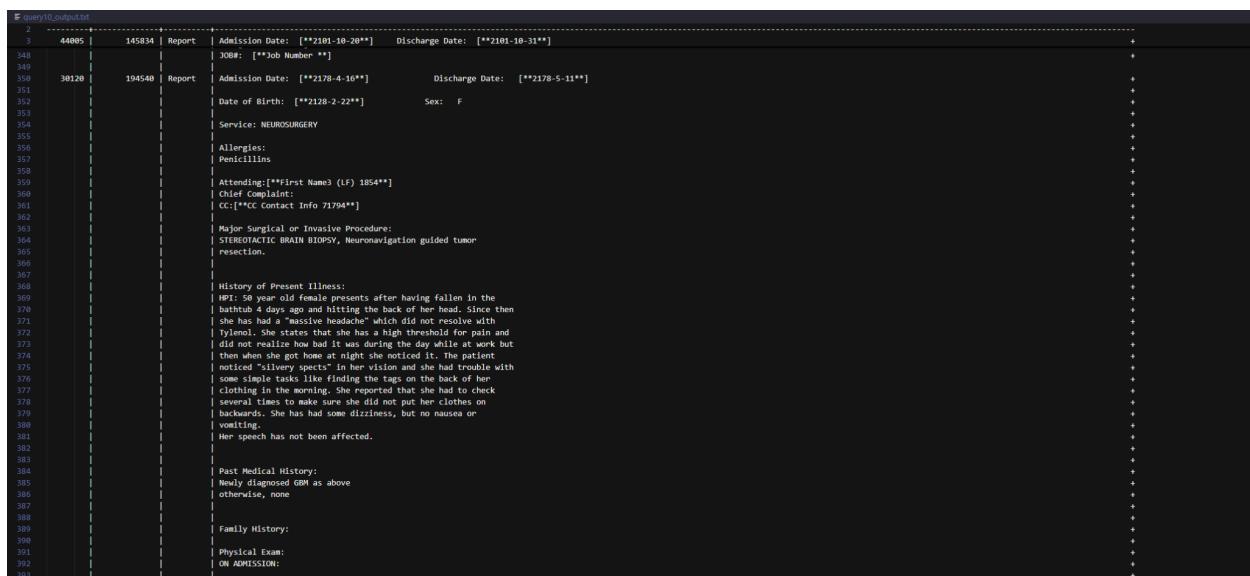
```

SELECT
  author,
  has_error,
  note_text
FROM Note_Events
WHERE admission_id = 163353
ORDER BY note_time;
  
```

author	has_error	note_text
Report	0	<p>Neonatology Attending Triage Note</p> <p>Baby **Name1 (NI) 1** [**Known lastname 2**] is a term male infant admitted to the NICU for sepsis evaluation. Asked to evaluate baby by Dr. [**First Name (NamePattern1) 3**] [**Last Name (NamePattern1) 4**].</p> <p>Mother is 34 years old GI PG 1.</p> <p>PNS: A pos, Ab neg, HSAg neg, RPR NR, RI, GBS neg.</p> <p>Pregnancy was uncomplicated.</p> <p>Delivery was by C-section after failure to progress. Apgars 9,9.</p> <p>Mother was treated with antibiotics because of maternal temp of 100.3 just prior to delivery. Mother's temp was then lower but at 2 hours rose again to 102.</p> <p>PE - Baby is **Name2 (NI) 5** and vigorous, AGA.</p> <p>VS - T 98.5 NR 145 RR 38 BP 72/35 48, O2 sat 100% in RA</p> <p>HEENT - AF soft and flat, some molding noted.</p> <p>Palate intact.</p> <p>Resp - breath sounds clear and equal.</p> <p>CVS - S1 S2 normal, [**6**] high pitched systolic murmur at LS8</p> <p>Abd - soft with normal bowel sounds, no organomegaly</p> <p>GU - normal male with testes descended bilaterally</p> <p>Neuro - tone wnl, symmetrical exam</p> <p>DS - 72</p> <p>Assessment/plan:</p> <p>Term male infant with increased risk of sepsis.</p> <p>Will check cbc diff and plats, blood culture.</p> <p>Will cover with antibiotics for at least 48 hours pending results of cultures.</p> <p>Further work up with possible LP if culture is positive or clinical signs of sepsis develop.</p>
Report	0	<p>Nursing Transfer note</p> <p>Pt admitted to NICU for sepsis eval. Please see Attending note for details regarding maternal history and delivery details.</p> <p>Infant stable in RA, RR 30-40's, sats 96-100%, LS clear/-.</p> <p>No retractions noted. HR 140's. No murmur. Infant [** 5**], well perfused. BM 3865g. CBC and BC sent, pending at this time.</p> <p>Infant on 48 r/o sepsis with abx Amp and Gent. PIV placed in Left hand, meds administered as ordered. D Stick 72. Infant stable for transfer to NBN. Continue to monitor for s/s of sepsis.</p>

