

PROJECT REPORT
DATABASE TECHNOLOGY

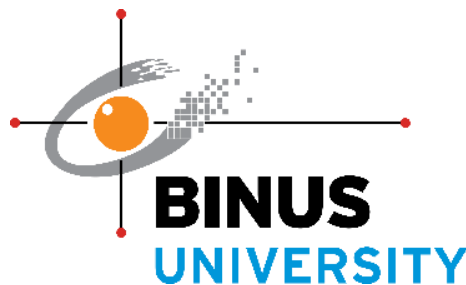
**Hotel Management System untuk Mengatasi Masalah Terkait Reservasi
dan Management Keuangan**

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BINUS University

2023

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BAB I

PENDAHULUAN

1.1 Latar Belakang

Industri perhotelan merupakan sektor yang terus berkembang seiring dengan pertumbuhan pariwisata global. Dalam menghadapi perkembangan ini, hotel-hotel perlu mengelola berbagai aspek, termasuk reservasi dan keuangan, dengan efisien dan akurat. Beberapa tantangan umum yang dihadapi oleh manajemen hotel adalah kurangnya kontrol terhadap reservasi, kesalahan dalam pelacakan keuangan, dan kesulitan dalam mengoptimalkan ketersediaan kamar.

1. Ketidakefisienan dalam Proses Reservasi:
 - Proses reservasi yang manual seringkali rentan terhadap kesalahan dan kebingungan, terutama dalam situasi tingkat pemesanan yang tinggi.
 - Kurangnya integrasi antara berbagai platform pemesanan online dan sistem internal hotel dapat menyebabkan penundaan atau kehilangan reservasi.
2. Kesulitan dalam Mengelola Ketersediaan Kamar:
 - Manajemen hotel sering kesulitan dalam mengoptimalkan ketersediaan kamar untuk memaksimalkan pendapatan.
 - Tanpa sistem yang efektif, dapat terjadi overbooking atau kekurangan kamar, yang berdampak pada kepuasan tamu dan pendapatan.
3. Tantangan dalam Pelacakan Keuangan:
 - Pengelolaan keuangan yang tidak efisien dapat mengarah pada kesalahan perhitungan, pembayaran yang terlewat, atau kehilangan dana.
 - Kesulitan dalam menyusun laporan keuangan secara real-time dapat menghambat pengambilan keputusan yang cepat.
4. Kebutuhan Akan Analisis Data:
 - Tanpa sistem yang mendukung analisis data, manajemen hotel sulit untuk mengidentifikasi tren, preferensi tamu, dan peluang peningkatan keuntungan.
5. Tingginya Persaingan dalam Industri:
 - Persaingan yang ketat dalam industri perhotelan menuntut efisiensi operasional dan keunggulan layanan untuk mempertahankan dan menarik tamu.

Untuk mengatasi tantangan-tantangan ini, Hotel Management System menjadi sangat penting. Sistem ini diharapkan dapat menyediakan solusi terpadu untuk manajemen reservasi dan keuangan, meningkatkan efisiensi operasional, mengoptimalkan pemanfaatan kamar, dan memberikan wawasan berharga melalui analisis data. Dengan adanya sistem ini, diharapkan hotel dapat meningkatkan layanan kepada tamu, meningkatkan pendapatan, dan tetap bersaing di pasar yang semakin dinamis.

Kasus yang kami gunakan merupakan kasus yang berkaitan dengan tema *tourism* yaitu berkaitan dengan masalah manajemen data di sebuah hotel. Dalam manajemen hotel sendiri,

banyak hal yang perlu diperhatikan seperti data pelanggan, data reservasi, data transaksi, dll. Secara detail, berikut merupakan rincian dari kasus kami :

Nani, seorang data scientist berbakat, ditugaskan untuk memperbaiki sistem database Hotel Aliong yang telah berdiri sejak tahun 1945. Meskipun terkenal, hotel ini mengalami masalah serius dalam sistem reservasi dan pembayaran. Pelanggan sering mengeluhkan adanya data ganda pada sistem reservasi serta pembayaran. Tantangan utama yang dihadapi oleh Nani adalah mengembangkan sistem database yang dapat menyimpan dengan efisien data pelanggan, termasuk data reservasi dengan informasi check-in dan check-out, data ruangan hotel, dan transaksi pembayaran pelanggan. Nani dituntut untuk menciptakan solusi yang dapat meningkatkan akurasi dan keandalan sistem, sehingga Hotel Aliong dapat memberikan pelayanan yang lebih baik kepada pelanggan dan memulihkan reputasinya di industri perhotelan.

BAB II

RUMUSAN MASALAH

1.1 Rumusan Masalah

Dalam kasus tersebut, beberapa masalah yang dapat terjadi antara lain:

1. Data Ganda dan Kehilangan Data: Masalah utama yang dihadapi Hotel Aliong adalah adanya data ganda dan kehilangan data pada reservasi serta pembayaran. Hal ini dapat mengakibatkan ketidakakuratan informasi, kesulitan dalam pelacakan transaksi, dan mengganggu pengalaman pelanggan.
2. Ketidakefisienan Sistem Reservasi: Sistem reservasi yang tidak efisien dapat menyebabkan pelanggan melakukan reservasi ganda atau kesulitan mendapatkan informasi yang akurat mengenai ketersediaan ruangan. Ini dapat merugikan tidak hanya pelanggan tetapi juga mengganggu operasional hotel.
3. Masalah Sistem Pembayaran: Keluhan mengenai sistem pembayaran yang bermasalah menunjukkan kemungkinan adanya kesalahan dalam pemrosesan transaksi. Ini bisa mencakup double charging, kesalahan jumlah pembayaran, atau kegagalan dalam merekam transaksi dengan benar.
4. Reputasi Menurun: Keluhan berulang dari pelanggan terkait dengan sistem reservasi dan pembayaran dapat merugikan reputasi Hotel Aliong. Reputasi yang buruk dapat berdampak negatif pada jumlah pelanggan yang kembali dan menurunkan daya tarik hotel di pasar.
5. Ketidakhandalan Data Ruangan: Jika data ruangan tidak dikelola dengan baik, hotel dapat menghadapi masalah seperti double booking atau kesulitan mengoptimalkan penggunaan ruangan. Hal ini dapat merugikan efisiensi operasional dan pengalaman pelanggan.

DATASET

2.1 Dataset

Berikut adalah deskripsi dari sample daya yang kami gunakan:

Beats ID		Open ID	First Name	Date of Birth	Address	Phone	Payment ID	Draw Number	Draw Name	Draw Date	Prize per Night	Cash Prize	Months	Check In Date	Check Out Date	Days Spent	Prize(s) Won	Prize(s) Won	
BO001-1001-BO001-1001	C1801	1801	John	1954-01-01	11 Malar St, 12, Kuching, Brunei Darussalam	03-62407000	P0001-1001	AS01	AS01-AS01	AS01-01	RM 100.00	RM 100.00	1	2021-11-01	2021-11-01	1	2 (AS01-01)	Draw	2021-11-01
BO01-1001	C1801	1801	John	1954-01-01	11 Malar St, 12, Kuching, Brunei Darussalam	03-62407000	P0001-1001	AS01	AS01-01	AS01-01	RM 100.00	RM 100.00	1	2021-11-01	2021-11-01	1	2 (AS01-01)	Draw	2021-11-01
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BO01-1001	C1801	1801	John	1954-01-01	11 Malar St, 12, Kuching, Brunei Darussalam	03-62407000	P0001-1001	AS01	AS01-01	AS01-01	RM 100.00	RM 100.00	1	2021-11-01	2021-11-01	1	2 (AS01-01)	Draw	2021-11-01
BO01-1001-1001-1001	C1801	1801	John	1954-01-01	11 Malar St, 12, Kuching, Brunei Darussalam	03-62407000	P0001-1001	AS01	AS01-01	AS01-01	RM 100.00	RM 100.00	1	2021-11-01	2021-11-01	1	2 (AS01-01)	Draw	2021-11-01
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BS00002	BS00002	Jane Smith	456 Elm St	987654321	456 Elm St	987654321	jane.smith@456elmst.com	BS00002	0002	San Francisco	San Francisco	415-555-5678	15	Available	2023-10-02	2023-10-02	987654321	San Francisco	BS00002
BS00003	BS00003	Mike Johnson	789 Oak St	234567890	789 Oak St	234567890	mike.johnson@789oakst.com	BS00003	0003	San Francisco	San Francisco	415-555-9012	20	Available	2023-10-03	2023-10-03	234567890	San Francisco	BS00003
BS00004	BS00004	Sarah Lee	101 Pine St	345678901	101 Pine St	345678901	sarah.lee@101pinest.com	BS00004	0004	San Francisco	San Francisco	415-555-3456	12	Available	2023-10-04	2023-10-04	345678901	San Francisco	BS00004
BS00005	BS00005	David Kim	202 Cedar St	456789012	202 Cedar St	456789012	david.kim@202cedarst.com	BS00005	0005	San Francisco	San Francisco	415-555-7890	18	Available	2023-10-05	2023-10-05	456789012	San Francisco	BS00005
BS00006	BS00006	Emily White	303 Birch St	567890123	303 Birch St	567890123	emily.white@303birchst.com	BS00006	0006	San Francisco	San Francisco	415-555-2345	14	Available	2023-10-06	2023-10-06	567890123	San Francisco	BS00006
BS00007	BS00007	Chris Brown	404 Maple St	678901234	404 Maple St	678901234	chris.brown@404maplest.com	BS00007	0007	San Francisco	San Francisco	415-555-6789	16	Available	2023-10-07	2023-10-07	678901234	San Francisco	BS00007
BS00008	BS00008	Alex Green	505 Spruce St	789012345	505 Spruce St	789012345	alex.green@505sprucest.com	BS00008	0008	San Francisco	San Francisco	415-555-0123	11	Available	2023-10-08	2023-10-08	789012345	San Francisco	BS00008
BS00009	BS00009	Mia Black	606 Ash St	890123456	606 Ash St	890123456	mia.black@606ashst.com	BS00009	0009	San Francisco	San Francisco	415-555-4567	13	Available	2023-10-09	2023-10-09	890123456	San Francisco	BS00009
BS00010	BS00010	Noah Gray	707 Redwood St	901234567	707 Redwood St	901234567	noah.gray@707redwoodst.com	BS00010	0010	San Francisco	San Francisco	415-555-8901	17	Available	2023-10-10	2023-10-10	901234567	San Francisco	BS00010
BS00011	BS00011	Liam King	808 Sycamore St	012345678	808 Sycamore St	012345678	liam.king@808sycamorest.com	BS00011	0011	San Francisco	San Francisco	415-555-2345	19	Available	2023-10-11	2023-10-11	012345678	San Francisco	BS00011
BS00012	BS00012	Olivia Queen	909 Dogwood St	123456789	909 Dogwood St	123456789	olivia.queen@909dogwoodst.com	BS00012	0012	San Francisco	San Francisco	415-555-6789	15	Available	2023-10-12	2023-10-12	123456789	San Francisco	BS00012
BS00013	BS00013	Ethan Prince	1010 Magnolia St	234567890	1010 Magnolia St	234567890	ethan.prince@1010magnolast.com	BS00013	0013	San Francisco	San Francisco	415-555-0123	21	Available	2023-10-13	2023-10-13	234567890	San Francisco	BS00013
BS00014	BS00014	Ava Duke	1111 Palm St	345678901	1111 Palm St	345678901	ava.duke@1111palmst.com	BS00014	0014	San Francisco	San Francisco	415-555-4567	12	Available	2023-10-14	2023-10-14	345678901	San Francisco	BS00014
BS00015	BS00015	Lucas Duke	1212 Cypress St	456789012	1212 Cypress St	456789012	lucas.duke@1212cypressst.com	BS00015	0015	San Francisco	San Francisco	415-555-8901	14	Available	2023-10-15	2023-10-15	456789012	San Francisco	BS00015
BS00016	BS00016	Isabella Duke	1313 Fir St	567890123	1313 Fir St	567890123	isabella.duke@1313first.com	BS00016	0016	San Francisco	San Francisco	415-555-2345	16	Available	2023-10-16	2023-10-16	567890123	San Francisco	BS00016
BS00017	BS00017	Benjamin Duke	1414 Juniper St	678901234	1414 Juniper St	678901234	benjamin.duke@1414juniperst.com	BS00017	0017	San Francisco	San Francisco	415-555-6789	18	Available	2023-10-17	2023-10-17	678901234	San Francisco	BS00017
BS00018	BS00018	Charlotte Duke	1515 Willow St	789012345	1515 Willow St	789012345	charlotte.duke@1515willowst.com	BS00018	0018	San Francisco	San Francisco	415-555-0123	10	Available	2023-10-18	2023-10-18	789012345	San Francisco	BS00018
BS00019	BS00019	William Duke	1616 Hickory St	890123456	1616 Hickory St	890123456	william.duke@1616hickorst.com	BS00019	0019	San Francisco	San Francisco	415-555-4567	12	Available	2023-10-19	2023-10-19	890123456	San Francisco	BS00019
BS00020	BS00020	Grace Duke	1717 Chestnut St	901234567	1717 Chestnut St	901234567	grace.duke@1717chestnutst.com	BS00020	0020	San Francisco	San Francisco	415-555-8901	14	Available	2023-10-20	2023-10-20	901234567	San Francisco	BS00020

link data: [+ FINAL DATA BASE AOL](#) (Bagian UNF)

2.2 Anomali Data

Dalam data ini terdapat beberapa atribut seperti Booking ID, Guest ID, First Name, Last Name, Date Of Birth, Address, Phone, Email, PaymentID, RoomNumber, TypeID, Room Name, Price per Night, Capacity, StatusID, CheckInDate, CheckOutDate, DaySpend, Payment MethodID, PaymentMethod, dan PaymentDate. Ini masih berupa sebuah data mentah yang masih menimbulkan banyak anomali nantinya.

Anomali-anomali yang dapat terjadi:

- Terdapat data ganda di beberapa atribut seperti BookingID, RoomNumber,TypeID, RoomName, PricePerNight, dan yang terakhir ialah Capacity . Hal ini dapat membuat proses pencarian, pengelolaan, dan pembaharuan data menjadi sulit bagi pengelola nantinya.
- Selain itu, dengan adanya penggandaan data ini bisa membuat terjadinya kesalahan dalam proses selain database, contohnya proses auditing, dllnya.

BAB IV

NORMALISASI

3.1 UNF

RoomID	GuestID	First Name	Last Name	Date Of Birth	Address	Phone	Email	RoomTypeID	RoomNumber	Capacity	StatusID	Check In Date	Check Out Date	Days Spent	Amount Paid	Payment Method	Payment Date
ROOM011001	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0001	A0101	4	Available	2023-11-01	2023-11-01	1	CA123456	Cash	2023-10-30
ROOM011002	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0002	A0102	4	Available	2023-11-01	2023-11-01	2	CA123456	Cash	2023-10-30
ROOM011003	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0003	A0103	4	Available	2023-11-01	2023-11-01	3	CA123456	Cash	2023-10-30
ROOM011004	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0004	A0104	4	Available	2023-11-01	2023-11-01	4	CA123456	Cash	2023-10-30
ROOM011005	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0005	A0105	4	Available	2023-11-01	2023-11-01	5	CA123456	Cash	2023-10-30
ROOM011006	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0006	A0106	4	Available	2023-11-01	2023-11-01	6	CA123456	Cash	2023-10-30
ROOM011007	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0007	A0107	4	Available	2023-11-01	2023-11-01	7	CA123456	Cash	2023-10-30
ROOM011008	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0008	A0108	4	Available	2023-11-01	2023-11-01	8	CA123456	Cash	2023-10-30
ROOM011009	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0009	A0109	4	Available	2023-11-01	2023-11-01	9	CA123456	Cash	2023-10-30
ROOM011010	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0010	A0110	4	Available	2023-11-01	2023-11-01	10	CA123456	Cash	2023-10-30

RoomID	GuestID	First Name	Last Name	Date Of Birth	Address	Phone	Email	RoomTypeID	RoomNumber	Capacity	StatusID	Check In Date	Check Out Date	Days Spent	Amount Paid	Payment Method	Payment Date
ROOM011011	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0011	A0111	4	Available	2023-11-01	2023-11-01	11	CA123456	Cash	2023-10-30
ROOM011012	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0012	A0112	4	Available	2023-11-01	2023-11-01	12	CA123456	Cash	2023-10-30
ROOM011013	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0013	A0113	4	Available	2023-11-01	2023-11-01	13	CA123456	Cash	2023-10-30
ROOM011014	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0014	A0114	4	Available	2023-11-01	2023-11-01	14	CA123456	Cash	2023-10-30
ROOM011015	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0015	A0115	4	Available	2023-11-01	2023-11-01	15	CA123456	Cash	2023-10-30
ROOM011016	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0016	A0116	4	Available	2023-11-01	2023-11-01	16	CA123456	Cash	2023-10-30
ROOM011017	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0017	A0117	4	Available	2023-11-01	2023-11-01	17	CA123456	Cash	2023-10-30
ROOM011018	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0018	A0118	4	Available	2023-11-01	2023-11-01	18	CA123456	Cash	2023-10-30
ROOM011019	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0019	A0119	4	Available	2023-11-01	2023-11-01	19	CA123456	Cash	2023-10-30
ROOM011020	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0020	A0120	4	Available	2023-11-01	2023-11-01	20	CA123456	Cash	2023-10-30

link data: [📄 FINAL DATA BASE AOL \(Bagian UNF\)](#)

3.2 1NF

Setiap kolom dalam tabel harus memiliki nilai atomik, yaitu nilai tunggal yang tidak dapat dibagi lagi.

