TITLE: E-BOOKSTORE

MISS. CRYSTAL KOH SOOK MUN

2 INTRODUCTION

Database is a computerized record keeping system with the overall purpose of maintaining information and making it available whenever required. Small database can be stored on a file system while big database are managed by a database management system (DBMS). DBMS is a set of programs that allow for the management of a database. DBMS function to do data definition, data manipulation, provide system and data security and provide programming language support. Example of commonly used DBMS system are such as My SQL, ORACLE, PostgreSQL, MongoDB, Microsoft SQL Server, SQLite and IBM Db2.

There are the primary and secondary objectives to consider for APU E-Bookstore in the design, implementation and documentation of a database system for an electronic bookstore. The primary objectives are security and protection, reliability, facilitation of multiple users, flexibility, ease of book access and data change, accuracy and consistency, clarity in standardization of data to avoid ambiguity, ability to service unanticipated request, protection of the investment and availability to users. The secondary objectives are physical data independence, logical data independence, control of redundancy, integrity control, clear data definition, suitably friendly user interface and automatic reorganization of migration.

There are various database type, and those are Relational Database, in which database is organized and accessed according to the relationship between data values. When a database model is a theory or specification describing how a database is structure and used are Hierarchy Database, Network Database and Relational Database. Hierarchical database organizes data in a tree structure, hierarchy is of parent and child data segment. Hierarchical model structures data as a tree of records, with each record having one parent record and many children. Network Database organize data as a network and the network model allows each record to have multiple parents and child records. Nevertheless, Relational Database allow the definition of data structures, storage and retrieval operations and integrity constraints. In such a database the data and relations between them are organized in tables. Time Series Database and Graph Database. The purpose of database is utilized to manage the storage, retrieval, modification and deletion of data in tandem with many data-processing operations. It is mainly

Database objects can be classified to Table, View, Stored Procedure, Trigger and Index. Table is a database object or structure where the data is stored. A table will contains rows and columns. A row in a table is also called as “tuple” and the column in the table is called “Attribute”. View is a virtual, dynamic or logical table computed or collated from data in the database. Changing the data in a table alters the data shown in the view. A stored procedure is a subroutine available to application accessing a relational database system. Stored procedures are actually stored in the database. A database trigger is procedural code that is automatically executed in repones to certain events on a particular table in a database. Besides that, a database index are typed to Unique Index and Non-unique Index whereby the data structure assist in improving the speed of operation in a table.

3 FUNCTIONALITY OF THE CURRENT SYSTEM

This system is composed of 5 main parts i.e. Hardware, Software, People, Procedures and Data. This system is expected to deliver as per below:-

- Performs functions that guarantee integrity and consistency of data
- Data dictionary management
- defines data elements and their relationships
- Data storage management
- stores data and related data entry forms, report definitions, etc.
- Data transformation and presentation
- translates logical requests into commands to physically locate and retrieve the requested data
- Security management
- enforces user security and data privacy within database
- Multiuser access control
- uses sophisticated algorithms to ensure multiple users can access the database concurrently without compromising the integrity of the database
- Backup and recovery management
- provides backup and data recovery procedures
- Data integrity management
- promotes and enforces integrity rules
- Database access languages and application programming interfaces
- provide data access through a query language
- Database communication interfaces
- allow database to accept end-user requests via multiple, different network environments

4 BUSINESS RULES

- Brief, precise, and unambiguous descriptions of a policies, procedures, or principles within a specific organization
- Apply to any organization that stores and uses data to generate information
- Description of operations that help to create and enforce actions within that organization's environment
- Must be rendered in writing
- Must be kept up to date
- Sometimes are external to the organization
- Must be easy to understand and widely disseminated
- Describe characteristics of the data as viewed by the company

Sources of Business Rules:

- Bookstore managers
- Policy makers

- Department managers
- Written documentation
- Procedures
- Standards
- Operations manuals
- Direct interviews with end users
- Discovering Business Rules
- Generally, nouns translate into entities
- Verbs translate into relationships among entities
- Relationships are bi-directional

5 DESIGN

4.1- Conceptual Database Design

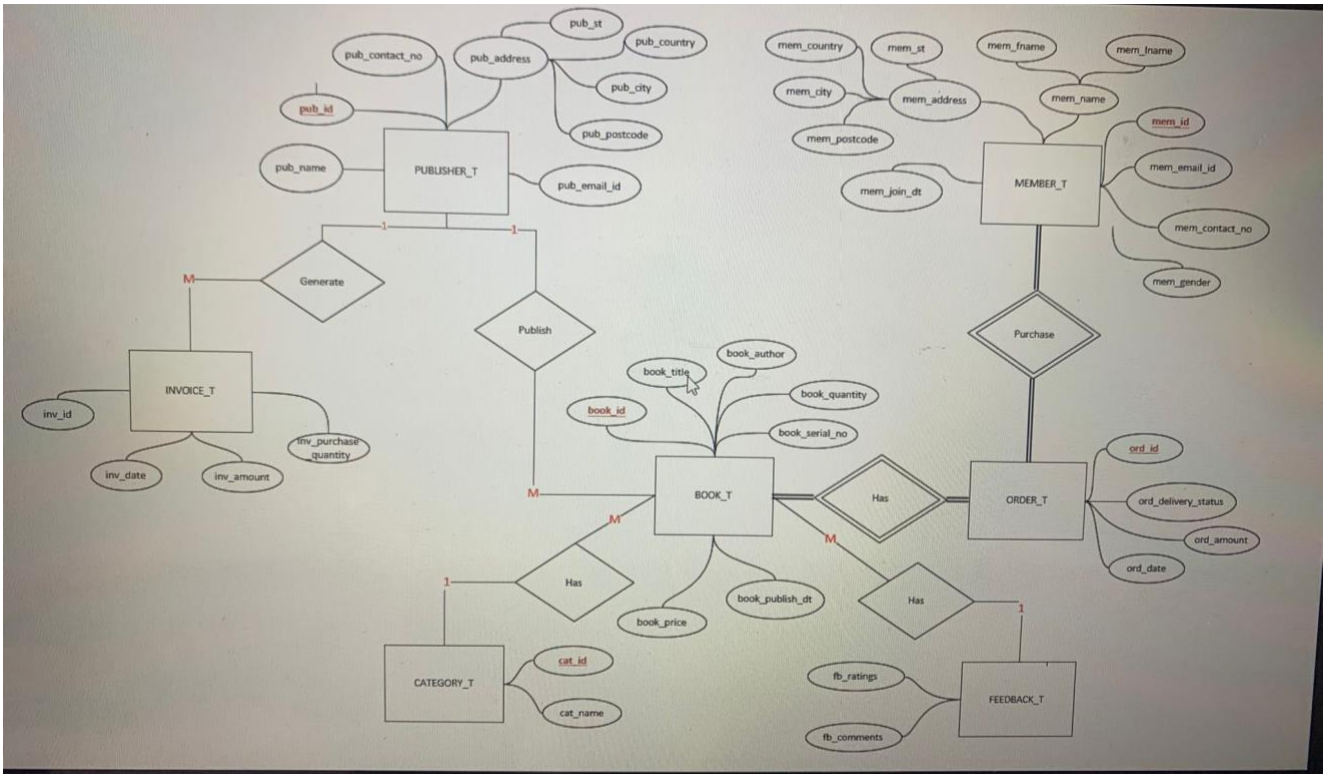

Fig: Entity Relationship Diagram (ERD)

