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Boarding House Search Information System Database Design

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Abstract

Technological advancements are causing humans to produce several inventions and developments to accomplish anything. Which one utilizes internet technology to obtain information as quickly and simply as possible? For example, if someone moves to a new area for work or school, they will need boarding houses. However, this information is difficult to obtain because it is traditionally passed down from person to person, and the boarding house owner finds it difficult to promote his boarding house. As a result, individuals require a computerized system to resolve this issue. This study aims to create a database design for a boarding home information system. This study employs the DBLC (Database Life Cycle) technique, which illustrates the life cycle of a database that may be developed at any time. Database design is separated into three parts: conceptual, logical, and physical database design.

Keywords *: Database, DBLC, Searching Boarding House, System Information.*

1. Introduction

The fast advancement of technological complexity makes it simpler for people to employ technology to carry out a task[1]. The internet is utilized to solve issues, and many individuals have used it at some point in their life. One of them is accessing the information required swiftly[2]. When someone travels to a new area for work or school, they will need details on boarding houses. However, they will have difficulty obtaining this information because it is traditionally distributed by word of mouth, and boarding house owners also have a problem promoting their boarding house[3]. Currently, boarding houses are a location to give lodging services or temporary dwellings consisting of numerous rooms, each with its own set of amenities. The boarding house owner sets the price, while the room renter sets the renting length.

This study aims to create a database for boarding house systems that may be utilized to generate a boarding house application system[4]. The process of defining the content and

layout of data necessary to support various system architectures is known as database design. Database design aims to provide information that satisfies specific user requirements and applications[5]. The database design is based on the DBLC (Database Life Cycle) idea, which divides the database into three stages: conceptual, logical, and physical. The DBLC technique depicts the life cycle that will continue to return to its initial state since it will need to be repaired as development progress [6].

There have been several previous studies on boarding house information systems, the first of which was conducted in Bandar Lampung. The database design includes boarding category data, district, transfer confirmation, boarding location, customers, senders, ordering an item, ordering, news category, news[7]. The second study looked at the application of discovering boarding homes in Tembilahan using mobile web and a database design that included login data, password changes, user data, boarding house data, filter_kos, and reviews. The third study focuses on an android-based boarding house information system[8]. The data of home kos, room, owner, history register room, and a boarding house profile were used to create the database[9].

2. Research Method

2.1 Database Design

The design of a boarding house search information system database is carried out through several steps and is depicted in Figure 1:

1. We conduct observations, literature studies, and several other data collection techniques to obtain the necessary data[10].
2. Analyze data requirements, including user requirements and applications.
3. We are designing the database conceptually.
4. We are designing the database logically.
5. Physically designing database

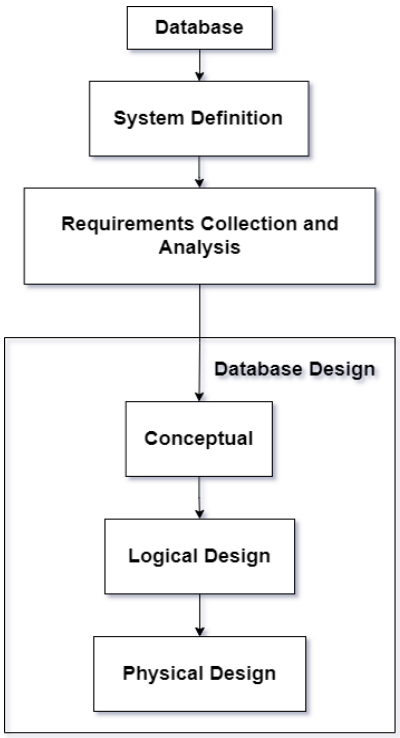

Figure 1. Cost Search Information System Database Design Flow

3. Results and Discussion

When it comes to creating databases, design is crucial. As a result, it is critical to creating a well-designed database. Database design in DBLC is separated into three stages: conceptual, logical, and physical database design[11].