RoomID	GuestID	First Name	Last Name	Date Of Birth	Address	Phone	Email	RoomTypeID	RoomNumber	Capacity	StatusID	Check In Date	Check Out Date	Days Spent	Amount Paid	Payment Method	Payment Date
ROOM011021	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0021	A0121	4	Available	2023-11-01	2023-11-01	21	CA123456	Cash	2023-10-30
ROOM011022	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0022	A0122	4	Available	2023-11-01	2023-11-01	22	CA123456	Cash	2023-10-30
ROOM011023	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0023	A0123	4	Available	2023-11-01	2023-11-01	23	CA123456	Cash	2023-10-30
ROOM011024	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0024	A0124	4	Available	2023-11-01	2023-11-01	24	CA123456	Cash	2023-10-30
ROOM011025	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0025	A0125	4	Available	2023-11-01	2023-11-01	25	CA123456	Cash	2023-10-30
ROOM011026	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0026	A0126	4	Available	2023-11-01	2023-11-01	26	CA123456	Cash	2023-10-30
ROOM011027	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0027	A0127	4	Available	2023-11-01	2023-11-01	27	CA123456	Cash	2023-10-30
ROOM011028	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0028	A0128	4	Available	2023-11-01	2023-11-01	28	CA123456	Cash	2023-10-30
ROOM011029	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0029	A0129	4	Available	2023-11-01	2023-11-01	29	CA123456	Cash	2023-10-30
ROOM011030	CT0001	Aleng	Gallagher	1991-10-01	B. Mahal No. 123, Kalyanapur Bares, Jakarta Selatan	81254567890	aleng.gallagher@gmail.com	PA001A0030	A0130	4	Available	2023-11-01	2023-11-01	30	CA123456	Cash	2023-10-30

link data: [📄 FINAL DATA BASE AOL \(Bagian 1NF\)](#)

Dari tabel ini terlihat adanya penguraian data agar tidak terjadi data berganda karena tujuan kita pada fase ini adalah membuat data yang hanya memiliki nilai atomik artinya dalam isi tabel dalam setiap baris ialah tunggal atau utuh sehingga tidak menimbulkan anomali yang dapat menyulitkan terjadinya proses pengelolaan data nantinya.

Berikut yang dilakukan dari sesi ini ialah:

- ❖ Menguraikan atribut BookingID
- ❖ Menguraikan atribut RoomNumber
- ❖ Menguraikan atribut TypeID
- ❖ Menguraikan atribut RoomName
- ❖ Menguraikan atribut PricePerNight
- ❖ Menguraikan atribut Capacity

3.3 2NF

- Tabel harus sudah berada dalam 2NF.
- Tabel tidak boleh memiliki dependensi parsial fungsional pada primary key. Dengan kata lain, setiap kolom non-key harus sepenuhnya bergantung pada seluruh primary key.

Booking ID	Guest ID	First Name	Last Name	Date Of Birth	Address	Phone	Email	PaymentID	RoomNumber	RoomType	Room Name	Price per Night	Capacity	StatusID	Check In Date	Check Out Date	Day Spend	Payment Method	Payment Method	Payment Date
BO001CU001	CU001	Along	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	along.gallagher@gmail.com	PA001AH001	A0101	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	CA123456	Cash	2023-10-30
BO002CU001	CU001	Along	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	along.gallagher@gmail.com	PA001AH001	A0102	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	CA123456	Cash	2023-10-30
BO003CU001	CU001	Along	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	along.gallagher@gmail.com	PA001AH001	A0103	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	CA123456	Cash	2023-10-30
BO004CU001	CU002	Mei Mei	Rodriguez	1994-12-15	Perumahan Bunga Indah Blok C2 No. 45, Bandung	85678901234	mei.rodriguez@gmail.com	PA001AH002	A0201	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	DB123456	Debit	2023-11-01
BO005CU001	CU003	Oliver	Groud	1990-03-28	Jl. Kenari No. 67, Surabaya	81112223344	oliver.groud@gmail.com	PA001AH003	A0104	AH-TB69	Twin Bed	Rp2,000,000	2	Available	2023-11-01	2023-11-01	2	CA123456	Cash	2023-10-28
BO006CU001	CU003	Oliver	Groud	1990-03-28	Jl. Kenari No. 67, Surabaya	81112223344	oliver.groud@gmail.com	PA001AH003	A0106	AH-TB69	Twin Bed	Rp2,000,000	2	Available	2023-11-01	2023-11-01	2	CA123456	Cash	2023-10-28
BO007CU001	CU004	Ling Ling	Chang	1993-07-09	Komplek Permata Hijau Blok D10, Medan	823344455667	lingling.chang@gmail.com	PA001AH004	A0107	AH-FA69	Family	Rp4,000,000	4	Available	2023-11-01	2023-11-01	3	CA123456	Cash	2023-10-21
BO008CU001	CU005	Sebastian	Vetel	1997-09-06	Gang Nuri No. 22, Denpasar, Bali	87654321098	sebastian.vetel@gmail.com	PA001AH005	A0108	AH-FA69	Family	Rp4,000,000	4	Available	2023-11-01	2023-11-01	3	DB123456	Debit	2023-10-25
BO009CU001	CU005	Sebastian	Vetel	1997-09-06	Gang Nuri No. 22, Denpasar, Bali	87654321098	sebastian.vetel@gmail.com	PA001AH005	A0109	AH-PR69	Party Room	Rp8,000,000	8	Available	2023-11-01	2023-11-01	3	DB123456	Debit	2023-10-21
BO010CU001	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0101	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	KB123456	Kredit	2023-09-04
BO011CU001	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0102	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	KB123456	Kredit	2023-09-04
BO012CU001	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0201	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	KB123456	Kredit	2023-09-04
BO013CU001	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0202	AH-SP69	Solo Player	Rp1,000,000	1	Available	2023-11-01	2023-11-01	2	KB123456	Kredit	2023-09-04
BO014CU001	CU007	Achai	Lawson	1996-02-19	Perumahan Citra Harmoni Blok E5/12, Semarang	83112233445	achai.lawson@gmail.com	PA001AH007	A0108	AH-TB69	Twin Bed	Rp2,000,000	2	Occupied	2023-11-01	2023-11-06	3	DB123456	Debit	2023-10-21
BO015CU001	CU008	Athar	Harrison	1998-11-24	Perumahan Citra Harmoni Blok E5/12, Semarang	83112233445	athar.harrison@gmail.com	PA001AH008	A0209	AH-PR69	Party Room	Rp8,000,000	8	Occupied	2023-11-01	2023-11-07	3	DB123456	Debit	2023-10-25
BO016CU001	CU009	Afeng	Park	1999-08-30	Komplek Puri Anjasmoro Blok F3/19, Solo	82998877665	afeng.park@gmail.com	PA001AH009	A0110	AH-PR69	Party Room	Rp8,000,000	8	Occupied	2023-11-01	2023-11-07	3	CA123456	Cash	2023-09-16
BO017CU010	CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com	PA001AH010	A0205	AH-PR69	Party Room	Rp8,000,000	8	Occupied	2023-11-04	2023-11-08	4	KB123456	Kredit	2023-11-04
BO018CU010	CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com	PA001AH010	A0206	AH-PR69	Party Room	Rp8,000,000	8	Occupied	2023-11-04	2023-11-08	4	KB123456	Kredit	2023-11-04
BO019CU010	CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com	PA001AH010	A0207	AH-PR69	Party Room	Rp8,000,000	8	Occupied	2023-11-04	2023-11-08	4	KB123456	Kredit	2023-11-04

(Tabel 1NF)