4.2- Logical Database Design

4.2.1- Enhanced Entity Relationship Diagram (EERD)

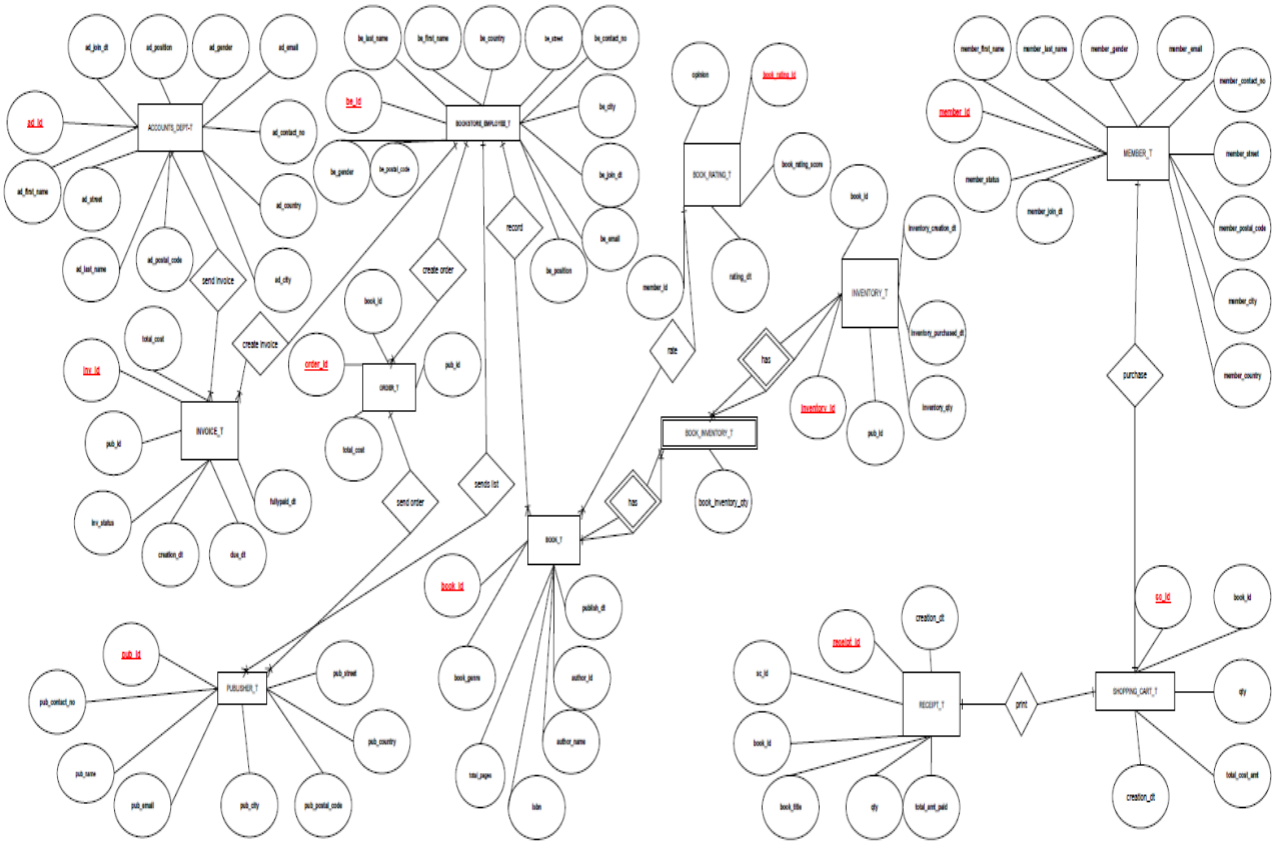

Fig: Enhanced Entity Relationship Diagram (EERD)

4.3. Normalization:

Definition: It is a process, which transforms complex database table into manageable and small

database tables.

4.3.1. Below are the structures of the normalized database tables:

Name of database table: PUBLISHER_T

Table name: PUBLISHER_T

Columns | Primary Key | Foreign Keys | Check Constraints | Indexes | General

+ New Column

Name	Type	Primary Key	Allow Nulls	Default Value
pub_id	char(6)	☑	☐	
pub_name	varchar(100)	☐	☐	
pub_email	varchar(40)	☐	☐	
pub_contact_no	varchar(40)	☐	☐	
pub_street	varchar(40)	☐	☑	
pub_postal_code	varchar(10)	☐	☑	
pub_city	varchar(40)	☐	☐	
pub_country	varchar(40)	☐	☐	

Sample data

Run | Stop | Max Rows: 200 | Show SQL Pane

	pub_id	pub_name	pub_email	pub_contact_n…	pub_street	pub_postal_co…	pub_city	pub_country
1	P00001	oJackson	support@oreil…	1-800-889-896…	*NULL*	*NULL*	Sebastopol	USA
2	P00002	columbBack	support@sprin…	1-800-232-112…	*NULL*	*NULL*	AG	Switzerland
3	P00003	Penguin Rando…	support@pengi…	1299309491	*NULL*	*NULL*	New York	USA
4	P00004	McGrawHill	support@mcgra…	1-800-338-398…	*NULL*	*NULL*	New York	USA
5	P00005	Hachette UK	enquiries@hac…	+44 20 3122 6…	*NULL*	*NULL*	London	UK
6	P00006	John Wiley & S	support.wiley…	1-877-762-297…	*NULL*	*NULL*	New York	USA
7	P00007	W. W. Norton …	support.norto…	1-212-354-550…	*NULL*	*NULL*	New York	USA
8	P00008	Simon and Sch…	-	-	*NULL*	*NULL*	New York	USA
9	P00009	candice-wells	-	-	*NULL*	*NULL*	New York	USA
1…	P00010	Cambridge Un…	directcs@camb…	+44(0)1223 55…	*NULL*	*NULL*	Cambridge	UK
1…	*NULL*	*NULL*	*NULL*	*NULL*	*NULL*	*NULL*	*NULL*	*NULL*

Name of database table: BOOKSTORE_EMPLOYEE_T

Name	Type	Primary Key	Allow Nulls	Default Value	
be_id	char(6)	☑	☐		🗑
be_first_name	varchar(100)	☐	☐		🗑
be_last_name	varchar(40)	☐	☐		🗑
be_gender	char(1)	☐	☐		🗑
be_street	varchar(40)	☐	☑		🗑
be_postal_code	varchar(10)	☐	☑		🗑
be_city	varchar(40)	☐	☐		🗑
be_country	varchar(40)	☐	☐		🗑
be_contact_no	varchar(40)	☐	☐		🗑
be_email	varchar(40)	☐	☑		🗑
be_position	varchar(40)	☐	☐		🗑
be_join_dt	date	☐	☐		🗑

