Project Proposal:

Scheduling Application

AIMS:

This project aims to design and develop a web-based scheduling application for a coworking space company to effectively manage and schedule their resources, including conference rooms, LCD projectors, and portable PCs. The application will provide real-time availability of resources, avoid conflicting bookings, generate reports on resource utilization, and identify the most frequent customers utilizing the services.

SCOPE:

The scope of this project includes the development of scheduling applications that will allow users to:

- To replace the current paper-based or simple Word document with database system management to benefit from data collection and information sharing efficiently.
- Online scheduling page system accessible to clients and users.
- An intuitive user interface for easy navigation and seamless scheduling.
- Schedule and book resources (conference hall, small conference rooms, LCD projectors, portable PCs) for specific dates and periods.
- Generate reports on resource utilization per week, month, and year.
- Answer queries such as when a specific resource will be available between certain hours, the average weekly occupancy of a conference room, and identify the most frequent customers.

INTRODUCTION/ BACKGROUND:

The purpose of the scheduling application is to help our Coworking space company manage and schedule its resources efficiently. The company currently provides many different resources such as (a Conference Hall, 10 Small conference rooms, 7 LCD projectors, and 5 Portable PCs) and more resources are expected to be released soon. These resources are rented out to customers, and management requires reporting on resource utilization per week, month, and year. The scheduling application will provide answers to required related resources, room, and customer usage.

PROJECT DESCRIPTION:

This coworking space company is used to handle resource scheduling and tracking manually. However, as the company has grown, it has become increasingly challenging to record and schedule the growing number of customers and resources manually. Therefore, the company requires a centralized system to automate the scheduling process efficiently. This system will help prevent different users from accidentally double-booking the same resource at the same time and more.

DESCRIPTION OF THE PROBLEM:

In today's world, scheduling and managing appointments is crucial for both personal and professional use. With the help of scheduling applications and electronic calendars, keeping track of appointments has become much simpler.

Currently, our coworking space company is using paper-based or simple Word documents for storing data. Which has the following problems:

- **Data redundancy(duplication)**
- **Inconsistency**
- **Lack of flexibility**
- **Poor security**
- **Lack of data sharing and availability**

PROPOSED SYSTEM:

Our proposed system is to use MySQL database management system. It refers to handling and managing data. It is commonly used in organizations to allow the collection of data, as well as background integration. Not only do they ensure information is easily accessed by users, but they also help to facilitate data duplication.

IDENTIFICATION OF INFORMATION NEEDS:

- **EASY DATA CONTROL**

With all the information centralized in a single location, there's no requirement for duplicating data. This implies that, unlike paper-based systems, every user can directly access the data without the need to reproduce it. Moreover, a database management system can remove the cost of duplication resulting from single application programs.

- **ACCURACY**

When data is saved on numerous computers through database management software, it becomes more convenient to manage it. To ensure the precision of information, organizations also employ database management systems. This allows them to uphold high standards by maintaining accuracy.

- **DATA SECURITY**

Data is restricted only to those who are certified to manipulate it, therefore preventing breach of information by unscrupulous individuals.

- **BETTER PROCESSING SPEED**

For instance, functions such as sum, calculate, and count are automated with ease. In a data management system, the applications to report, store, and update the data are planned in an orderly manner.

- **REUSE OF DATA CODE**

For instance, inventory data is stored in a section that is separate from another set of data. Nevertheless, queries are combined from all the modules without having to change the structure. Since all the data is combined into one single database, a power outage or corrupted database may result in loss of information.