10. Show the first 10 discharge summaries recorded in the database.

```
SELECT
    note_id,
    admission_id,
    author,
    note_text
FROM Note_Events
WHERE note_type = 'Discharge summary'
LIMIT 10;
```



			note_text
2			
3	44085	145834	Report Admission Date: [**2101-10-20**] Discharge Date: [**2101-10-31**]
348			JOB#: [*Job Number **]
349			Admission Date: [**2128-4-16**] Discharge Date: [**2128-5-11**]
350	30120	194540	Date of Birth: [**2128-2-22**] Sex: F
351			Service: NEUROSURGERY
352			Allergies:
353			Penicillins
354			Attending:[**First Name3 (LF) 1854**]
355			Chief Complaint:
356			Cc:[**CC Contact Info 71794**]
357			Major Surgical or Invasive Procedure:
358			STEREOTACTIC BRAIN BIOPSY, Neuronavigation guided tumor
359			resection.
360			
361			History of Present Illness:
362			HPI: 59 year old female presents after having fallen in the
363			bathtub 4 days ago and hitting the back of her head. Since then
364			she has had a "massive headache" which did not resolve with
365			Tylenol. She has had some dizziness and some trouble with
366			her vision. She has had trouble with simple tasks like
367			finding tags on her clothes. She has had some trouble with
368			her speech. She has had some dizziness, but no nausea or
369			vomiting.
370			Her speech has not been affected.
371			
372			Past Medical History:
373			Newly diagnosed GBM as above
374			otherwise, none
375			
376			Family History:
377			Physical Exam:
378			ON ADMISSION:
379			
380			
381			
382			
383			
384			
385			
386			
387			
388			
389			
390			
391			
392			
393			

11. Count the number of notes written per admission.

SELECT

```
admission_id,  
COUNT(*) AS note_count  
FROM Note_Events  
GROUP BY admission_id;
```

	admission_id	note_count
1	146746	111
2	130011	4
3	106119	7
4	103729	17
5	108394	2
6	139056	6
7	144053	27
8	137955	3
9	112349	23
10	106753	13
11	119479	65
12	186767	18
13	137039	18
14	151928	16
15	116736	13
16	177294	17
17	199818	26
18	189812	175
19	193143	13
20	129748	5
21	147197	3
22	199969	21
23	191053	22
24	110749	13
25	167411	13
26	141968	4
27	134441	10
28	131208	14
29	135529	16
30	113547	14
31	155892	7
32	149311	7
33	146870	5
34	132876	11
35	109360	58
36	145788	287
37	185758	20
38	176935	12
39	175301	3
40	189658	18
41	106441	9
42	166781	10
43	110388	10
44	159265	12
45	192834	16
46	170752	143

12. List all diagnoses (ICD codes) assigned to a given patient, including the textual description from the ICD dictionary.

```

SELECT d.diagnosis_id, d.admission_id, d.icd_code, d.icd_version, d.sequence,
dict.long_title AS diagnosis_description
FROM Diagnosis_ICD d
JOIN D_Diagnosis_ICD dict ON d.icd_code = dict.icd_code AND d.icd_version =
dict.icd_version
JOIN Admission a ON d.admission_id = a.admission_id
WHERE a.patient_id = 10006
ORDER BY d.sequence;

```

	diagnosis_id	admission_id	icd_code	icd_version	sequence	diagnosis_description
1						
2						
3	112344	142345	99591	9	1	Sepsis
4	112345	142345	99662	9	2	Infection and inflammatory reaction due to other vascular device, implant, and graft
5	112346	142345	5672	9	3	
6	112347	142345	36250	9	4	Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage V or end stage renal disease
7	112348	142345	43731	9	5	Atrial fibrillation
8	112349	142345	4288	9	6	Congestive heart failure, unspecified
9	112350	142345	4284	9	7	Aortic valve disorder
10	112351	142345	4248	9	8	Mitral valve disorder
11	112352	142345	2874	9	9	
12	112353	142345	9810	9	10	Other staphylococcal septicemia
13	112354	142345	9858	9	11	Tachycardia, unspecified
14	112355	142345	E8791	9	12	Kidney dialysis as the cause of abnormal reaction of patient, or of later complication, without mention of misadventure at time of procedure
15	112356	142345	V86	9	13	
16	112357	142345	56211	9	14	Infection with microorganisms resistant to penicillins
17	112358	142345	28529	9	15	Diverticulitis of colon (without mention of hemorrhage)
18	112359	142345	43840	9	16	Anal or rectal fissure
19	112360	142345	V5867	9	17	Long-term (current) use of insulin
20	112361	142345	E9342	9	18	Anticoagulants causing adverse effects in therapeutic use
21	112362	142345	41481	9	19	Coronary atherosclerosis of native coronary artery
22	112363	142345	2749	9	20	Gout, unspecified
23	112364	142345	3851	9	21	Tobacco use disorder
24						(21 rows)
25						
26						