Sample data:

	be_id	be_first_name	be_last_name	be_gender	be_street	be_postal_code	be_city	be_country	be_contact_no	be_email	be_position
1	BE0001	John	Thomas	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0103433233	*NULL*	Manager
2	BE0002	Sally	Tan	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0163223246	*NULL*	Assistant Manager
3	BE0003	Ahmad	Fadi	M	*NULL*	*NULL*	Kuala Lumpur	Malaysia	0123843930	*NULL*	Clerk
4	BE0004	Cheong	Wong	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0124457879	*NULL*	Clerk
5	BE0005	Bala	Krishnan	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0162234880	*NULL*	Clerk
6	BE0006	Mohd	Asrul	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0126678432	*NULL*	Clerk
7	BE0007	Siti	Ali	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0102445670	*NULL*	Clerk
8	BE0008	Kok	Lee	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0103325678	*NULL*	Clerk
9	BE0009	Vicky	Lee	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0123446789	*NULL*	Clerk
10	BE0010	Nazrul	Hisham	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0163441122	*NULL*	Clerk

Name of database table: BOOK_T

Name	Type	Primary Key	Allow Nulls	Default Value	
book_id	char(10)	☑	☐		🗑
book_title	varchar(100)	☐	☐		🗑
book_genre	varchar(40)	☐	☐		🗑
total_pages	numeric(10,0)	☐	☑		🗑
isbn	char(17)	☐	☑		🗑
author_name	varchar(40)	☐	☐		🗑
book_price	numeric(5,2)	☐	☐		🗑
publish_dt	date	☐	☐		🗑
pub_id	char(6)	☐	☑		🗑
genre_id	char(3)	☐	☑		🗑

Sample data:

Results Messages

	book_id	book_title	book_genre	total_pages	isbn	author_name	book_price	publish_dt	pub_id	genre_i
1	BK00000001	Practical Statistics for …	Data Science	*NULL*	11233455	Andrew Bruce, Peter C. B…	300.00	2017-05-10	P00001	DS
2	BK00000002	Python for Data Analysis:…	Data Science	*NULL*	55323137	Wes McKinney	240.00	2011-12-30	P00001	DS
3	BK00000003	Python Data Science Handb…	Data Science	*NULL*	12312455	Jake VanderPlas	350.00	2016-07-10	P00001	DS
4	BK00000004	Data Science For Dummies	Data Science	*NULL*	12357588	Lillian Pierson	300.00	2015-02-20	P00004	DS
5	BK00000005	The Art of Computer Progr…	Programming	*NULL*	15456743	Donald Knuth	240.00	1968-05-01	P00005	P
6	BK00000006	Python Crash Course, 2nd …	Programming	*NULL*	32435556	Eric Matthes	180.00	2019-05-03	P00005	P
7	BK00000007	Introduction to Algorithms	Programming	*NULL*	34243412	Thomas H. Cormen, Charles…	200.00	1989-01-01	P00008	P
8	BK00000008	Project Management Absolu…	Project Management	*NULL*	43432535	Greg Horine	240.00	2005-02-02	P00007	PM
9	BK00000009	Project Management: A Sys…	Project Management	*NULL*	43235465	Harold Kerzner	320.00	1979-08-01	P00002	PM
10	BK00000010	Doing Agile Right: Transf…	Project Management	*NULL*	23445463	Sarah Elk, Steve Berez, D…	300.00	2020-05-26	P00003	PM

Name of database table: ORDER_T

Name	Type	Primary Key	Allow Nulls	Default Value	
ord_id	char(10)	☑	☐		🗑
book_id	char(10)	☐	☐		🗑
pub_id	char(6)	☐	☐		🗑
qty	numeric(2,0)	☐	☐		🗑
total_cost	numeric(10,2)	☐	☐		🗑

Sample data:

Results Messages

	ord_id	book_id	pub_id	qty	total_cost
1	ORD0000001	BK00000001	P00001	10	1500.00
2	ORD0000002	BK00000002	P00001	5	1200.00
3	ORD0000003	BK00000003	P00001	5	1750.00
4	ORD0000004	BK00000004	P00004	5	1500.00
5	ORD0000005	BK00000005	P00005	5	1200.00
6	ORD0000006	BK00000006	P00005	5	900.00
7	ORD0000007	BK00000007	P00008	5	1000.00
8	ORD0000008	BK00000008	P00007	5	1200.00
9	ORD0000009	BK00000009	P00002	5	1600.00
10	ORD0000010	BK00000010	P00003	5	1500.00

Name of database table: INVOICE_T

Name	Type	Primary Key	Allow Nulls	Default Value	
inv_id	char(10)	☑	☐		
pub_id	char(6)	☐	☐		
inv_status	char(1)	☐	☐		
creation_dt	date	☐	☐		
due_dt	date	☐	☐		
fullypaid_dt	date	☐	☑		
total_cost	numeric(10,2)	☐	☐		
qty	numeric(3,0)	☐	☑		

Sample data:

Results Messages

	inv_id	pub_id	inv_status	creation_dt	due_dt	fullypaid_dt	total_cost	qty
1	INV0000001	P00001	P	2022-06-11	2022-06-17	2022-06-11	1500.00	10
2	INV0000002	P00001	U	2022-06-11	2022-06-17	*NULL*	1200.00	5
3	INV0000003	P00001	U	2022-06-11	2022-06-17	*NULL*	1750.00	5
4	INV0000004	P00004	P	2022-06-11	2022-06-17	2022-06-11	1500.00	5
5	INV0000005	P00005	P	2022-05-01	2022-05-07	2022-05-05	1200.00	5
6	INV0000006	P00005	P	2022-06-11	2022-06-17	2022-06-11	900.00	5
7	INV0000007	P00008	U	2022-06-11	2022-06-17	*NULL*	1000.00	5
8	INV0000008	P00007	P	2022-04-05	2022-04-13	2022-04-10	1200.00	5
9	INV0000009	P00002	P	2022-02-04	2022-02-11	2022-02-06	1600.00	5
10	INV0000010	P00003	P	2022-06-02	2022-06-09	2022-06-03	1500.00	5

Name of database table: ACCOUNTS_DEPT_T

Name	Type	Primary Key	Allow Nulls	Default Value	
ad_id	char(6)	☑	☐		🗑
ad_first_name	varchar(100)	☐	☐		🗑
ad_last_name	varchar(40)	☐	☐		🗑
ad_gender	char(1)	☐	☐		🗑
ad_street	varchar(40)	☐	☑		🗑
ad_postal_code	varchar(10)	☐	☑		🗑
ad_city	varchar(40)	☐	☐		🗑
ad_country	varchar(40)	☐	☐		🗑
ad_contact_no	varchar(40)	☐	☐		🗑
ad_email	varchar(40)	☐	☑		🗑
ad_position	varchar(40)	☐	☐		🗑
ad_join_dt	date	☐	☐		🗑