Entity Room					
RoomNumber	TypeID	Room Name	Price per Night	Capacity	StatusID
A0101	AH-SP69	Solo Player	Rp1,000,000	1	Available
A0102	AH-SP69	Solo Player	Rp1,000,000	1	Available
A0103	AH-SP69	Solo Player	Rp1,000,000	1	Available
A0104	AH-TB69	Twin Bed	Rp2,000,000	2	Occupied
A0105	AH-TB69	Twin Bed	Rp2,000,000	2	Occupied
A0106	AH-TB69	Twin Bed	Rp2,000,000	2	Available
A0107	AH-FA69	Family	Rp4,000,000	4	Available
A0108	AH-FA69	Family	Rp4,000,000	4	Available
A0109	AH-PR69	Party Room	Rp8,000,000	8	Available
A0110	AH-PR69	Party Room	Rp8,000,000	8	Occupied
A0201	AH-SP69	Solo Player	Rp1,000,000	1	Available
A0202	AH-SP69	Solo Player	Rp1,000,000	1	Available
A0203	AH-SP69	Solo Player	Rp1,000,000	1	Available
A0204	AH-TB69	Twin Bed	Rp2,000,000	2	Available
A0205	AH-TB69	Twin Bed	Rp2,000,000	2	Occupied
A0206	AH-TB69	Twin Bed	Rp2,000,000	2	Occupied
A0207	AH-FA69	Family	Rp4,000,000	4	Occupied
A0208	AH-FA69	Family	Rp4,000,000	4	Available
A0209	AH-PR69	Party Room	Rp8,000,000	8	Occupied
A0210	AH-PR69	Party Room	Rp8,000,000	8	Available

(Tabel Room)

Entity Booking																				
Booking ID	Guest ID	First Name	Last Name	Date Of Birth	Address	Phone	Email	PaymentID	RoomNumber	Check In Date	Check Out Date	Day Spend								
BO001CU001	CU001	Along	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	along.gallagher@gmail.com	PA001AH001	A0101	2023-11-01	2023-11-03	2								
BO002CU001	CU001	Along	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	along.gallagher@gmail.com	PA001AH001	A0102	2023-11-01	2023-11-03	2								
BO003CU001	CU001	Along	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	along.gallagher@gmail.com	PA001AH001	A0103	2023-11-01	2023-11-03	2								
BO004CU002	CU002	Mei Mei	Rodriguez	1994-12-15	Perumahan Bunga Indah Blok C2 No. 45, Bandung	85678901234	mei.rodriguez@gmail.com	PA001AH002	A0201	2023-11-01	2023-11-03	2								
BO005CU003	CU003	Oliver	Groud	1990-03-28	Jl. Kenari No. 67, Surabaya	81112223344	oliver.groud@gmail.com	PA001AH003	A0104	2023-11-01	2023-11-03	2								
BO006CU003	CU003	Oliver	Groud	1990-03-28	Jl. Kenari No. 67, Surabaya	81112223344	oliver.groud@gmail.com	PA001AH003	A0106	2023-11-01	2023-11-03	2								
BO007CU004	CU004	Ling Ling	Chang	1993-07-09	Komplek Permata Hijau Blok D10, Medan	823344455667	lingling.chang@gmail.com	PA001AH004	A0107	2023-11-02	2023-11-05	3								
BO008CU005	CU005	Sebastian	Vetel	1997-09-06	Gang Nuri No. 22, Denpasar, Bali	87654321098	sebastian.vetel@gmail.com	PA001AH005	A0108	2023-11-02	2023-11-05	3								
BO009CU005	CU005	Sebastian	Vetel	1997-09-06	Gang Nuri No. 22, Denpasar, Bali	87654321098	sebastian.vetel@gmail.com	PA001AH005	A0109	2023-11-02	2023-11-05	3								
BO010CU006	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0101	2023-11-03	2023-11-05	2								
BO011CU006	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0102	2023-11-03	2023-11-05	2								
BO012CU006	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0201	2023-11-03	2023-11-05	2								
BO013CU006	CU006	Hansen	Tukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tukamoto@gmail.com	PA001AH006	A0202	2023-11-03	2023-11-05	2								
BO014CU007	CU007	Achai	Lawson	1996-02-19	Perumahan Citra Harmoni Blok E5/12, Semarang	83112233445	achai.lawson@gmail.com	PA001AH007	A0104	2023-11-03	2023-11-06	3								
BO015CU007	CU007	Achai	Lawson	1996-02-19	Perumahan Citra Harmoni Blok E5/12, Semarang	83112233445	achai.lawson@gmail.com	PA001AH007	A0105	2023-11-03	2023-11-06	3								
BO016CU008	CU008	Athar	Harrison	1998-11-24	Jl. Raya Serpong No. 55, Tangerang	81998877665	athar.harrison@gmail.com	PA001AH008	A0209	2023-11-04	2023-11-07	3								
BO017CU009	CU009	Afeng	Park	1999-08-30	Komplek Puri Anjasmoro Blok F3/19, Solo	82998877665	afeng.park@gmail.com	PA001AH009	A0110	2023-11-04	2023-11-07	3								
BO018CU010	CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com	PA001AH010	A0205	2023-11-04	2023-11-08	4								
BO019CU010	CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com	PA001AH010	A0206	2023-11-04	2023-11-08	4								
BO020CU010	CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com	PA001AH010	A0207	2023-11-04	2023-11-08	4								

(Table Booking)

Entity Payment				
Payment ID	Payment MethodID	PaymentMethod	Total Amount	Payment Date
PA001AH001	CA123AH	Cash	Rp6,000,000	2023-09-01
PA001AH002	DE123AH	Debit	Rp2,000,000	2023-11-01
PA001AH003	CA123AH	Cash	Rp8,000,000	2023-10-28
PA001AH004	CA123AH	Cash	Rp12,000,000	2023-10-12
PA001AH005	KR123AH	Kredit	Rp36,000,000	2023-10-23
PA001AH006	KR123AH	Kredit	Rp8,000,000	2023-09-04
PA001AH007	DE123AH	Debit	Rp12,000,000	2023-10-21
PA001AH008	CA123AH	Cash	Rp24,000,000	2023-09-16
PA001AH009	DE123AH	Debit	Rp24,000,000	2023-09-29
PA001AH010	KR123AH	Kredit	Rp32,000,000	2023-11-04

Untuk Payment Date dapat dibayarkan sebelum dari tanggal CheckIn dan saat hari CheckIn

(Table Payment)

link data: [FINAL DATA BASE AOL](#) (Bagian 2NF)

Dalam proses ini, kami memisahkan *candidate key* yang berpotensi menjadi *primary key* yang kemudian bertujuan agar menghilangkan dependensi parsial fungsional sehingga tercapai normalisasi 2NF.

Secara rinci, yang dilakukan dari sesi ini ialah:

- ❖ Menguraikan tabel INF menjadi tabel Room, tabel Booking, dan tabel Payment

3.4 3NF

- Tabel harus sudah berada dalam 3NF.
- Tidak boleh ada dependensi fungsional transitive. Artinya, kolom non-key tidak boleh bergantung pada kolom non-key lainnya.
- Tabel tidak boleh memiliki dependensi transitif antara *non-key* dengan *non-key*.

Dengan kata lain, setiap kolom non-key secara tidak langsung bergantung pada satu atau beberapa kolom *non-key* melalui perantara.