13. Find the top 5 most common diagnoses in the hospital database.

SELECT

```
d.icd_code,
d.icd_version,
dict.long_title AS diagnosis_description,
COUNT(*) AS diagnosis_count
FROM Diagnosis_ICD d
JOIN D_Diagnosis_ICD dict
  ON d.icd_code = dict.icd_code
  AND d.icd_version = dict.icd_version
GROUP BY d.icd_code, d.icd_version, dict.long_title
ORDER BY diagnosis_count DESC
LIMIT 5;
```

query13_output.txt				
1	icd_code	icd_version	diagnosis_description	diagnosis_count
2				
3	4019	9	Unspecified essential hypertension	3081
4	4288	9	Congestive heart failure, unspecified	2818
5	42731	9	Atrial fibrillation	2503
6	41401	9	Coronary atherosclerosis of native coronary artery	2461
7	V853	9	Need for prophylactic vaccination and inoculation against viral hepatitis	1968
8	(5 rows)			
9				
10				

14. Retrieve all admissions that include an ICU stay and at least one diagnosis of "hyper-tension" (ICD-9 code: 401.9).

```

SELECT DISTINCT a.admission_id, a.patient_id, a.admit_time, a.discharge_time,
d.icd_code, dict.long_title AS diagnosis_description
FROM Admission a
JOIN ICU_Stays i ON a.admission_id = i.admission_id
JOIN Diagnosis_ICD d ON a.admission_id = d.admission_id
JOIN D_Diagnosis_ICD dict ON d.icd_code = dict.icd_code
AND d.icd_version = dict.icd_version
WHERE d.icd_code = '4019'
    AND d.icd_version = '9'
ORDER BY a.patient_id;

```

	admission_id	patient_id	admit_time	discharge_time	icd_code	diagnosis_description
1	159759	9	2149-11-09 13:06:00	2149-11-14 10:15:00	4019	Unspecified essential hypertension
2	112213	12	2104-08-07 10:15:00	2104-08-20 02:57:00	4019	Unspecified essential hypertension
3	143045	13	2167-01-08 18:43:00	2167-01-15 15:15:00	4019	Unspecified essential hypertension
4	188822		2167-10-02 11:18:00	2167-10-04 16:15:00	4019	Unspecified essential hypertension
5	109238	19	2108-08-05 16:25:00	2108-08-11 09:29:00	4019	Unspecified essential hypertension
6	109238	20	2108-08-05 16:25:00	2108-08-11 09:29:00	4019	Unspecified essential hypertension
7	165315	22	2106-04-09 12:26:00	2106-04-10 15:54:00	4019	Unspecified essential hypertension
8	124321	23	2157-10-18 19:34:00	2157-10-25 14:00:00	4019	Unspecified essential hypertension
9	152220	23	2153-09-03 07:15:00	2153-09-08 19:10:00	4019	Unspecified essential hypertension
10	129693	25	2160-11-02 02:06:00	2160-11-05 14:55:00	4019	Unspecified essential hypertension
11	106557	26	2108-08-22 23:37:00	2108-08-28 15:06:00	4019	Unspecified essential hypertension
12	153385	31	2108-08-22 23:37:00	2108-08-28 15:06:00	4019	Unspecified essential hypertension
13	158652	32	2170-04-04 08:00:00	2170-04-23 17:45:00	4019	Unspecified essential hypertension
14	175413		2170-04-04 08:00:00	2170-04-23 17:45:00	4019	Unspecified essential hypertension
15	166707	35	2122-02-10 11:15:00	2122-02-28 15:30:00	4019	Unspecified essential hypertension
16	122659	37	2131-05-12 19:49:00	2131-05-25 13:30:00	4019	Unspecified essential hypertension
17	105668	38	2101-05-10 19:38:00	2101-05-20 14:16:00	4019	Unspecified essential hypertension
18	132304	39	2131-05-07 10:01:00	2131-05-20 14:16:00	4019	Unspecified essential hypertension
19	181757	41	2132-12-31 10:30:00	2133-01-27 15:45:00	4019	Unspecified essential hypertension
20	119208	42	2116-04-26 18:58:00	2116-04-30 18:16:00	4019	Unspecified essential hypertension
21	181759	44	2192-11-19 18:14:00	2192-11-27 14:35:00	4019	Unspecified essential hypertension
22	153385	53	2170-03-20 20:20:00	2170-03-23 18:00:00	4019	Unspecified essential hypertension
23	190695	55	2108-08-22 23:37:00	2108-08-28 15:06:00	4019	Unspecified essential hypertension
24	137711	56	2104-01-02 02:01:00	2104-01-05 14:00:00	4019	Unspecified essential hypertension
25	155252	67	2157-12-02 00:45:00	2157-12-02 03:55:00	4019	Unspecified essential hypertension
26	186474	67	2155-02-25 12:45:00	2155-03-06 15:00:00	4019	Unspecified essential hypertension
27	104749	73	2170-12-22 00:12:00	2170-12-26 12:00:00	4019	Unspecified essential hypertension
28	111208	75	2147-01-01 14:45:00	2147-01-01 14:45:00	4019	Unspecified essential hypertension
29	177046	81	2109-01-09 10:50:00	2109-01-11 10:50:00	4019	Unspecified essential hypertension
30	140803	94	2176-09-02 14:22:00	2176-09-25 13:15:00	4019	Unspecified essential hypertension
31	183686	2176-02-16 14:49:00	2176-02-29 17:45:00	4019	Unspecified essential hypertension	
32	127870	97	2105-04-28 15:01:00	2105-05-06 17:45:00	4019	Unspecified essential hypertension
33	187373	99	2184-07-29 18:46:00	2184-08-04 15:21:00	4019	Unspecified essential hypertension
34	132731	100	2108-08-22 23:37:00	2108-08-28 15:06:00	4019	Unspecified essential hypertension
35	133549	103	2144-08-30 23:09:00	2144-09-01 14:28:00	4019	Unspecified essential hypertension
36	145167	106	2192-08-09 18:34:00	2192-08-15 21:15:00	4019	Unspecified essential hypertension
37	123352	108	2109-10-25 14:41:00	2109-11-02 09:51:00	4019	Unspecified essential hypertension
38	158597	111	2144-07-01 04:12:00	2144-07-01 14:55:00	4019	Unspecified essential hypertension
39	192723	111	2142-01-16 12:40:00	2142-01-16 12:40:00	4019	Unspecified essential hypertension
40	114545	115	2109-01-16 12:40:00	2109-01-11 16:56:00	4019	Unspecified essential hypertension
41	140784	117	2133-04-07 16:29:00	2133-04-12 16:39:00	4019	Unspecified essential hypertension
42	164853	117	2133-11-13 21:34:00	2133-12-01 17:00:00	4019	Unspecified essential hypertension
43	195632	123	2161-10-29 02:27:00	2161-11-01 11:37:00	4019	Unspecified essential hypertension
44	112908	128	2142-01-16 12:40:00	2142-01-16 12:40:00	4019	Unspecified essential hypertension
45	175001	134	2108-06-24 21:25:00	2108-07-15 15:10:00	4019	Unspecified essential hypertension
46	191817	133	2165-05-06 18:38:00	2165-05-16 15:25:00	4019	Unspecified essential hypertension
47	167887	134	2127-01-14 07:15:00	2127-01-24 14:55:00	4019	Unspecified essential hypertension