Sample data:

	book_id	book_title	book_genre	total_pages	isbn	author_name	book_price	publish_dt	pub_id	genre_i
1	BK00000001	Practical Statistics for …	Data Science	*NULL*	11233455	Andrew Bruce, Peter C. B…	300.00	2017-05-10	P00001	DS
2	BK00000002	Python for Data Analysis:…	Data Science	*NULL*	55323137	Wes McKinney	240.00	2011-12-30	P00001	DS
3	BK00000003	Python Data Science Handb…	Data Science	*NULL*	12312455	Jake VanderPlas	350.00	2016-07-10	P00001	DS
4	BK00000004	Data Science For Dummies	Data Science	*NULL*	12357588	Lillian Pierson	300.00	2015-02-20	P00004	DS
5	BK00000005	The Art of Computer Progr…	Programming	*NULL*	15456743	Donald Knuth	240.00	1968-05-01	P00005	P
6	BK00000006	Python Crash Course, 2nd …	Programming	*NULL*	32435556	Eric Matthes	180.00	2019-05-03	P00005	P
7	BK00000007	Introduction to Algorithms	Programming	*NULL*	34243412	Thomas H. Cormen, Charles…	200.00	1989-01-01	P00008	P
8	BK00000008	Project Management Absolu…	Project Management	*NULL*	43432535	Greg Horine	240.00	2005-02-02	P00007	PM
9	BK00000009	Project Management: A Sys…	Project Management	*NULL*	43235465	Harold Kerzner	320.00	1979-08-01	P00002	PM
10	BK00000010	Doing Agile Right: Transf…	Project Management	*NULL*	23445463	Sarah Elk, Steve Berez, D…	300.00	2020-05-26	P00003	PM

Name of database table: MEMBER_T

Name	Type	Primary Key	Allow Nulls	Default Value
member_id	char(6)	☑	☐	
member_first_name	varchar(100)	☐	☐	
member_last_name	varchar(40)	☐	☐	
member_gender	char(1)	☐	☐	
member_street	varchar(40)	☐	☑	
member_postal_code	varchar(10)	☐	☑	
member_city	varchar(40)	☐	☐	
member_country	varchar(40)	☐	☐	
member_contact_no	varchar(40)	☐	☐	
member_email	varchar(40)	☐	☑	
member_status	char(1)	☐	☐	
member_join_dt	date	☐	☐	
member_identification_...	char(19)	☐	☑	

Sample data:

Results Messages

	member_id	member_first_name	member_last_name	member_gender	member_street	member_postal_code	member_city	member_country	member_contact_no
1	M00001	Terri	Woon	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0105542112
2	M00002	Crystal	Koh	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0165542331
3	M00003	Tim	Wong	M	*NULL*	*NULL*	Kuala Lumpur	Malaysia	0125552010
4	M00004	Evon	Ting	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0123344689
5	M00005	Lim	Quah	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0163346768
6	M00006	Mohd	Razak	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0113244668
7	M00007	Wei	Wong	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0103244669
8	M00008	Roger	Wang	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0103255664
9	M00009	Felicia	Er	F	*NULL*	*NULL*	Petaling Jaya	Malaysia	0126643134
10	M00010	Tom	Jones	M	*NULL*	*NULL*	Petaling Jaya	Malaysia	0163422112

Name of database table: SHOPPING_CART_T

Name	Type	Primary Key	Allow Nulls	Default Value	
sc_id	char(10)	☑	☐		
member_id	char(6)	☐	☐		
book_id	char(10)	☐	☐		
qty	numeric(2,0)	☐	☐		
creation_dt	date	☐	☑		
total_cost_amt	numeric(10,2)	☐	☑		
delivery_status	char(1)	☐	☑		

Sample data:

	sc_id	member_id	book_id	qty	creation_dt	total_cost_amt	delivery_status
1	SC00000001	M00001	BK00000001	1	2022-06-11	300.00	Y
2	SC00000002	M00002	BK00000001	1	2022-06-11	300.00	Y
3	SC00000003	M00003	BK00000001	1	2022-06-11	300.00	N
4	SC00000004	M00004	BK00000001	1	2022-06-11	300.00	N
5	SC00000005	M00005	BK00000001	1	2022-06-11	300.00	N
6	SC00000006	M00006	BK00000001	1	2022-06-11	300.00	Y
7	SC00000007	M00007	BK00000001	1	2022-06-11	300.00	Y
8	SC00000008	M00008	BK00000001	1	2022-06-11	300.00	N
9	SC00000009	M00009	BK00000001	1	2022-06-11	300.00	Y
10	SC00000010	M00010	BK00000001	1	2022-06-11	300.00	N

Name of database table: RECEIPT_T

Name	Type	Primary Key	Allow Nulls	Default Value	
receipt_id	char(10)	☑	☐		🗑
sc_id	char(10)	☐	☐		🗑
book_id	char(10)	☐	☐		🗑
book_title	varchar(100)	☐	☐		🗑
qty	numeric(2,0)	☐	☐		🗑
total_amt_paid	numeric(10,2)	☐	☑		🗑
creation_dt	date	☐	☑		🗑

Sample data:

	receipt_id	sc_id	book_id	book_title	qty	total_amt_paid	creation_dt
1	RT00000001	SC00000001	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
2	RT00000002	SC00000002	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
3	RT00000003	SC00000003	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
4	RT00000004	SC00000004	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
5	RT00000005	SC00000005	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
6	RT00000006	SC00000006	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
7	RT00000007	SC00000007	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
8	RT00000008	SC00000008	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
9	RT00000009	SC00000009	BK00000001	Practical Statistics for …	1	300.00	2022-06-11
10	RT00000010	SC00000010	BK00000001	Practical Statistics for …	1	300.00	2022-06-11

Name of database table: INVENTORY_T

Name	Type	Primary Key	Allow Nulls	Default Value	
inventory_id	char(10)	☑	☐		
book_id	char(10)	☐	☐		
pub_id	char(6)	☐	☐		
inventory_qty	numeric(5,0)	☐	☐		
inventory_purchased_dt	date	☐	☑		
inventory_creation_dt	date	☐	☑		

Sample data:

	inventory_id	book_id	pub_id	inventory_qty	inventory_purchased_dt	inventory_creation_dt
1	I000000001	BK00000001	P00001	10	2022-02-11	2022-02-11
2	I000000002	BK00000002	P00001	5	2022-02-11	2022-02-11
3	I000000003	BK00000003	P00001	5	2022-02-11	2022-02-11
4	I000000004	BK00000004	P00004	5	2022-02-11	2022-02-11
5	I000000005	BK00000005	P00005	5	2022-02-11	2022-02-11
6	I000000006	BK00000006	P00005	5	2022-02-11	2022-02-11
7	I000000007	BK00000007	P00008	5	2022-02-11	2022-02-11
8	I000000008	BK00000008	P00007	5	2022-02-11	2022-02-11
9	I000000009	BK00000009	P00002	5	2022-02-11	2022-02-11
10	I000000010	BK00000010	P00003	5	2022-02-11	2022-02-11