Booking ID	Guest ID	First Name	Last Name	Date Of Birth	Address	Phone	Email	PaymentID	RoomNumber	TypeID	Room Name	Price per Night	Capacity	StatusID	Check In Date	Check Out Date	One Night	Payment MethodID	PaymentMethod	Payment Date
BOOK01C1001	C1001	Aliang	Gallagher	1991-10-01	B. Mahat No. 123, Kebayoran Baru, Jakarta Selatan	0123456789	aliang.gallagher@gmail.com	PA001AH001	A0101	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	CA123AH	Cash	2023-09-01
BOOK02C1001	C1001	Aliang	Gallagher	1991-10-01	B. Mahat No. 123, Kebayoran Baru, Jakarta Selatan	0123456789	aliang.gallagher@gmail.com	PA001AH001	A0102	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	CA123AH	Cash	2023-09-01
BOOK03C1001	C1001	Aliang	Gallagher	1991-10-01	B. Mahat No. 123, Kebayoran Baru, Jakarta Selatan	0123456789	aliang.gallagher@gmail.com	PA001AH001	A0103	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	CA123AH	Cash	2023-09-01
BOOK04C1002	C1002	Mai Mei	Bookman	1994-12-15	Pemulasihan Bering Indah Blok C2 No. 45, Bandung	0567890123	mai.mei@bookman.com	PA001AH002	A0201	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	DE123AH	Debit	2023-11-01
BOOK05C1003	C1003	Oliver	General	1990-03-20	R. Kurnia No. 67, Surabaya	0112233445	oliver.general@gmail.com	PA001AH003	A0104	A15-TB01	Twin Bed	Rp2,000,000	2	Available	2023-11-01	2023-11-03	2	CA123AH	Cash	2023-10-28
BOOK06C1002	C1003	Oliver	General	1990-03-20	R. Kurnia No. 67, Surabaya	0112233445	oliver.general@gmail.com	PA001AH003	A0106	A15-TB01	Twin Bed	Rp2,000,000	2	Available	2023-11-01	2023-11-03	2	CA123AH	Cash	2023-10-28
BOOK07C1004	C1004	Lara Lee	Chang	1995-07-09	Kempulok Permai Ujung Blok D10, Medan	0155445567	lara.lee@chang.com	PA001AH004	A0107	A15-FAM01	Family	Rp4,000,000	4	Available	2023-11-02	2023-11-05	3	CA123AH	Cash	2023-10-12
BOOK08C1005	C1005	Schulman	Vitald	1997-01-06	Gang Nuri No. 22, Depasari, Bali	0795432109	schulman.vitald@gmail.com	PA001AH005	A0108	A15-FAM01	Family	Rp4,000,000	4	Available	2023-11-02	2023-11-05	3	KR123AH	Kredit	2023-10-23
BOOK09C1005	C1005	Schulman	Vitald	1997-01-06	Gang Nuri No. 22, Depasari, Bali	0795432109	schulman.vitald@gmail.com	PA001AH005	A0109	A15-FAM01	Family	Rp4,000,000	4	Available	2023-11-02	2023-11-05	3	KR123AH	Kredit	2023-10-23
BOOK10C1006	C1006	Hansen	Indakanto	1992-05-12	R. Cempaka Putih No. 98, Yogyakarta	0897654321	hansen.indakanto@gmail.com	PA001AH006	A0101	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	KR123AH	Kredit	2023-09-04
BOOK11C1006	C1006	Hansen	Indakanto	1992-05-12	R. Cempaka Putih No. 98, Yogyakarta	0897654321	hansen.indakanto@gmail.com	PA001AH006	A0102	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	KR123AH	Kredit	2023-09-04
BOOK12C1006	C1006	Hansen	Indakanto	1992-05-12	R. Cempaka Putih No. 98, Yogyakarta	0897654321	hansen.indakanto@gmail.com	PA001AH006	A0201	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	KR123AH	Kredit	2023-09-04
BOOK13C1006	C1006	Hansen	Indakanto	1992-05-12	R. Cempaka Putih No. 98, Yogyakarta	0897654321	hansen.indakanto@gmail.com	PA001AH006	A0202	A15-SM01	Single Room	Rp1,000,000	1	Available	2023-11-01	2023-11-03	2	KR123AH	Kredit	2023-09-04
BOOK14C1007	C1007	Achal	Larson	1996-02-19	Pemulasihan Cita Hartono Blok E57.2, Semarang	0311233445	achal.larson@gmail.com	PA001AH007	A0104	A15-TB01	Twin Bed	Rp2,000,000	2	Occupied	2023-11-01	2023-11-06	5	DE123AH	Debit	2023-10-21
BOOK15C1007	C1007	Achal	Larson	1996-02-19	Pemulasihan Cita Hartono Blok E57.2, Semarang	0311233445	achal.larson@gmail.com	PA001AH007	A0105	A15-TB01	Twin Bed	Rp2,000,000	2	Occupied	2023-11-01	2023-11-06	5	DE123AH	Debit	2023-10-21
BOOK16C1008	C1008	Afkar	Hartono	1998-11-24	R. Raya Semping No. 55, Tangerang	0190807965	afkar.hartono@gmail.com	PA001AH008	A0203	A15-PB01	Party Room	Rp8,000,000	8	Occupied	2023-11-04	2023-11-07	3	CA123AH	Cash	2023-09-16
BOOK17C1009	C1009	Afkar	Hartono	1998-11-24	Kempulok Permai Ujung Blok E77.8, Sido	0290901234	afkar.hartono@gmail.com	PA001AH009	A0110	A15-PB01	Party Room	Rp8,000,000	8	Occupied	2023-11-04	2023-11-07	3	DE123AH	Debit	2023-09-29
BOOK18C1010	C1010	Dadi	Muara	1995-04-07	R. Dadi No. 33, Marudu, Sulawesi Utara	0711233445	dadi.muara@gmail.com	PA001AH010	A0205	A15-TB01	Twin Bed	Rp2,000,000	2	Occupied	2023-11-04	2023-11-08	4	KR123AH	Kredit	2023-11-04
BOOK19C1010	C1010	Dadi	Muara	1995-04-07	R. Dadi No. 33, Marudu, Sulawesi Utara	0711233445	dadi.muara@gmail.com	PA001AH010	A0206	A15-TB01	Twin Bed	Rp2,000,000	2	Occupied	2023-11-04	2023-11-08	4	KR123AH	Kredit	2023-11-04
BOOK20C1010	C1010	Dadi	Muara	1995-04-07	R. Dadi No. 33, Marudu, Sulawesi Utara	0711233445	dadi.muara@gmail.com	PA001AH010	A0207	A15-FAM01	Family	Rp4,000,000	4	Occupied	2023-11-04	2023-11-08	4	KR123AH	Kredit	2023-11-04

(Tabel 1NF)

Entity Room		
RoomNumber	TypeID	StatusID
A0101	AH-SP69	Available
A0102	AH-SP69	Available
A0103	AH-SP69	Available
A0104	AH-TB69	Occupied
A0105	AH-TB69	Occupied
A0106	AH-TB69	Available
A0107	AH-FA69	Available
A0108	AH-FA69	Available
A0109	AH-PR69	Available
A0110	AH-PR69	Occupied
A0201	AH-SP69	Available
A0202	AH-SP69	Available
A0203	AH-SP69	Available
A0204	AH-TB69	Available
A0205	AH-TB69	Occupied
A0206	AH-TB69	Occupied
A0207	AH-FA69	Occupied
A0208	AH-FA69	Available
A0209	AH-PR69	Occupied
A0210	AH-PR69	Available

Untuk menentukan status room, asumsi tanggal sekarang adalah 2023-11-05

(Tabel Room)

Entity Booking							
Booking ID	Guest ID	PaymentID	RoomNumber	Check In Date	Check Out Date	Day Spend	Total Price
BO001CU001	CU001	PA001AH001	A0101	2023-11-01	2023-11-03	2	Rp2,000,000
BO002CU001	CU001	PA001AH001	A0102	2023-11-01	2023-11-03	2	Rp2,000,000
BO003CU001	CU001	PA001AH001	A0103	2023-11-01	2023-11-03	2	Rp2,000,000
BO001CU002	CU002	PA001AH002	A0201	2023-11-01	2023-11-03	2	Rp2,000,000
BO001CU003	CU003	PA001AH003	A0104	2023-11-01	2023-11-03	2	Rp4,000,000
BO002CU003	CU003	PA001AH003	A0106	2023-11-01	2023-11-03	2	Rp4,000,000
BO001CU004	CU004	PA001AH004	A0107	2023-11-02	2023-11-05	3	Rp12,000,000
BO001CU005	CU005	PA001AH005	A0108	2023-11-02	2023-11-05	3	Rp12,000,000
BO002CU005	CU005	PA001AH005	A0109	2023-11-02	2023-11-05	3	Rp24,000,000
BO001CU006	CU006	PA001AH006	A0101	2023-11-03	2023-11-05	2	Rp2,000,000
BO002CU006	CU006	PA001AH006	A0102	2023-11-03	2023-11-05	2	Rp2,000,000
BO003CU006	CU006	PA001AH006	A0201	2023-11-03	2023-11-05	2	Rp2,000,000
BO004CU006	CU006	PA001AH006	A0202	2023-11-03	2023-11-05	2	Rp2,000,000
BO001CU007	CU007	PA001AH007	A0104	2023-11-03	2023-11-06	3	Rp6,000,000
BO002CU007	CU007	PA001AH007	A0105	2023-11-03	2023-11-06	3	Rp6,000,000
BO001CU008	CU008	PA001AH008	A0209	2023-11-04	2023-11-07	3	Rp24,000,000
BO001CU009	CU009	PA001AH009	A0110	2023-11-04	2023-11-07	3	Rp24,000,000
BO001CU010	CU010	PA001AH010	A0205	2023-11-04	2023-11-08	4	Rp8,000,000
BO002CU010	CU010	PA001AH010	A0206	2023-11-04	2023-11-08	4	Rp8,000,000
BO003CU010	CU010	PA001AH010	A0207	2023-11-04	2023-11-08	4	Rp16,000,000