15. Show all patients who have never been admitted to the ICU.

```
SELECT DISTINCT p.*  
FROM Patients p  
JOIN Admission a ON p.patient_id = a.patient_id  
WHERE a.admission_id NOT IN (  
    SELECT admission_id  
    FROM ICU_Stays  
)
```

	patient_id	date_of_birth	dob_privacy	gender	life_status
1	4791	2133-09-08	f	M	Expired
2	7373	1840-04-09	f	F	Expired
3	3818	2155-12-01	f	F	Expired
4	7189	2067-11-11	f	F	Expired
5	5301	2063-06-16	f	M	Expired
6	5827	2043-03-23	f	F	Alive
7	7522	2122-09-30	f	M	Expired
8	1027	2089-08-17	f	F	Expired
9	3156	2042-03-08	f	M	Expired
10	2898	2053-06-29	f	M	Expired
11	6557	2057-04-03	f	M	Expired
12	9177	2057-04-03	f	M	Expired
13	9092	2117-05-07	f	M	Alive
14	1441	2092-10-08	f	F	Expired
15	18399	2101-10-11	f	F	Alive
16	9323	2072-01-16	f	F	Expired
17	5855	2112-01-24	f	F	Alive
18	1567	2133-08-16	f	M	Alive
19	1781	2117-02-25	f	F	Expired
20	1629	2114-05-25	f	M	Alive
21	9412	2130-07-06	f	M	Expired
22	5338	2110-07-17	f	M	Alive
23	7110	2085-11-22	f	F	Expired
24	807	2064-04-30	f	M	Alive
25	9851	2174-03-10	f	M	Alive
26	5981	2121-01-18	f	M	Alive
27	3559	2081-05-18	f	F	Expired
28	1939	2048-05-05	f	M	Expired
29	3746	2067-10-25	f	M	Alive
30	7261	2149-02-18	f	F	Expired
31	2040	2116-08-02	f	F	Alive
32	3525	2118-08-31	f	M	Alive
33	1153	2118-08-31	f	F	Alive
34	2839	2160-04-16	f	M	Alive
35	7815	2148-06-07	f	M	Expired
36	4688	2068-02-16	f	M	Expired
37	7908	2140-12-29	f	M	Expired
38	8051	2131-03-10	f	F	Expired
39	1039	2102-03-04	f	F	Expired
40	1713	2120-09-30	f	M	Expired
41	4386	2126-09-08	f	M	Expired
42	6411	2081-02-11	f	F	Expired

16. List of patients who had at least one radiology report during admission.

```

SELECT p.patient_id, p.date_of_birth, p.gender, a.admission_id, a.admit_time,
COUNT(n.note_id) AS radiology_report_count
FROM Patients p
JOIN Admission a ON a.patient_id = p.patient_id
JOIN Note_Events n ON n.admission_id = a.admission_id
WHERE LOWER(n.note_type) = 'radiology'
GROUP BY p.patient_id, p.date_of_birth, p.gender, a.admission_id, a.admit_time
ORDER BY p.patient_id, a.admission_id;