Name of database table: BOOK_RATING_T

Name	Type	Primary Key	Allow Nulls	Default Value	
book_rating_id	char(10)	☑	☐		🗑
member_id	char(6)	☐	☐		🗑
book_id	char(10)	☐	☐		🗑
opinion	varchar(1000)	☐	☑		🗑
book_rating_score	numeric(2,0)	☐	☐		🗑
rating_dt	date	☐	☐		🗑

Sample data:

	book_rating_id	member_id	book_id	opinion	book_rating_score	rating_dt
1	BR00000001	M00001	BK00000001	A good book overall.	9	2022-06-11
2	BR00000002	M00002	BK00000001	*NULL*	7	2022-06-11
3	BR00000003	M00003	BK00000001	*NULL*	7	2022-06-11
4	BR00000004	M00004	BK00000001	*NULL*	8	2022-06-11
5	BR00000005	M00005	BK00000001	*NULL*	9	2022-06-11
6	BR00000006	M00006	BK00000001	*NULL*	9	2022-06-11
7	BR00000007	M00007	BK00000001	*NULL*	6	2022-06-11
8	BR00000008	M00008	BK00000002	Well written book.	9	2022-06-11
9	BR00000009	M00009	BK00000003	Great book!	9	2022-06-11
10	BR00000010	M00010	BK00000004	Easy to understand!	9	2022-06-11

Name of database table: BOOK_INVENTORY_T

Name	Type	Primary Key	Allow Nulls	Default Value	
book_id	char(10)	☑	☐		🗑
inventory_id	char(10)	☐	☐		🗑
book_inventory_qty	numeric(5,0)	☐	☑		🗑

Sample data:

	book_id	inventory_id	book_inventory_qty
1	BK00000001	I000000001	10
2	BK00000002	I000000002	5
3	BK00000003	I000000003	5
4	BK00000004	I000000004	5
5	BK00000005	I000000005	5
6	BK00000006	I000000006	5
7	BK00000007	I000000007	5
8	BK00000008	I000000008	5
9	BK00000009	I000000009	5
10	BK00000010	I000000010	5

4.4- Database Schema (Data Dictionary)

Name of Table:		PUBLISHER_T		
Primary Key		**pub_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
pub_id	Publisher Identiifcation Code (P00001, P000002...	Char	6	PK;NOT NULL
pub_name	Name of Publisher	Varchar	100	NOT NULL
pub_email	Email Address	Varchar	40	NOT NULL
pub_contact_no	Phone Number	Varchar	40	NOT NULL
pub_street	Street name	Varchar	40	NULL
pub_postal_code	Post code	Varchar	10	NULL
pub_city	City Name	Varchar	40	NOT NULL
pub_country	Country Name	Varchar	40	NOT NULL
Name of Table:		BOOKSTORE_EMPLOYEE_T		
Primary Key		**be_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
be_id	Bookstore Employee Identiifcation Code (BE0001, BE0002...	Char	6	PK;NOT NULL
be_first_name	First Name of Employee	Varchar	100	NOT NULL
be_last_name	Last Name of Employee	Varchar	40	NOT NULL
be_gender	Gender (M->Male / F->Female)	Char	1	NOT NULL
be_street	Street name	Varchar	40	NULL
be_postal_code	Post code	Varchar	10	NULL
be_city	City Name	Varchar	40	NOT NULL
be_country	Country Name	Varchar	40	NOT NULL
be_contact_no	Phone Number	Varchar	40	NOT NULL
be_email	Email Address	Varchar	40	NULL
be_position	Employee Position	Varchar	40	NOT NULL
be_join_dt	Join Date	Date		NOT NULL
Name of Table:		BOOK_T		
Primary Key		**book_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002...	Char	10	PK;NOT NULL;
book_title	Title of Book	Varchar	100	NOT NULL
book_genre	Genre of Book	Varchar	40	NOT NULL
total_pages	Total Pages of Book	Numeric	10	NULL
isbn	Book ISBN Code(978-3-16-148410-0,978-3-16-148420-1..	Char	17	NOT NULL
author_name	Author of Book	Varchar	40	NOT NULL
book_price	Price of Book	Numeric	5,2	NOT NULL
publish_dt	Book Publish Date	Date		NOT NULL
pub_id	Publisher Identiifcation Code (P00001, P000002...	Char	6	FK;NOT NULL
genre_id	ID for Genre	Char	3	

Name of Table:		ORDER_T		
Primary Key		**ord_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
ord_id	Order Identiifcation Code (ORD0000001, ORD0000002...	Char	10	PK;NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002...	Char	10	FK;NOT NULL
pub_id	Publisher Identiifcation Code (P00001, P000002...	Char	6	FK;NOT NULL
qty	Order Quantity	Numeric	2	NOT NULL
total_cost	Total Cost of Order	Numeric	10,2	NOT NULL
Name of Table:		INVOICE_T		
Primary Key		**inv_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
inv_id	Order Identiifcation Code (INV0000001, INV0000002...	Char	10	PK;NOT NULL
pub_id	Publisher Identiifcation Code (P00001, P000002...	Char	6	FK;NOT NULL
inv_status	Status (P->PAID / U->UNPAID)	Char	1	NOT NULL
creation_dt	Invoice Creation Date	Date		NOT NULL
due_dt	Payment Due Date	Date		NOT NULL
fullypaid_dt	Fully Paid Date	Date		NOT NULL
total_cost	Total Cost to be paid	Numeric	10,2	NOT NULL
qty	Invoice Quantity	Numeric	3	
Name of Table:		ACCOUNTS_DEPT_T		
Primary Key		**ad_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
ad_id	Accounts Department Identiifcation Code (AD0001, AD0002...	Char	6	PK;NOT NULL
ad_first_name	First Name of Employee	Varchar	100	NOT NULL
ad_last_name	Last Name of Employee	Varchar	40	NOT NULL
ad_gender	Gender (M->Male / F->Female)	Char	1	NOT NULL
ad_street	Street name	Varchar	40	NULL
ad_postal_code	Post code	Varchar	10	NULL
ad_city	City Name	Varchar	40	NOT NULL
ad_country	Country Name	Varchar	40	NOT NULL
ad_contact_no	Phone Number	Varchar	40	NOT NULL
ad_email	Email Address	Varchar	40	NULL
ad_position	Employee Position	Varchar	40	NOT NULL
ad_join_dt	Join Date	Date		NOT NULL