(Tabel Booking)

Entity Guest						
Guest ID	First Name	Last Name	Date Of Birth	Address	Phone	Email
CU001	Ahiong	Gallagher	1991-10-03	Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan,Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan	81234567890	ahiong.gallagher@gmail.com
CU002	Mei Mei	Rodriguez	1994-12-15	Perumahan Bunga Indah Blok C2 No. 45, Bandung	85678901234	mei.rodriguez@gmail.com
CU003	Oliver	Giroud	1990-03-28	Jl. Kenari No. 67, Surabaya	81112233444	oliver.giroud@gmail.com
CU004	Ling Ling	Chang	1993-07-09	Komplek Permata Hijau Blok D10, Medan	82334455667	lingling.chang@gmail.com
CU005	Sebastian	Vetel	1997-09-06	Gang Nuri No. 22, Denpasar, Bali	87654321098	sebastian.vetel@gmail.com
CU006	Hansen	Tuukamoto	1992-05-12	Jl. Cempaka Putih No. 88, Yogyakarta	89876543210	hansen.tuukamoto@gmail.com
CU007	Achai	Lawson	1996-02-19	Perumahan Citra Harmoni Blok E5/12, Semarang	83112233445	achai.lawson@gmail.com
CU008	Athar	Harrison	1998-11-24	Jl. Raya Serpong No. 55, Tangerang	81998877665	athar.harrison@gmail.com
CU009	Afing	Park	1999-08-30	Komplek Puri Anjasmoro Blok F3/19, Solo	82998877665	afing.park@gmail.com
CU010	Dedi	Mason	1995-04-07	Jl. Dahlia No. 33, Manado, Sulawesi Utara	87112233445	dedi.mason@gmail.com

(Table Guest)

Entity Payment				
Payment ID	Payment MethodID	Total Amount	Payment Date	
PA001AH001	CA123AH	Rp6,000,000	2023-09-01	
PA001AH002	DE123AH	Rp2,000,000	2023-11-01	
PA001AH003	CA123AH	Rp8,000,000	2023-10-28	
PA001AH004	CA123AH	Rp12,000,000	2023-10-12	
PA001AH005	KR123AH	Rp36,000,000	2023-10-23	
PA001AH006	KR123AH	Rp8,000,000	2023-09-04	
PA001AH007	DE123AH	Rp12,000,000	2023-10-21	
PA001AH008	CA123AH	Rp24,000,000	2023-09-16	
PA001AH009	DE123AH	Rp24,000,000	2023-09-29	
PA001AH010	KR123AH	Rp32,000,000	2023-11-04	

Untuk Payment Date dapat dibayarkan sebelum dari tanggal CheckIn dan saat hari CheckIn

(Tabel Payment)

Entitiy Room Type			
Type ID	Room Name	Price per Night	Capacity
AH-FA69	Family	Rp4,000,000	4
AH-TB69	Twin Bed	Rp2,000,000	2
AH-SP69	Solo Player	Rp1,000,000	1
AH-PR69	Party Room	Rp8,000,000	8

(Table Room Type)

Entity Method Payment	
PaymentMethodID	PaymentMethod
CA123AH	Cash
DE123AH	Debit
KR123AH	Kredit

(Table Method Payment)

link data: [📄 FINAL DATA BASE AOL](#) (Bagian 3NF)

3.5 BCNF

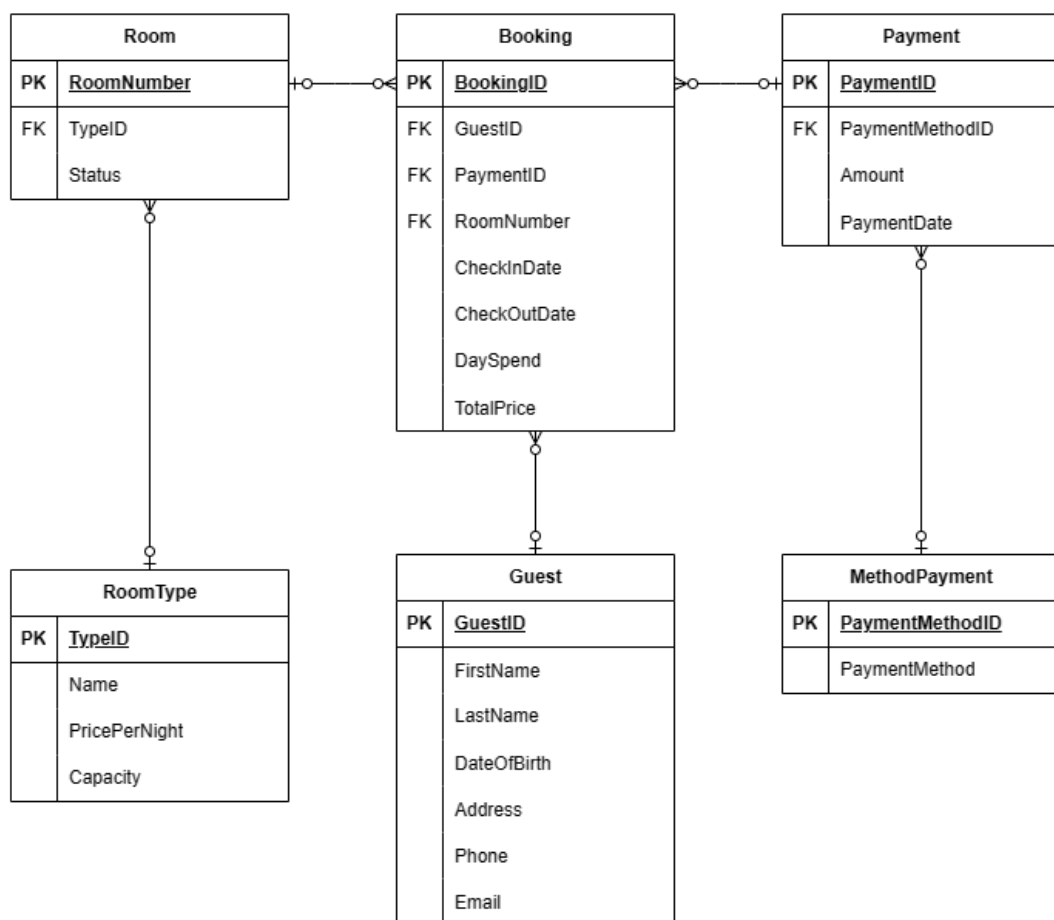
Dalam proyek ini kami tidak menggunakan normalisasi BCNF dikarenakan data sudah tertata pada bagian 3NF secara keseluruhan.

3.6 ERD

Berdasarkan data yang sudah dinormalisasi dalam tahap-3 menjadi data 3NF dapat kita buat menjadi Entity Relation Diagram berdasarkan normalisasi 3NF.

ERD dengan menggunakan notasi crow's foot

Entity Relationship Diagram Hotel Management System



Berikut ini adalah penjelasan hubungan antara entitas dalam diagram di atas.

Hubungan antara RoomType dan Room menunjukkan bahwa setiap tipe kamar dapat memiliki beberapa kamar, tetapi setiap kamar hanya terhubung dengan satu tipe kamar. TypeID di entitas Room berfungsi sebagai foreign key yang mengarah ke RoomType, menunjukkan jenis kamar yang spesifik. Ini memungkinkan hotel untuk menawarkan berbagai macam kategori kamar sambil tetap menjaga konsistensi dalam definisi jenis kamar.