```

	patient_id	date_of_birth	gender	admission_id	admit_time	radiology_report_count
1						
2						
3	2825-04-11	M		345834	2101-10-28 19:00:00	14
4	2143-05-12	F		385777	2101-03-16 06:28:00	7
5	61-2109-06-21	F		307064	2175-05-07 07:15:00	11
6	82-2117-11-20	M		359514	2117-11-20 10:22:00	1
7	9-2109-06-26	M		359515	2117-11-09 10:22:00	10
8	10-2109-06-26	F		384167	2101-03-11 10:30:00	1
9	11-2128-02-22	F		304540	2178-04-16 06:18:00	13
10	13-2127-02-27	F		343045	2167-01-08 18:43:00	5
11	18-2116-11-29	M		388822	2167-10-02 11:18:00	1
12	19-2109-05-05	M		309000	2109-05-05 07:00:00	11
13	20-2107-06-13	F		317681	2103-04-28 09:45:00	1
14	21-2047-04-04	M		309451	2134-09-11 12:17:00	12
15	21-2047-04-04	M		311070	2135-01-30 20:50:00	10
16	22-2131-05-07	F		305315	2106-04-09 12:26:00	3
17	23-2082-07-17			324321	2157-10-18 09:34:00	6
18	23-2131-05-17	M		312050	2101-03-10 07:00:00	2
19	26-2054-05-04	M		379661	2126-05-06 15:16:00	2
20	28-2103-04-15	M		362569	2177-09-01 07:15:00	3
21	30-1872-10-14			304557	2127-10-14 14:17:00	1
22	32-2124-09-29	M		379450	2178-04-04 08:00:00	7
23	33-2124-09-02	M		310376	2124-09-02 10:15:00	3
24	34-1886-07-18	M		315799	2106-07-18 16:46:00	3
25	34-1886-07-18	M		344319	2101-02-23 05:23:00	5
26	35-2052-09-01	F		366797	2122-02-10 11:15:00	10
27	36-2061-08-17	M		322659	2131-05-12 10:40:00	10
28	36-2061-08-17	M		382184	2131-04-30 07:15:00	11
29	36-2061-08-17	M		382184	2131-04-30 07:15:00	4
30	37-2114-09-17	M		388670	2183-08-21 16:48:00	8
31	38-2090-08-31	M		385918	2166-08-10 06:28:00	17
32	39-2114-11-29	F		386732	2114-11-29 21:84:00	1
33	41-2081-05-13	M		310376	2101-03-10 07:00:00	8
34	42-2065-02-25	M		319383	2116-04-26 18:58:00	4
35	43-2153-12-25	M		346628	2106-10-01 23:15:00	16
36	44-2112-09-14	M		381750	2102-11-19 18:14:00	6
37	45-2087-01-13	M		357987	2129-06-10 00:32:00	9
38	46-2106-06-27	M		382184	2131-04-30 07:15:00	2
39	49-2105-12-22	M		349839	2106-11-21 07:15:00	3
40	52-2152-11-26	M		300797	2101-01-10 02:12:00	7
41	56-1804-01-02	F		381711	2104-01-02 02:01:00	4
42	59-2118-10-12	F		304138	2107-11-14 17:07:00	3
43	61-2081-05-23	M		376132	2106-05-23 14:00:00	9
44	61-2081-10-21	M		310376	2101-03-10 07:00:00	12
45	62-2044-05-08	M		316089	2113-02-15 08:19:00	3
46	63-2080-07-07	M		309596	2109-01-07 01:50:00	5
47	64-2116-06-27	F		372056	2143-03-03 09:25:00	2
48	65-2106-01-17	R		343438	2132-08-10 07:13:00	7

17. List of patients who had at least one radiology report from the chest on admission.

SELECT DISTINCT

p.*

FROM Patients p

JOIN Admission a ON a.patient_id = p.patient_id

JOIN Note_Events n ON n.admission_id = a.admission_id

WHERE n.note_type = 'Radiology' AND n.note_text ILIKE '%CHEST%'

AND n.note_time >= a.admit_time

AND (a.discharge_time IS NULL OR n.note_time <= a.discharge_time);

	patient_id	date_of_birth	dob_privacy	gender	life_status
1					
2					
3	2925-04-11	F		M	Expired
4	2143-05-12	F		F	Alive
5	2109-06-21	F		F	Alive
6	2117-11-20	F		M	Alive
7	2305-01-26	F		M	Expired
8	2128-03-12	F		F	Alive
9	2127-02-27	F		F	Alive
10	2116-11-29	F		M	Alive
11	2107-06-13	F		F	Alive
12	2087-01-08	F		M	Expired
13	2103-07-17	F		M	Alive
14	2054-05-04	F		M	Expired
15	2103-04-15	F		M	Alive
16	1872-10-14	F		M	Alive
17	2124-09-29	F		M	Alive
18	2113-05-02	F		M	Alive
19	1886-07-18	F		M	Expired
20	2052-09-01	F		F	Alive
21	2061-08-17	F		M	Alive
22	2114-09-17	F		M	Expired
23	2114-11-31	F		F	Alive
24	2114-11-29	F		F	Alive
25	2076-05-13	F		M	Expired
26	2055-02-25	F		M	Expired
27	2153-12-25	F		M	Alive
28	2111-05-13	F		M	Expired
29	2087-01-13	F		M	Alive
30	2105-12-22	F		M	Alive
31	2152-11-26	F		M	Expired
32	1884-01-02	F		F	Expired
33	2044-05-22	F		M	Expired
34	2044-05-08	F		M	Alive
35	2080-07-07	F		M	Alive
36	2188-08-25	F		F	Alive
37	2084-06-05	F		M	Expired
38					Expired
39	2135-09-01	F		F	Alive
40	2163-09-22	F		M	Alive
41	2070-06-27	F		F	Alive
42	2128-07-01	F		M	Expired
43	2151-10-21	F		F	Expired
44	2096-09-18	F		M	Expired
45	2096-09-18	F		M	Expired