Name of Table:		MEMBER_T		
Primary Key		**member_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
member_id	Member Identiifcation Code (M00001, M00002…	Char	6	PK;NOT NULL
member_first_name	First Name of Member	Varchar	100	NOT NULL
member_last_name	Last Name of Member	Varchar	40	NOT NULL
member_gender	Gender (M->Male / F->Female)	Char	1	NOT NULL
member_street	Street name	Varchar	40	NULL
member_postal_code	Post code	Varchar	10	NULL
member_city	City Name	Varchar	40	NOT NULL
member_country	Country Name	Varchar	40	NOT NULL
member_contact_no	Phone Number	Varchar	40	NOT NULL
member_email	Email Address	Varchar	40	NULL
member_status	Member Status (Y-> YES/ N->NO)	Char	1	NOT NULL
member_join_dt	Member Join Date	Date		NOT NULL
member_identification_number	Member Identification Number	Char	19	
Name of Table:		SHOPPING_CART_T		
Primary Key		**sc_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
sc_id	Shopping Card Identiifcation Code (SC00000001, SC00000002…	Char	10	PK;NOT NULL
member_id	Member Identiifcation Code (M00001, M00002…	Char	6	FK;NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002…	Char	10	FK;NOT NULL;
qty	Quantity in Shopping Cart	Numeric	2	NOT NULL
creation_dt	Shopping Card Transaction Date	Date		
total_cost_amt	Total Cost to be paid	Numeric	10,2	NOT NULL
delivery_status	Status of Delivery (Y->YES/N->NO)	Char	1	
Name of Table:		RECEIPT_T		
Primary Key		**receipt_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
receipt_id	Receipt Identiifcation Code (RT00000001, RT00000001…	Char	10	PK;NOT NULL
sc_id	Shopping Card Identiifcation Code (SC00000001, SC00000002…	Char	10	FK;NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002…	Char	10	FK;NOT NULL;
book_title	Title of Book	Varchar	100	NOT NULL
qty	Quantity in Shopping Cart	Numeric	2	NOT NULL
total_amt_paid	Total amount paid	Numeric	10,2	NOT NULL
creation_dt	Receipt Creation Date	Date		

Name of Table:		INVENTORY_T		
Primary Key		**inventory_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
inventory_id	Inventory Identiifcation Code (I000000001, I000000002…	Char	10	PK;NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002…	Char	10	FK;NOT NULL;
pub_id	Publisher Identiifcation Code (P00001, P000002…	Char	6	FK;NOT NULL
inventory_qty	Inventory quantity	Numeric	5	NOT NULL
inventory_purchased_dt	Book purchased date	Date		NOT NULL
inventory_creation_dt	Inventory creation date	Date		NOT NULL
Name of Table:		BOOK_RATING_T		
Primary Key		**book_rating_id**		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
book_rating_id	Book Rating Identiifcation Code (BR00000001,BR00000002…	Char	10	PK;NOT NULL
member_id	Member Identiifcation Code (M00001, M00002…	Char	6	FK;NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002…	Char	10	FK;NOT NULL;
opinion	Book Opinion Member Input	Varchar	1000	NULL
book_rating_score	1-10 which is 0= terrible, 10= masterpiece	Numeric	2	NOT NULL
rating_dt	Book rating date	Date		NOT NULL
Name of Table:		BOOK_INVENTORY_T		
Composite Primary Key		(book_id,inventory_id)		
Foreign Key 1		book_id REFERENCES BOOK_T(book_id)		
Foreign Key 2		inventory_id REFERENCES INVENTORY(inventory_id)		
Name of Attribute	Description	Data Type	Size	PK/FK/NULL / NOT NULL
book_id	Book Identiifcation Code (BK00000001, BK00000002…	Char	10	PK,FK;NOT NULL;
inventory_id	Inventory Identiifcation Code (I000000001, I000000002…	Char	10	PK,FK;NOT NULL
book_inventory_qty	Book Inventory Quatity	Numeric	5	NOT NULL

4.5- Physical Database Designs

4.5.1- .SQL-DDL Statements used to create the table [PUBLISHER_T]

```
CREATE TABLE [dbo].[PUBLISHER_T](
	[pub_id] [char](6) NOT NULL,
	[pub_name] [varchar](100) NOT NULL,
	[pub_email] [varchar](40) NOT NULL,
	[pub_contact_no] [varchar](40) NOT NULL,
	[pub_street] [varchar](40) NULL,
	[pub_postal_code] [varchar](10) NULL,
	[pub_city] [varchar](40) NOT NULL,
	[pub_country] [varchar](40) NOT NULL,
PRIMARY KEY CLUSTERED
(
	[pub_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.2 – SQL-DDL Statements used to create the table [BOOKSTORE_EMPLOYEE_T]

```
CREATE TABLE [dbo].[BOOKSTORE_EMPLOYEE_T](
	[be_id] [char](6) NOT NULL,
	[be_first_name] [varchar](100) NOT NULL,
	[be_last_name] [varchar](40) NOT NULL,
	[be_gender] [char](1) NOT NULL,
	[be_street] [varchar](40) NULL,
	[be_postal_code] [varchar](10) NULL,
	[be_city] [varchar](40) NOT NULL,
	[be_country] [varchar](40) NOT NULL,
	[be_contact_no] [varchar](40) NOT NULL,
	[be_email] [varchar](40) NULL,
	[be_position] [varchar](40) NOT NULL,
	[be_join_dt] [date] NOT NULL,
PRIMARY KEY CLUSTERED
(
	[be_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.3 – SQL-DDL Statements used to create the table [BOOK_T]

```
CREATE TABLE [dbo].[BOOK_T](
	[book_id] [char](10) NOT NULL,
	[book_title] [varchar](100) NOT NULL,
	[book_genre] [varchar](40) NOT NULL,
	[total_pages] [numeric](10, 0) NULL,
	[isbn] [char](17) NULL,
	[author_name] [varchar](40) NOT NULL,
	[book_price] [numeric](5, 2) NOT NULL,
	[publish_dt] [date] NOT NULL,
	[pub_id] [char](6) NULL,
	[genre_id] [char](3) NULL,
PRIMARY KEY CLUSTERED
(
	[book_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
	GO
```

4.5.4 – SQL-DDL Statements used to create the table [ORDER_T]

```
CREATE TABLE [dbo].[ORDER_T](
	[ord_id] [char](10) NOT NULL,
	[book_id] [char](10) NOT NULL,
	[pub_id] [char](6) NOT NULL,
	[qty] [numeric](2, 0) NOT NULL,
	[total_cost] [numeric](10, 2) NOT NULL,
PRIMARY KEY CLUSTERED
(
	[ord_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.5 – SQL-DDL Statements used to create the table [INVOICE_T]

```
CREATE TABLE [dbo].[INVOICE_T](
	[inv_id] [char](10) NOT NULL,
	[pub_id] [char](6) NOT NULL,
	[inv_status] [char](1) NOT NULL,
	[creation_dt] [date] NOT NULL,
	[due_dt] [date] NOT NULL,
	[fullypaid_dt] [date] NULL,
	[total_cost] [numeric](10, 2) NOT NULL,
	[qty] [numeric](3, 0) NULL,
PRIMARY KEY CLUSTERED
(
	[inv_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.6 – SQL-DDL Statements used to create the table [ACCOUNTS_DEPT_T]

```
CREATE TABLE [dbo].[ACCOUNTS_DEPT_T](
	[ad_id] [char](6) NOT NULL,
	[ad_first_name] [varchar](100) NOT NULL,
	[ad_last_name] [varchar](40) NOT NULL,
	[ad_gender] [char](1) NOT NULL,
	[ad_street] [varchar](40) NULL,
	[ad_postal_code] [varchar](10) NULL,
	[ad_city] [varchar](40) NOT NULL,
	[ad_country] [varchar](40) NOT NULL,
	[ad_contact_no] [varchar](40) NOT NULL,
	[ad_email] [varchar](40) NULL,
	[ad_position] [varchar](40) NOT NULL,
	[ad_join_dt] [date] NOT NULL,
PRIMARY KEY CLUSTERED
(
	[ad_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.7 – SQL-DDL Statements used to create the table [MEMBER_T]