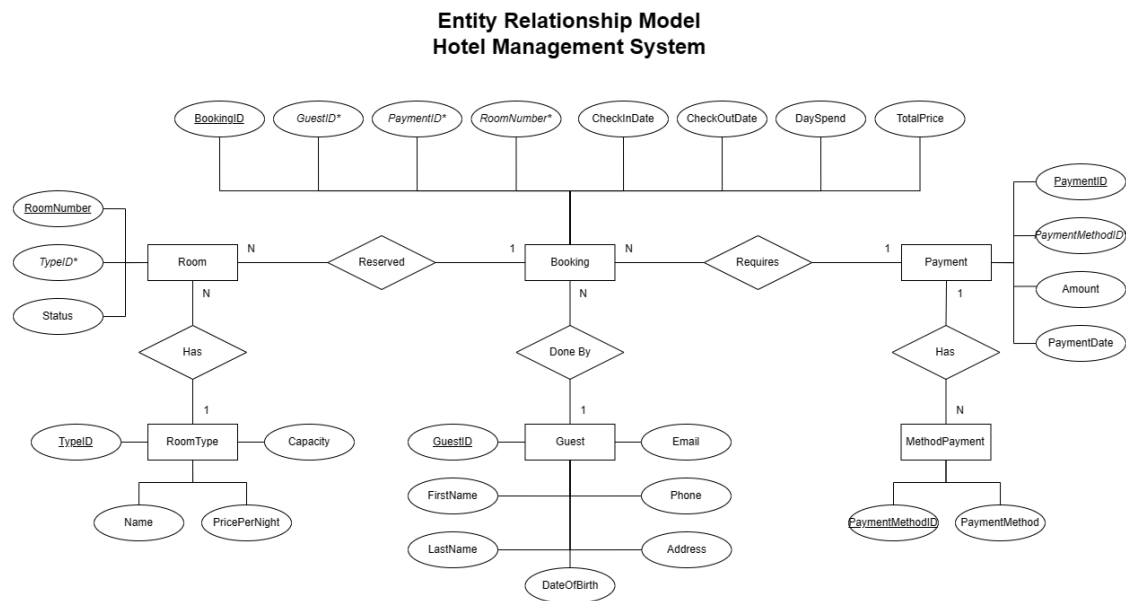
Hubungan antara Booking dan Room menunjukkan bahwa satu pemesanan dapat mencakup beberapa kamar, tetapi setiap kamar terhubung dengan satu pemesanan. RoomNumber di entitas Booking berfungsi sebagai foreign key yang mengarah ke entitas Room, menunjukkan kamar yang dipesan sebagai bagian dari pemesanan tersebut. Kardinalitas ini memungkinkan hotel untuk menangani berbagai situasi pemesanan, termasuk pemesanan untuk beberapa kamar dalam satu pemesanan.

Hubungan antara Guest dan Booking menunjukkan bahwa satu tamu dapat membuat beberapa pemesanan, tetapi setiap pemesanan terhubung dengan satu tamu khusus. GuestID di entitas Booking bertindak sebagai foreign key yang menghubungkannya dengan Guest, menunjukkan siapa yang melakukan pemesanan. Kardinalitas ini memudahkan pencatatan pemesanan yang terkait dengan setiap tamu, memungkinkan hotel untuk melacak reservasi yang dibuat oleh masing-masing tamu dari waktu ke waktu.

Hubungan antara Entitas Payment dan Booking menunjukkan kardinalitas satu-ke-banyak (1:N). Artinya, satu transaksi pembayaran dapat terkait dengan beberapa pemesanan, tetapi setiap pemesanan hanya terkait dengan satu pembayaran. Atribut PaymentID di entitas Booking berperan sebagai foreign key yang mengacu pada entitas Payment, menghubungkan setiap pemesanan ke pembayaran tertentu. Kardinalitas ini memungkinkan hotel untuk mengelola catatan pembayaran yang terkait dengan beberapa pemesanan, sehingga memastikan pelacakan keuangan yang tepat.

Hubungan antara Entitas MethodPayment dan Payment menunjukkan kardinalitas satu-ke-banyak (1:N). Artinya, satu metode pembayaran dapat terkait dengan beberapa pembayaran, tetapi setiap pembayaran hanya terkait dengan satu metode pembayaran. Atribut PaymentMethodID di entitas Payment berperan sebagai foreign key yang mengacu pada entitas MethodPayment, menghubungkan setiap pembayaran ke metode pembayaran tertentu. Kardinalitas ini memungkinkan hotel untuk mengelola catatan metode pembayaran yang terkait dengan beberapa pembayaran, sehingga juga dapat mengembangkan sistem pelacakan keuangan yang lebih tepat.

ERD dengan menggunakan notasi Chen



Penjelasan singkatnya, terdapat enam entitas yang diketahui yaitu RoomType, Room, Booking, Guest, Payment, dan MethodPayment. Hubungan antar entitas tersebut dapat dijelaskan sebagai berikut: Room memiliki RoomType, Room dipesan melalui Booking, Booking dilakukan oleh Guest, Booking membutuhkan Payment, dan Payment memiliki MethodPayment. Hubungan tersebut dapat direpresentasikan menggunakan notasi Chen, seperti 1 - N (one-to-many) dan N - 1 (many-to-one).

Membuat SQL dari data Normalisasi tahap-3 (3NF)

Berdasarkan data yang sudah dinormalisasi dalam tahap-3 menjadi data 3NF dapat kita buat data digital dalam sebuah DataBase Management System, Berikut adalah Query yang sudah kami buat.

```
-- Making Table
#Entity Method Payment
CREATE TABLE MethodPayment (
    PaymentMethodID CHAR(7) PRIMARY KEY CHECK (PaymentMethodID REGEXP '^(CA|DE|KR)[0-9][0-9][0-9]AH$'),
    PaymentMethod VARCHAR(10) NOT NULL
);

-- Entity MethodPayment
INSERT INTO MethodPayment (PaymentMethodID, PaymentMethod) VALUES
('CA123AH', 'Cash'),
('DE123AH', 'Debit'),
('KR123AH', 'Kredit');
```

(Table Method Payment)

```
#Entitiy Payment
CREATE TABLE Payment (
    PaymentID CHAR(10) PRIMARY KEY CHECK (PaymentID REGEXP '^PA[0-9][0-9][0-9]AH[0-9][0-9][0-9]$'),
    PaymentMethodID CHAR(7) CHECK (PaymentMethodID REGEXP '^(CA|DE|KR)[0-9][0-9][0-9]AH$'),
    TotalAmount INT NOT NULL,
    PaymentDate DATE,
    FOREIGN KEY (PaymentMethodID) REFERENCES MethodPayment(PaymentMethodID) ON UPDATE CASCADE ON DELETE CASCADE
);

-- Entity Payment
INSERT INTO Payment (PaymentID, PaymentMethodID, TotalAmount, PaymentDate) VALUES
('PA001AH001', 'CA123AH', 6000000, '2023-09-01'),
('PA001AH002', 'DE123AH', 2000000, '2023-11-01'),
('PA001AH003', 'CA123AH', 8000000, '2023-10-28'),
('PA001AH004', 'CA123AH', 12000000, '2023-10-12'),
('PA001AH005', 'KR123AH', 36000000, '2023-10-23'),
('PA001AH006', 'KR123AH', 8000000, '2023-09-04'),
('PA001AH007', 'DE123AH', 12000000, '2023-10-21'),
('PA001AH008', 'CA123AH', 24000000, '2023-09-16'),
('PA001AH009', 'DE123AH', 24000000, '2023-09-29'),
('PA001AH010', 'KR123AH', 32000000, '2023-11-04');
```

(Table Payment)

```
#Entity RoomType
CREATE TABLE RoomType (
 TypeID CHAR(7) PRIMARY KEY CHECK (TypeID REGEXP '^AH-(FA|TB|SP|PR)69$'),
  RoomName VARCHAR (25) NOT NULL,
  PricePerNight INT NOT NULL,
  Capacity INT NOT NULL
);

-- Entity RoomType
INSERT INTO RoomType (TypeID, RoomName, PricePerNight, Capacity) VALUES
('AH-FA69', 'Family', 4000000, 4),
('AH-TB69', 'Twin Bed', 2000000, 2),
('AH-SP69', 'Solo Player', 1000000, 1),
('AH-PR69', 'Party Room', 8000000, 8);
```

(Tabel RoomType)

```
#Entity Room
CREATE TABLE Room (
  RoomNumber CHAR(5) PRIMARY KEY CHECK (RoomNumber REGEXP '^A[0-9][0-9][0-9][0-9]'),
  TypeID CHAR(7) CHECK (TypeID REGEXP '^AH-(FA|TB|SP|PR)69$'),
  StatusID VARCHAR(150) NOT NULL,
  FOREIGN KEY (TypeID) REFERENCES RoomType(TypeID) ON UPDATE CASCADE ON DELETE CASCADE
);

-- Entity Room
INSERT INTO Room (RoomNumber, TypeID, StatusID) VALUES
('A0101', 'AH-SP69', 'Available'),
('A0102', 'AH-SP69', 'Available'),
('A0103', 'AH-SP69', 'Available'),
('A0104', 'AH-TB69', 'Occupied'),
('A0105', 'AH-TB69', 'Occupied'),
('A0106', 'AH-TB69', 'Available'),
('A0107', 'AH-FA69', 'Available'),
('A0108', 'AH-FA69', 'Available'),
('A0109', 'AH-PR69', 'Available'),
('A0110', 'AH-PR69', 'Occupied'),
('A0201', 'AH-SP69', 'Available'),
('A0202', 'AH-SP69', 'Available'),
('A0203', 'AH-SP69', 'Available'),
('A0204', 'AH-TB69', 'Available'),
('A0205', 'AH-TB69', 'Occupied'),
('A0206', 'AH-TB69', 'Occupied'),
('A0207', 'AH-FA69', 'Occupied'),
('A0208', 'AH-FA69', 'Available'),
('A0209', 'AH-PR69', 'Occupied'),
('A0210', 'AH-PR69', 'Available');
```