INITIAL LIST OF ENTITIES:

An entity is an object that exists and is distinguishable from other objects. An entity may be concrete (a person or a book, for example) or abstract. An entity is represented by a set of attributes. Entities to be used in our project of scheduling applications:

1. ConferenceHall:
2. SmallConferenceRoom:
3. LCDProjector:
4. PortablePC:
5. Customer:
6. Reservation:
7. ResourceUtilization:
8. Availability:
9. UsageReport:
10. CustomerUsage:

ATTRIBUTES:

An attribute is a function that maps an entity set into a domain. One can characterize it as an "attribute management system" where attributes are small chunks of information that describe something. Attributes to be used against each entity in our project are:

1. ConferenceHall:
- HallID (primary key)
- HallName
- HallCapacity

2. SmallConferenceRoom:
- RoomID (primary key)
- RoomName
- RoomCapacity

3. LCDProjector:
- ProjectorID (primary key)
- ProjectorName

4. PortablePC:
- PCID (primary key)
- PCName

5. Customer:
- CustomerID (primary key)
- CustomerName
- CustomerAddress

6. Reservation:
- ReservationID (primary key)
- CustomerID (foreign key to Customer)
- ResourceID (foreign key to ConferenceHall/LCDProjector/…)
- ReservationDate
- StartTime
- EndTime

7. ResourceUtilization:
- ReservationID (primary key)
- CustomerID (foreign key to Customer)
- ResourceID (foreign key to ConferenceHall/…)
- ReservationDate
- StartTime
- EndTime

8. Availability:
- AvailabilityID (primary key)
- ResourceID (foreign key to Customer)
- AvailabilityDate (foreign key to ConferenceHall/…)
- StartTime
- EndTime
- IsAvailable

9. UsageReport:
- ReportID (primary key)
- ResourceID (foreign key to ConferenceHall/…)
- ReportDate
- UtilizationDuration

10. CustomerUsage:
- UsageID (primary key)
- CustomerID (foreign key to Customer)
- TotalUtilizationDuration

These attributes provide specific information for each entity in the context of the coworking space scenario. They include unique identifiers (primary keys) for each table, as well as other relevant details such as names, capabilities, addresses, dates, times, and durations.

With these attributes, we will perform queries such as (example):

- Retrieve the next available day for a specific resource between 1:00 and 5:00.

INITIAL LIST OF ENTITIES(TABLES):

Conference Hall:

Field	Description	Type	Length
ID	Hall ID	Int	8
Name	HallName	Varchar	255
Capacity	HallCapacity	Int	8

Small ConferenceRoom:

Field	Description	Type	Length
ID	Room ID	Int	8
Name	Room Name	Varchar	255
Capacity	Room Capacity	Int	8

LCD Projector:

Field	Description	Type	Length
ID	Projector ID	Int	8
Name	Projector Name	Varchar	255

Portable Pc:

Field	Description	Type	Length
ID	PCID	Int	8
Name	PCName	Varchar	255

Customer:

Field	Description	Type	Length
ID	Customer ID	Int	8
Name	Customer Name	Varchar	255
Gender	Customer Gender	Varchar	1
Address	Customer Address	Varchar	100

Reservation:

Field	Description	Type	Length
ID	Reservation ID	Int	8
CID	Customer ID	Int	8
RID	Resource ID	Int	8
RDATE	Reservation DATE	Date	
STIME	StartTime	Time	8
ETIME	EndTime	Time	8

Resource Utilization:

Field	Description	Type	Length
ID	Utilization ID	Int	8
RID	Resource ID	Int	8
UDATE	Utilization DATE	Date	
USTIME	Utilization StartTime	Time	8
UETIME	Utilization EndTime	Time	8

Availability:

Field	Description	Type	Length
ID	Availability ID	Int	8
RID	Resource ID	Int	8
DATE	Availability DATE	Date	
STIME	StartTime	Time	8
ETIME	EndTime	Time	8
Available	IsAvailable	Varchar	255

Usage Report:

Field	Description	Type	Length
ID	Report ID	Int	8
RID	Resource ID	Int	8
DATE	Report DATE	Date	
Duration	Utilization Time	Time	8

Customer Usage:

Field	Description	Type	Length
ID	Usage ID	Int	8
CID	Customer ID	Int	8
Duration	Total Utilization Time	Time	8

Clients, Users:

The application will cater to the following types of users:

Admin: The admin user will have full access to the application and be responsible for managing resources, generating reports, and maintaining customer records.

Customers: Customers will be able to access the application to view resource availability, make bookings, and update their personal information.

Example Users:

Admin: Coworking space company management

Customers: Individuals and organizations utilizing the coworking space facilities