```
CREATE TABLE [dbo].[MEMBER_T](
	[member_id] [char](6) NOT NULL,
	[member_first_name] [varchar](100) NOT NULL,
	[member_last_name] [varchar](40) NOT NULL,
	[member_gender] [char](1) NOT NULL,
	[member_street] [varchar](40) NULL,
	[member_postal_code] [varchar](10) NULL,
	[member_city] [varchar](40) NOT NULL,
	[member_country] [varchar](40) NOT NULL,
	[member_contact_no] [varchar](40) NOT NULL,
	[member_email] [varchar](40) NULL,
	[member_status] [char](1) NOT NULL,
	[member_join_dt] [date] NOT NULL,
	[member_identification_number] [char](19) NULL,
PRIMARY KEY CLUSTERED
(
	[member_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.8 – SQL-DDL Statements used to create the table [SHOPPING_CART_T]

```
CREATE TABLE [dbo].[SHOPPING_CART_T](
	[sc_id] [char](10) NOT NULL,
	[member_id] [char](6) NOT NULL,
	[book_id] [char](10) NOT NULL,
	[qty] [numeric](2, 0) NOT NULL,
	[creation_dt] [date] NULL,
	[total_cost_amt] [numeric](10, 2) NULL,
	[delivery_status] [char](1) NULL,
PRIMARY KEY CLUSTERED
(
	[sc_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.9 – SQL-DDL Statements used to create the table [RECEIPT_T]

```
CREATE TABLE [dbo].[RECEIPT_T](
	[receipt_id] [char](10) NOT NULL,
	[sc_id] [char](10) NOT NULL,
	[book_id] [char](10) NOT NULL,
	[book_title] [varchar](100) NOT NULL,
	[qty] [numeric](2, 0) NOT NULL,
	[total_amt_paid] [numeric](10, 2) NULL,
	[creation_dt] [date] NULL,
PRIMARY KEY CLUSTERED
(
	[receipt_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.10 – SQL-DDL Statements used to create the table [**INVENTORY_T**]

```
CREATE TABLE [dbo].[INVENTORY_T](
	[inventory_id] [char](10) NOT NULL,
	[book_id] [char](10) NOT NULL,
	[pub_id] [char](6) NOT NULL,
	[inventory_qty] [numeric](5, 0) NOT NULL,
	[inventory_purchased_dt] [date] NULL,
	[inventory_creation_dt] [date] NULL,
PRIMARY KEY CLUSTERED
(
	[inventory_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.11 – SQL-DDL Statements used to create the table [**BOOK_RATING_T**]

```
CREATE TABLE [dbo].[BOOK_RATING_T](
	[book_rating_id] [char](10) NOT NULL,
	[member_id] [char](6) NOT NULL,
	[book_id] [char](10) NOT NULL,
	[opinion] [varchar](1000) NULL,
	[book_rating_score] [numeric](2, 0) NOT NULL,
	[rating_dt] [date] NOT NULL,
PRIMARY KEY CLUSTERED
(
	[book_rating_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

4.5.12 – SQL-DDL Statements used to create the table [**BOOK_INVENTORY_T**]

```
CREATE TABLE [dbo].[BOOK_INVENTORY_T](
	[book_id] [char](10) NOT NULL,
	[inventory_id] [char](10) NOT NULL,
	[book_inventory_qty] [numeric](5, 0) NULL,
PRIMARY KEY CLUSTERED
(
	[book_id] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF, ALLOW_ROW_LOCKS =
ON, ALLOW_PAGE_LOCKS = ON, OPTIMIZE_FOR_SEQUENTIAL_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY]
GO
```

5- IMPLEMENTATION

5.1 SQL DML statements used

5.1-1- Question 1

Find the total number of feedback per book. Show book id, book title, and total number of feedback per book.

SQL DML CODE

```
--i. Find the total number of feedback per book. Show book id, book title, and total number of feedback per book.
SELECT br.book_id AS 'Book ID',
       b.book_title AS 'Book Title',
       COUNT(b.book_title) AS 'Total Number Feedback Per Book'
FROM BOOK_RATING_T br, BOOK_T b
WHERE ( br.book_id = b.book_id )
GROUP BY br.book_id,b.book_title
```

SQL Server Result

Results | Messages

	Book ID	Book Title	Total Number Feedback Per Book
1	BK00000001	Practical Statistics for Data Scientists: 50+ Essenti...	7
2	BK00000002	Python for Data Analysis: Data Wrangling with Pa...	1
3	BK00000003	Python Data Science Handbook: Essential Tools f...	1
4	BK00000004	Data Science For Dummies	1

5-1-2- Question 2

Find the total number of feedback per member. Show member id, member name, and total number of feedback per member.

SQL DML CODE

```
--ii. Find the total number of feedback per member. Show member id, member name, and total number of feedback per member.
SELECT br.member_id AS 'Member ID',
       CONCAT(m.member_first_name,' ',m.member_last_name) AS 'Member Name',
       COUNT(m.member_id) AS 'Total Number Feedback Per Member'
FROM BOOK_RATING_T br, MEMBER_T m
WHERE ( br.member_id = m.member_id)
GROUP BY br.member_id, concat(m.member_first_name,' ',m.member_last_name)
```

SQL Server Result

Results | Messages

	Member ID	Member Name	Total Number Feedback Per Member
1	M00002	Crystal Koh	1
2	M00004	Evon Ting	1
3	M00009	Felicia Er	1
4	M00005	Lim Quah	1
5	M00006	Mohd Razak	1
6	M00008	Roger Wang	1
7	M00001	Terri Woon	1
8	M00003	Tim Wong	1
9	M00010	Tom Jones	1
10	M00007	Wei Wong	1

5-1-3- Question 3

Find the total number of book published by each publisher. Show publisher id, publisher name, and number of book published.

SQL DML CODE

```
--iii. Find the total number of book published by each publisher. Show publisher id, publisher name, and number of book published.
SELECT b.pub_id AS 'Publisher ID',
       p.pub_name AS 'Publisher Name',
       COUNT(p.pub_name) AS 'Total Number of Book Published'
FROM PUBLISHER_T p, BOOK_T b
WHERE ( b.pub_id = p.pub_id)
GROUP BY b.pub_id,p.pub_name
```

SQL Server Result

Results | Messages

	Publisher ID	Publisher Name	Total Number of Book Published
1	P00001	OReilly	3
2	P00002	Springer	1
3	P00003	Penguin Random House	1
4	P00004	McGrawHill	1
5	P00005	Hachette UK	2
6	P00007	W. W. Norton & Company.	1
7	P00008	Simon and Schuster.	1

5-1-4- Question 4

Find the total number of book for each category. Show category id, category name, and number of book for each category.