(Tabel Room)


```
# Entity Guest
CREATE TABLE Guest (
    GuestID CHAR(5) PRIMARY KEY CHECK (GuestID REGEXP '^CU[0-9][0-9][0-9]$'),
    FirstName VARCHAR (25) NOT NULL,
    LastName VARCHAR (25),
    DateOfBirthday DATE NOT NULL,
    Address VARCHAR(250) NOT NULL,
    Phone VARCHAR(50) NOT NULL,
    Email VARCHAR(250) NOT NULL CHECK (Email REGEXP '^A-Za-z0-9._%+-]+@gmail\\.com$')
);

-- Entity Guest
INSERT INTO Guest (GuestID, FirstName, LastName, DateOfBirthday, Address, Phone, Email) VALUES
('CU001', 'Along', 'Gallagher', '1991-10-03', 'Jl. Melati No. 123, Kebayoran Baru, Jakarta Selatan', '81234567890', 'along.gallagher@gmail.com'),
('CU002', 'Mei Mei', 'Rodriguez', '1994-12-15', 'Perumahan Bunga Indah Blok C2 No. 45, Bandung', '85678901234', 'mei.rodriguez@gmail.com'),
('CU003', 'Oliver', 'Giroud', '1990-03-28', 'Jl. Kenari No. 67, Surabaya', '81112223344', 'oliver.giroud@gmail.com'),
('CU004', 'Ling Ling', 'Chang', '1993-07-09', 'Komplek Permata Hijau Blok D10, Medan', '82334455667', 'lingling.chang@gmail.com'),
('CU005', 'Sebastian', 'Vettel', '1997-09-06', 'Gang Nuri No. 22, Denpasar, Bali', '87654321098', 'sebastian.vettel@gmail.com'),
('CU006', 'Hansen', 'Tsukamoto', '1992-05-12', 'Jl. Cempaka Putih No. 88, Yogyakarta', '89876543210', 'hansen.tsukamoto@gmail.com'),
('CU007', 'Achai', 'Lawson', '1996-02-19', 'Perumahan Citra Harmoni Blok E5/12, Semarang', '83112233445', 'achai.lawson@gmail.com'),
('CU008', 'Athat', 'Harrison', '1998-11-24', 'Jl. Raya Serpong No. 55, Tangerang', '81998877665', 'athat.harrison@gmail.com'),
('CU009', 'Afung', 'Park', '1999-08-30', 'Komplek Puri Anjasmoro Blok F3/19, Solo', '82998877665', 'afung.park@gmail.com'),
('CU010', 'Dedi', 'Mason', '1995-04-07', 'Jl. Dahlia No. 33, Manado, Sulawesi Utara', '87112233445', 'dedi.mason@gmail.com');
```

(Tabel Guest)

```
# Entity Booking
CREATE TABLE Booking (
    BookingID CHAR (10) PRIMARY KEY CHECK (BookingID REGEXP '^BO[0-9][0-9][0-9]CU[0-9][0-9][0-9]$'),
    GuestID CHAR(5) CHECK (GuestID REGEXP '^CU[0-9][0-9][0-9]$'),
    PaymentID CHAR(10) CHECK (PaymentID REGEXP '^PA[0-9][0-9][0-9]AH[0-9][0-9][0-9]$'),
    RoomNumber CHAR(5) CHECK (RoomNumber REGEXP '^A[0-9][0-9][0-9][0-9]$'),
    CheckInDate DATE NOT NULL,
    CheckOutDate DATE NOT NULL,
    DaySpend INT NOT NULL,
    TotalPrice INT NOT NULL,
    FOREIGN KEY (GuestID) REFERENCES Guest(GuestID) ON UPDATE CASCADE ON DELETE CASCADE,
    FOREIGN KEY (PaymentID) REFERENCES Payment(PaymentID) ON UPDATE CASCADE ON DELETE CASCADE,
    FOREIGN KEY (RoomNumber) REFERENCES Room(RoomNumber) ON UPDATE CASCADE ON DELETE CASCADE
);

-- Entity Booking
INSERT INTO Booking (BookingID, GuestID, PaymentID, RoomNumber, CheckInDate, CheckOutDate, DaySpend, TotalPrice) VALUES
('B0001CU001', 'CU001', 'PA001AH001', 'A0101', '2023-11-01', '2023-11-03', 2, 2000000),
('B0002CU001', 'CU001', 'PA001AH001', 'A0102', '2023-11-01', '2023-11-03', 2, 2000000),
('B0003CU001', 'CU001', 'PA001AH001', 'A0103', '2023-11-01', '2023-11-03', 2, 2000000),
('B0001CU002', 'CU002', 'PA001AH002', 'A0201', '2023-11-01', '2023-11-03', 2, 2000000),
('B0001CU003', 'CU003', 'PA001AH003', 'A0104', '2023-11-01', '2023-11-03', 2, 4000000),
('B0002CU003', 'CU003', 'PA001AH003', 'A0106', '2023-11-01', '2023-11-03', 2, 4000000),
('B0001CU004', 'CU004', 'PA001AH004', 'A0107', '2023-11-02', '2023-11-05', 3, 12000000),
('B0001CU005', 'CU005', 'PA001AH005', 'A0108', '2023-11-02', '2023-11-05', 3, 12000000),
('B0002CU005', 'CU005', 'PA001AH005', 'A0109', '2023-11-02', '2023-11-05', 3, 24000000),
('B0001CU006', 'CU006', 'PA001AH006', 'A0101', '2023-11-03', '2023-11-05', 2, 2000000),
('B0002CU006', 'CU006', 'PA001AH006', 'A0102', '2023-11-03', '2023-11-05', 2, 2000000),
('B0003CU006', 'CU006', 'PA001AH006', 'A0201', '2023-11-03', '2023-11-05', 2, 2000000),
('B0004CU006', 'CU006', 'PA001AH006', 'A0202', '2023-11-03', '2023-11-05', 2, 2000000),
('B0001CU007', 'CU007', 'PA001AH007', 'A0104', '2023-11-03', '2023-11-06', 3, 6000000),
('B0002CU007', 'CU007', 'PA001AH007', 'A0105', '2023-11-03', '2023-11-06', 3, 6000000),
('B0001CU008', 'CU008', 'PA001AH008', 'A0209', '2023-11-04', '2023-11-07', 3, 24000000),
('B0001CU009', 'CU009', 'PA001AH009', 'A0110', '2023-11-04', '2023-11-07', 3, 24000000),
('B0001CU010', 'CU010', 'PA001AH010', 'A0205', '2023-11-04', '2023-11-08', 4, 8000000),
('B0002CU010', 'CU010', 'PA001AH010', 'A0206', '2023-11-04', '2023-11-08', 4, 8000000),
('B0003CU010', 'CU010', 'PA001AH010', 'A0207', '2023-11-04', '2023-11-08', 4, 16000000);
```

(Tabel Booking)

BAB V

KESIMPULAN

4.1 Kesimpulan

Proyek pengembangan basis data untuk Hotel Aliong melibatkan perancangan sistem yang cermat dan teliti untuk mengatasi sejumlah permasalahan yang telah lama mengganggu operasional hotel. Dalam langkah-langkahnya, kami secara khusus menangani isu duplikasi data yang kerap terjadi pada sistem sebelumnya. Pendekatan pencegahan duplikasi ini bertujuan untuk memastikan bahwa setiap entitas data, mulai dari informasi pelanggan hingga detail reservasi dan pembayaran, memiliki keunikan yang dijaga dengan cermat.

Melalui solusi yang disiapkan, kami berhasil mengintegrasikan fungsi-fungsi yang menciptakan manajemen data yang lebih efektif dan terpadu. Fokus kami terutama terletak pada aspek pelanggan, reservasi, ruangan, dan transaksi pembayaran. Sistem ini memberikan kemampuan untuk melacak dengan akurat informasi check-in dan check-out pelanggan, serta memonitor ketersediaan ruangan dengan lebih baik.

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DAFTAR LAMPIRAN

[Query DataBase](#)

[DataBase Table](#)