A. Conceptual Database Design

Creating a model based on information utilized by a firm or organization without physical planning concerns and is independent of any biological factors is known as conceptual database design[9]. As indicated in table 1, the identification of entity categories in the proposed database design is as follows:

Table 1. Identify Each Entity

No.	Entity Name	Entity Description	Activity
1	Member	is an entity that contains data about members	members can make boarding orders several times
2	Owner	is an entity that contains data regarding the Owner	owner can add cost several times
3	Facility	is an entity that contains data regarding Facilities	each cost can have several facilities

4	Boarding House	is an entity that contains data about the cost that can be ordered	can store cost data that can be ordered
5	Order	is an entity that contains data regarding cost booking transactions	members can make boarding orders several times
6	Confirm Payment	is an entity that contains data regarding payment confirmations	member can confirm the cost payment
7	Order Details	is an entity that contains data regarding order details	data stores order data and the number of costs to be ordered

The goal of rational type identification is to determine what relevant links exist between the many categories of things that have already been discovered[12].

The domain of an attribute is the set of all potential values assigned to it—a member of a domain name that has the same value as the domain[13]. The data type of the values that will make up the domain and the format of the field will be determined by the environment. As indicated in Table 2, the identification of domain characteristics in the conceptual database design is as follows:

Table 2. Domain Attributes

Entity Name	Attribute	Data Type
Member	id_member	Number
	member_name	String
	username	String
	password	String
	gender	String
	address	String
	no_telp	number
	email	String
	id_owner	Number
	owner_name	String
	username	String

Owner	password	String
	gender	String
	owner_address	String
	no_telp	number
	email_owner	String
Facility	facility_id	number
	facility_name	string
Boarding House	id	number
	name	string
	type	string
	price	number
	address	string
	no_telp	number
	description	string
	fig1	string
	fig2	string
	fig3	string
	fig4	string
	rent_period	string
	longitude	string
	latitude	string
Order	order_id	number
	order_date	date
	recipient_name	string
	payment_status	string
	confirm_id	number

Payment Confirmation	sender_id	string
	no_rekening	number
	date	date
	transfer_amount	number
	proof_picture	string
Orders Detail	order_details_id	number
	total	number

B. Logical Database Design

Creating a model of the information used in the firm based on the specification data model is known as logical database design[14], and it is independent of particular DBMS (Database Management Systems) and other physical concerns[15]. A data dictionary including all characteristics and their keys (primary keys, alternate keys, and foreign keys) as well as an entity relational diagram are the results of this step (ERD)[16].

Database normalization aims to reduce data redundancy and inconsistency[17]. We may additionally validate the relationships between things by normalizing this information[18].

1. Un-Normal Form

{member id, member_name, username, password, gender, address, telp no, email, owner id, owner_name, username, password, gender, owner_address, owner_telp no, email_owner, facility id, facility_name, id_kos, name_kos, type_kos, price, address, no_tel , pictures1, pictures2, pictures3, pictures4, rent_period, longitude, latitude, order_id, order_date, recipient_name, payment_status, confirmation_id, sender_name, account_no., date, transfer_amount, proof_image, order_detail id, amount}.

2. First Normal Form

The next step is to separate the attributes whose values are the same will be written once.

Member Table {member_id, member_name, username, password, gender, address, no_telp, email}

Owner Table {owner_id, owner_name, username, password, gender, owner_address, owner_telp, owner email}

Boarding House Table {*boarding_id, boarding_name, boarding_type,

	price, address, phone number, description, pictures1, pictures, pictures3, pictures4, rent_period, longitude, latitude, facility id, facility_name}
Order Table	{*order_id, order_date, recipient_name, payment_status, Order_Detail ID, amount, confirmation_id, sender_name, account_no., date, transfer_amount, proof_image}

3. Second Normal Form

The next step is to determine the functional dependency.