18. List of patients with discharge summary report during the hospitalization.

SELECT p.patient_id, p.date_of_birth, p.gender, a.admission_id, a.admit_time, a.discharge_time, n.note_type, n.author

FROM Patients p

JOIN Admission a ON a.patient_id = p.patient_id

JOIN Note_Events n ON n.admission_id = a.admission_id

WHERE LOWER(n.note_type) = 'discharge summary'

ORDER BY p.patient_id, a.admission_id

LIMIT 50;

	patient_id	date_of_birth	gender	admission_id	admit_time	discharge_time	note_type	author
1								
2								
3	2025-04-11	M		145834	2101-10-20 19:08:00	2101-10-31 13:58:00	Discharge summary	Report
4	2143-05-12	F		185777	2191-03-16 00:28:00	2191-03-23 18:41:00	Discharge summary	Report
5	2109-04-21	F		107062	2175-05-30 07:15:00	2175-06-06 10:00:00	Discharge summary	Report
6	2108-01-26	M		150269	2149-11-14 11:15:00	2149-11-14 11:15:00	Discharge summary	Report
7	2108-01-26	M		180750	2149-11-09 13:06:00	2149-11-14 10:15:00	Discharge summary	Report
8	2103-06-28	F		184167	2103-06-28 11:36:00	2103-07-06 12:10:00	Discharge summary	Report
9	2128-02-22	F		195460	2178-04-16 06:18:00	2178-05-11 19:08:00	Discharge summary	Report
10	2032-03-24	M		112221	2184-08-07 10:15:00	2184-08-20 02:57:00	Discharge summary	Report
11	2127-02-27	F		134053	2167-01-15 13:00:00	2167-01-15 13:00:00	Discharge summary	Report
12	2087-07-14	F		134045	2167-01-08 18:43:00	2167-01-08 18:43:00	Discharge summary	Report
13	2116-11-29	M		101087	2135-05-09 14:11:00	2135-05-13 14:40:00	Discharge summary	Report
14	2087-07-14	F		194021	2134-12-27 07:15:00	2134-12-31 16:05:00	Discharge summary	Report
15	2116-10-29	M		188822	2167-10-10 11:18:00	2167-10-04 16:15:00	Discharge summary	Report
16	2108-01-29	M		188823	2167-10-02 11:18:00	2167-10-04 16:15:00	Discharge summary	Report
17	2116-11-29	M		188824	2167-10-02 11:18:00	2167-10-04 16:15:00	Discharge summary	Report
18	1808-08-05	M		109235	2108-08-16 16:25:00	2108-08-11 11:20:00	Discharge summary	Report
19	2107-06-13	F		157681	2183-04-28 09:45:00	2183-05-03 14:45:00	Discharge summary	Report
20	2107-06-13	F		157681	2183-04-28 09:45:00	2183-05-03 14:45:00	Discharge summary	Report
21	2041-04-04	M		109401	2134-09-12 12:17:00	2134-09-16 10:15:00	Discharge summary	Report
22	2124-04-04	M		110090	2161-09-30 13:45:00	2161-09-30 13:45:00	Discharge summary	Report
23	2131-05-07	F		165315	2196-04-09 12:26:00	2196-04-10 15:54:00	Discharge summary	Report
24	2082-07-17	M		124321	2157-10-18 09:34:00	2157-10-25 14:00:00	Discharge summary	Report
25	2082-07-17	M		152221	2153-09-07 07:15:00	2153-09-08 19:10:00	Discharge summary	Report
26	2100-05-31	M		161859	2139-06-01 16:14:00	2139-06-09 12:48:00	Discharge summary	Report
27	2103-04-15	M		122659	2177-09-23 07:15:00	2177-09-23 07:15:00	Discharge summary	Report
28	2054-05-04	M		197661	2126-05-13 15:16:00	2126-05-13 15:00:00	Discharge summary	Report
29	2103-04-15	M		162569	2177-09-07 07:15:00	2177-09-06 16:00:00	Discharge summary	Report
30	1872-10-14	M		184597	2172-10-14 14:17:00	2172-10-19 14:37:00	Discharge summary	Report
31	2036-05-17	M		128052	2108-08-22 23:27:00	2108-08-30 15:00:00	Discharge summary	Report
32	2132-08-02	M		137876	2116-12-23 22:30:00	2116-12-23 22:45:00	Discharge summary	Report
33	2034-08-02	M		176776	2116-12-23 22:30:00	2116-12-23 22:45:00	Discharge summary	Report
34	1806-07-18	M		144319	2191-02-23 05:23:00	2191-02-25 20:20:00	Discharge summary	Report
35	2052-09-01	F		166707	2122-02-10 11:15:00	2122-02-20 15:30:00	Discharge summary	Report
36	2061-08-17	M		122659	2131-05-12 19:49:00	2131-05-25 13:30:00	Discharge summary	Report
37	2040-05-17	M		161859	2139-05-06 13:16:00	2139-05-20 13:16:00	Discharge summary	Report
38	2051-08-17	M		182194	2121-01-30 07:15:00	2121-01-30 07:15:00	Discharge summary	Report
39	2114-09-17	M		188670	2183-08-21 16:48:00	2183-08-26 18:54:00	Discharge summary	Report
40	2090-08-31	M		185910	2166-08-10 00:28:00	2166-09-04 11:30:00	Discharge summary	Report
41	2076-05-13	M		107057	2132-12-31 10:30:00	2131-01-27 15:45:00	Discharge summary	Report
42	2076-05-13	M		107057	2132-12-31 10:30:00	2131-01-27 15:45:00	Discharge summary	Report
43	2105-02-25	M		119268	2116-04-26 18:58:00	2116-04-30 18:16:00	Discharge summary	Report
44	2105-02-25	M		146828	2186-10-23 23:15:00	2186-10-11 18:00:00	Discharge summary	Report
45	2153-12-25	M		181759	2192-11-19 18:14:00	2192-11-27 14:35:00	Discharge summary	Report
46	2112-09-14	M		181759	2192-11-19 18:14:00	2192-06-20 14:39:00	Discharge summary	Report
47	2057-01-13	M		157907	2129-06-10 00:32:00	2129-06-20 14:39:00	Discharge summary	Report
48	2059-02-21	M		144073	2133-02-20 18:21:00	2133-02-24 14:42:00	Discharge summary	Report