SQL DML CODE

```
--iv. Find the total number of book for each category. Show category id, category name, and number of book for each category.
SELECT b.genre_id AS 'Category ID',
       b.book_genre AS 'Category Name',
       COUNT(b.book_genre) AS 'Total Number of Book For Each Category'
FROM BOOK_T b
GROUP BY b.genre_id,b.book_genre
```

SQL Server Result

Results | Messages

	Category ID	Category Name	Total Number of Book For Each Category
1	DS	Data Science	4
2	P	Programming	3
3	PM	Project Management	3

5-1.5- Question 5

From the book table, list the books where quantity is more than the average quantity of all books.

SQL DML CODE

```
 --v. From the book table, list the books where quantity is more than the average quantity of all books.
SELECT b.book_title AS 'Book Title',
       i.inventory_qty AS 'Quantity'
 FROM BOOK_T b, INVENTORY_T i
 WHERE (b.book_id = i.book_id ) AND
 i.inventory_qty > (SELECT AVG(i.inventory_qty) AS 'Quantity'
                    FROM BOOK_T b,INVENTORY_T i
                    WHERE ( b.book_id = i.book_id))
```

SQL Server Result

Results | Messages

	Book Title	Quantity
1	Practical Statistics for Data Scientists: 50+ Es...	10

5-1-6- Question 6

Find the total number of books ordered by store manager from various publishers.

SQL DML CODE

```
 --vi. Find the total number of books ordered by store manager from various publishers.
SELECT o.pub_id AS 'Publisher ID',
       p.pub_name AS ' Publishers Name',
       SUM(o.qty) AS 'Total Number Ordered from various Publishers'
 FROM ORDER_T o,PUBLISHER_T p
 WHERE o.pub_id = p.pub_id
 GROUP BY o.pub_id, p.pub_name
```

SQL Server Result

Results | Messages

	Publisher ID	Publishers Name	Total Number Ordered from various Publishers
1	P00001	OReilly	20
2	P00002	Springer	5
3	P00003	Penguin Random House	5
4	P00004	McGrawHill	5
5	P00005	Hachette UK	10
6	P00007	W. W. Norton & Company.	5
7	P00008	Simon and Schuster.	5

5-1-7- Question 7

Produce a record of invoices for various publishers. The invoice consists of invoice number, invoice date, publisher's names & addresses, total quantity of ordered books and total amount to be paid.

SQL DML CODE

```
--vii. Produce a record of invoices for various publishers. The invoice consists of invoice number, invoice date, publisher's names & addresses, total quantity of ordered books and total
SELECT i.inv_id AS 'Invoice Number',
       i.creation_dt AS 'Invoice Date',
       p.pub_name AS 'Publisher Name',
       CONCAT(p.pub_street,' ',p.pub_postal_code,' ',p.pub_city,' ',p.pub_country) AS 'Address',
       i.qty AS 'Total Quantity Ordered',
       i.total_cost AS 'Total Amount to be Paid'
FROM INVOICE_T i,PUBLISHER_T p
WHERE i.pub_id = p.pub_id
```

SQL Server Result

Results | Messages

	Invoice Number	Invoice Date	Publisher Name	Address	Total Quantity Ordered	Total Amount to be Paid
1	INV0000001	2022-06-11	OReilly	Sebastopol USA	10	1500.00
2	INV0000002	2022-06-11	OReilly	Sebastopol USA	5	1200.00
3	INV0000003	2022-06-11	OReilly	Sebastopol USA	5	1750.00
4	INV0000004	2022-06-11	McGrawHill	New York USA	5	1500.00
5	INV0000005	2022-05-01	Hachette UK	London UK	5	1200.00
6	INV0000006	2022-06-11	Hachette UK	London UK	5	900.00
7	INV0000007	2022-06-11	Simon and Schuster.	New York USA	5	1000.00
8	INV0000008	2022-04-05	W. W. Norton & Company.	New York USA	5	1200.00
9	INV0000009	2022-02-04	Springer	AG Switzerland	5	1600.00
10	INV0000010	2022-06-02	Penguin Random House	New York USA	5	1500.00

5-1-8- Question 8

A list of total customers based on gender who are registered as members in APU E-Bookstore. The list should show total number of registered members and total number of gender (male and female).

SQL DML CODE

```
--viii. A list of total customers based on gender who are registered as members in APU
--E-Bookstore. The list should show total number of registered members and total
--number of gender (male and female)

SELECT COUNT(*) AS 'Total Registered Members',
       COUNT(CASE WHEN mem_gender='M' THEN 1 END) AS 'Male Members',
       COUNT(CASE WHEN mem_gender='F' THEN 1 END) AS 'Female Members'
FROM MEMBER_T
```

SQL Server Result

Results | Messages

	TOTAL MEMBERS
1	10

	TOTAL MALE
1	6

	TOTAL FEMALE
1	4

5-1-9- Question 9

A list of purchased books that have been and have not been delivered to members. The list should show member identification number, address, contact number, book serial number, book title, quantity, date and status of delivery.

SQL DML CODE

```
  --ix. A list of purchased books that have been and have not been delivered to members. The list should show member identification number, address, contact number, book serial number, b
select m.member_identification_number AS 'Identification Number',
        CONCAT(m.member_street,' ',m.member_postal_code,' ',m.member_city,' ',m.member_country) AS 'Address',
        b.isbn AS 'Book Serial Number',
        b.book_title AS 'Book Title',
        sc.qty AS 'Quantity',
        sc.creation_dt AS 'Date',
        sc.delivery_status As 'Delivery Status'
FROM MEMBER_T m,BOOK_T b,SHOPPING_CART_T sc
WHERE m.member_id = sc.member_id AND
      b.book_id = sc.book_id
```

SQL Server Result

Results | Messages

	Identification Number	Address	Book Serial Number	Book Title	Quantity	Date	Delivery Status
1	840204-14-5087	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	Y
2	800401-14-5221	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	Y
3	200201-14-5110	Kuala Lumpur Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	N
4	830106-14-5002	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	N
5	810630-14-5088	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	N
6	820101-14-5099	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	Y
7	880202-14-5312	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	Y
8	880606-14-5541	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	N
9	820505-14-5003	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	Y
10	800401-14-5002	Petaling Jaya Malaysia	11233455	Practical Statistics for Data Scientists: 50+ Es...	1	2022-06-11	N

5-1-10- Question 10

A list of total books and its total price as added by members in shopping cart.

SQL DML CODE

```
--x. A list of total books and its total price as added by members in shopping cart.
SELECT sc.member_id AS 'Member ID',
       SUM(sc.qty) AS 'Total Books',
       SUM(sc.total_cost_amt) AS 'Total Price'
FROM SHOPPING_CART_T sc
GROUP BY sc.member_id
```

SQL Server Result

Results | Messages

	Member ID	Total Books	Total Price
1	M00001	1	300.00
2	M00002	1	300.00
3	M00003	1	300.00
4	M00004	1	300.00
5	M00005	1	300.00
6	M00006	1	300.00
7	M00007	1	300.00
8	M00008	1	300.00
9	M00009	1	300.00
10	M00010	1	300.00

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