Member Table	{*member_id, member_name, username, password, gender, address, no_telp, email}
Owner Table	{*owner_id, owner_name, username, password, gender, owner_address, owner_telp, owner_email}
Facility Table	{*facility_id, facility_name}
Boarding House Table	{*boarding_id, **owner_id, facility_id, boarding_name, boarding_type, price, address, phone number, description, pictures1, pictures, pictures3, pictures4, rent_period, longitude, latitude}
Order Table	{*order_id, **member_id, order_details_id, order_date, recipient_name, payment_status, total}
Payment Confirm Table	{*confirm_id, **order_id, sender_id, account_id, date, transfer_amount, proof_image}

4. Third Normal Form

Member Table	{*member_id, member_name, username, password, gender, address, no_telp, email}
Owner Table	{*owner_id, owner_name, username, password, gender, owner_address, owner_telp, owner_email}
Facility Table	{*facility_id, facility_name}
Boarding House Table	{*boarding_id, **owner_id, **facility_id, boarding_name, boarding_type, price, address, phone number, description, pictures1, pictures,

	pictures3, pictures4, rent_period, longitude, latitude}
Order Table	{*order_id, **member_id, **order_details_id, order_date, recipient_name, payment_status, total}
Payment Confirm Table	{*confirm_id, **order_id, sender_id, account_id, date, transfer_amount, proof_image}
Details Order Table	{*order_details_id, **boarding_house_id, total}

C. Physical Database Design

Physical database design is the process of describing the core connections, file structures, and indexes utilized to provide efficient data access, as well as any relevant integration limitations and security measures for a database implementation on secondary storage[19]. As indicated in the table below, a physical database design is as follows:

Table 3. Member

Field Name	Data Type	Size	Description
member_id	int	10	Primary Key, Auto Increment
member_name	varchar	32	not null
username	varchar	32	not null
password	varchar	32	not null
gender	enum	“male”, “female”	not null
address	varchar	100	not null
telp	varchar	12	not null
email	varchar	12	not null

Table 4. Owner

Field Name	Data Type	Size	Description
owner_id	int	10	Primary Key, Auto Increment
owner_name	varchar	32	not null

username	varchar	32	not null
password	varchar	32	not null
gender	enum	“male”, “female”	not null
address	varchar	100	not null
telp	varchar	12	not null
email	varchar	12	not null

Table 5. Facilities

Field Name	Data Type	Size	Description
facility_id	int	10	Primary Key, Auto Increment
facility_name	varchar	32	not null

Table 6. Boarding House

Field Name	Data Type	Size	Description
bourding_house_id	int	10	Primary Key, Auto Increment
owner_name	varchar	32	not null
username	varchar	32	not null
password	varchar	32	not null
gender	enum	“male”, “female”	not null
address	varchar	100	not null
telp	varchar	12	not null
email	varchar	12	not null

Table 7. Order

Field Name	Data Type	Size	Description
order_id	int	10	Primary Key, Auto Increment
order_date	date	10	not null

recipient_name	varchar	32	not null
payment_status	enum	“received”, “not yet received”	not null
member_id	int	10	foreign key references owner
order_details_id	int	10	foreign key references facility

Table 8. Payment Confirm

Field Name	Data Type	Size	Description
confirm_id	int	10	Primary Key, Auto Increment
sender_name	varchar	32	not null
no_rek	varchar	32	not null
date	date	10	not null
transfer_amount	varchar	32	not null
proof_image	varchar	50	null
order_id	int	10	foreign key references order

Table 9. Order Details

Field Name	Data Type	Size	Description
order_details_id	int	10	Primary Key, Auto Increment
total	int	1	not null
boarding_house_id	int	10	foreign key references boarding house

4. Conclusions

It can be concluded from the results of the boarding information system database design that it produces a conceptual database design consisting of 7 entities, including member entities, owners, facilities, boarding, orders, payment confirmations, and order details, as well as domain attributes on each entity name and a diagram of the relationship between entities depicted in the ER[20]. The local logical data model generates relations that reflect the

relationship between an entity and other entities, such as the cost-order relationship, and is normalized to eliminate redundancy (data repetition). Additionally, create a database architecture depending on data type, size, and description. There are seven tables in the goods lending database.

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