19. List of patients with radiology report or ECG report during the hospitalization.

```
SELECT p.patient_id, p.date_of_birth, p.gender, a.admission_id, a.admit_time, n.note_type,
COUNT(n.note_id) AS report_count
FROM Patients p
```

```
JOIN Admission a ON a.patient_id = p.patient_id
JOIN Note_Events n ON n.admission_id = a.admission_id
WHERE LOWER(n.note_type) IN ('radiology', 'ecg')
GROUP BY p.patient_id, p.date_of_birth, p.gender, a.admission_id, a.admit_time, n.note_type
ORDER BY p.patient_id, a.admission_id, n.note_type;
```

	patient_id	date_of_birth	gender	admission_id	admit_time	note_type	report_count
1	2025-04-11	M		145851	2101-10-29 19:08:00	ECG	9
2	3025-04-11	M		145824	2101-10-29 19:08:00	Radiology	10
3	2025-04-11	M		145824	2101-10-29 19:08:00	Radiology	10
4	2143-05-12	F		185777	2191-03-16 00:28:00	ECG	1
5	4 2143-05-12	F		185777	2191-03-16 00:28:00	Radiology	7
6	2109-06-21	F		107964	2175-05-09 07:15:00	ECG	1
7	6 2109-06-21	F		107964	2175-05-09 07:15:00	Radiology	11
8	2109-06-21	F		107914	2175-05-09 07:15:00	ECG	1
9	2109-06-20	M		159758	2109-11-20 14:02:00	Radiology	1
10	9 2109-06-20	M		159758	2109-11-20 14:02:00	ECG	2
11	2108-01-26	M		159758	2109-11-09 13:06:00	Radiology	10
12	10 2108-01-26	F		184167	2108-06-28 11:36:00	Radiology	1
13	2230-06-22	F		194540	2176-04-16 00:38:00	ECG	2
14	11 2230-06-22	F		194540	2176-04-16 00:38:00	Radiology	13
15	2012-03-24	M		112231	2108-08-28 18:15:00	ECG	4
16	13 2127-02-27	F		143045	2107-01-06 18:15:00	ECG	3
17	13 2127-02-27	F		143045	2107-01-06 18:15:00	Radiology	5
18	2087-07-14	F		161087	2135-06-20 14:11:00	ECG	4
19	2087-07-14	F		161087	2135-06-20 14:11:00	Radiology	1
20	1116-11-29	M		188822	2102-10-02 11:18:00	ECG	3
21	18 2116-11-29	M		188822	2102-10-02 11:18:00	Radiology	1
22	1886-08-05	M		180235	2108-08-05 15:25:00	Radiology	11
23	20 2108-06-13	F		157681	2183-04-29 09:56:00	Radiology	1
24	20 2108-06-13	F		157681	2183-04-29 09:56:00	ECG	5
25	21 2047-04-04	M		186451	2134-09-11 12:17:00	Radiology	12
26	21 2047-04-04	M		111970	2135-01-30 20:59:00	ECG	2
27	21 2047-04-04	M		111970	2135-01-30 20:59:00	Radiology	10
28	22 2131-06-07	F		165315	2106-04-09 12:26:00	ECG	2
29	22 2131-06-07	F		165315	2106-04-09 12:26:00	Radiology	3
30	23 2087-07-17	M		132321	2107-06-18 19:23:00	ECG	3
31	23 2087-07-17	M		124321	2107-06-18 19:23:00	Radiology	6
32	23 2087-07-17	M		152223	2153-09-03 07:15:00	ECG	4
33	23 2087-07-17	M		152223	2153-09-03 07:15:00	Radiology	2
34	24 2108-06-22	M		180235	2108-06-22 01:00:00	ECG	2
35	25 2108-11-21	M		139831	2108-11-02 02:00:00	ECG	7
36	26 2054-05-04	M		197661	2126-05-02 15:16:00	ECG	4
37	26 2054-05-04	M		197661	2126-05-02 15:16:00	Radiology	2
38	28 2103-04-15	M		162569	2177-09-01 07:15:00	ECG	1
39	28 2103-04-15	M		162569	2177-09-01 07:15:00	Radiology	3
40	30 2172-10-14	M		184557	2172-10-14 14:17:00	Radiology	5
41	30 2172-10-14	M		184557	2172-10-14 14:17:00	ECG	1
42	31 2036-09-17	M		128652	2108-06-22 23:27:00	ECG	1
43	32 2124-09-29	M		175411	2170-04-04 00:08:00	ECG	1
44	32 2124-09-29	M		175411	2170-04-04 00:08:00	Radiology	7
45	33 2034-06-02	M		176176	2116-12-23 22:30:00	ECG	1
46	33 2034-06-02	M		176176	2116-12-23 22:30:00	Radiology	3
47	34 1886-07-18	M		115799	2106-07-18 16:46:00	ECG	2
48	34 1886-07-18	M		115799	2106-07-18 16:46:00	Radiology	3

20. Generate a summary report showing for a patient, the total number of admissions, the number of ICU stays, and the number of diagnoses recorded.

```

SELECT p.patient_id, p.date_of_birth, p.gender, COUNT(DISTINCT a.admission_id)
AS total_admissions, COUNT(DISTINCT i.icu_stay_id) AS total_icu_stays, COUNT(DISTINCT
d.diagnosis_id) AS total_diagnoses
FROM Patients p
LEFT JOIN Admission a ON a.patient_id = p.patient_id
LEFT JOIN ICU_Stays i ON i.admission_id = a.admission_id
LEFT JOIN Diagnosis_ICD d ON d.admission_id = a.admission_id
GROUP BY p.patient_id, p.date_of_birth, p.gender
ORDER BY p.patient_id;

```

	patient_id	date_of_birth	gender	total_admissions	total_icu_stays	total_diagnoses
1	2	2138-07-17	M	1	1	3
2	3	2138-08-15	F	1	1	9
3	4	2141-06-12	F	1	1	9
4	5	2103-06-02	M	1	1	3
5	6	2109-06-21	F	1	1	8
6	7	2121-06-23	F	1	2	3
7	8	2121-06-23	M	1	1	6
8	9	2106-06-26	M	1	1	6
9	10	2106-06-29	F	1	1	5
10	11	2128-06-22	F	1	1	1
11	12	2023-01-24	M	1	1	9
12	13	2122-06-27	F	1	1	5
13	14	2111-06-20	M	1	1	5
14	15	2082-07-14	F	2	2	12
15	16	2082-07-14	F	2	2	12
16	17	2116-11-29	M	1	1	13
17	18	1886-08-05	M	1	1	9
18	19	2107-06-13	F	1	1	5
19	20	2080-06-04	M	2	2	39
20	21	2131-06-07	F	1	1	7
21	22	2082-07-17	M	2	2	18
22	23	2082-07-17	M	2	2	18
23	24	2106-05-31	M	1	1	4
24	25	2105-11-21	M	1	1	4
25	26	2059-06-26	M	1	1	9
26	27	2105-11-30	F	1	1	4
27	28	2105-06-15	M	1	1	11
28	29	1872-10-14	M	1	1	9
29	30	2036-05-17	M	1	1	8
30	31	2126-06-29	M	1	1	8
31	32	2135-11-02	M	1	1	3
32	33	1886-07-18	M	2	2	16
33	34	1886-07-18	M	2	2	16
34	35	2052-09-01	F	1	1	11
35	36	2061-08-17	M	3	3	33
36	37	2114-09-17	M	1	1	9
37	38	2035-06-24	M	1	1	13
38	39	2124-11-29	F	1	1	9
39	40	2076-05-13	M	1	2	19
40	41	2055-02-25	M	1	1	7
41	42	2153-12-25	M	1	1	3
42	43	2111-06-04	M	1	1	10
43	44	2087-01-13	M	1	1	8
44	45	2059-06-21	M	1	1	8
45	46	2105-12-22	M	1	1	8
46	47	2121-06-23	M	1	1	11
47	48	2121-06-23	M	1	1	5
48	49	2153-11-26	M	1	1	9
49	50	2124-06-31	M	1	1	5