MONASH University
Information Technology

FIT2094 Databases

2020 Semester 2

Assignment 2 - SQL - Monash Art Union (MAU)

Assignment weighting 15% - Lecturer in Charge: Minh Le

Monash Art Union (MAU) is a company which accepts artworks from artists and offers these artworks to galleries around the country for display and potential sale. A registered MAU customer may, while the artwork is being displayed, decide to purchase the item. MAU charge twenty percent of the price at which the artwork is sold as their commission (note this is not recorded as part of the model). The gallery is paid a standard percentage of the sale price as its commission, this percentage is negotiated per gallery and so may vary from gallery to gallery (this gallery percentage is recorded as part of the model). The remainder of the sale price goes to the artist.

MAU assign an artist code to each artist which the company represents. MAU record the artist's name, their contact address and telephone number (not all artists supply a telephone number). When an artist has completed an artwork which they wish to sell through MAU, they contact the company and offer the work to be sold by MAU. MAU maintain for each artist the number of works which MAU currently hold in stock (ie. available for display/sale) for that artist.

All artworks accepted by MAU are assigned an artwork number specific to a particular artist. For example artist 1234 will have artworks 1, 2, 3 etc and artist 4567 will also have artworks 1, 2, 3 etc. The title of the artwork, the date the work was accepted into the MAU system and the minimum payment which the artist is prepared to accept for their work is recorded. The work may be sold for any price above this minimum payment such that the artist receives at least this minimum amount and the gallery and MAU commission requirements are satisfied.

A gallery is identified by a gallery id. MAU record the name of the gallery, the gallery manager’s name, the address of the gallery and the contact phone number for the gallery (all galleries are required to provide a unique contact number).

Art collectors who are interested in purchasing an artwork must register with MAU as a customer before they are able to make any purchase. Each customer is identified by their customer id. The customer's name, address and contact phone number are recorded. If the customer is a business customer their business name is also recorded.

A gallery considers the artworks which MAU has on offer and then requests one or more artworks and displays the artwork(s) in its gallery with the intention of generating a sale. The date at which the display starts is recorded. If the item generates little interest then the gallery will return the artwork to MAU. At a later date, after it is back at MAU, the gallery might request and display the same artwork again.

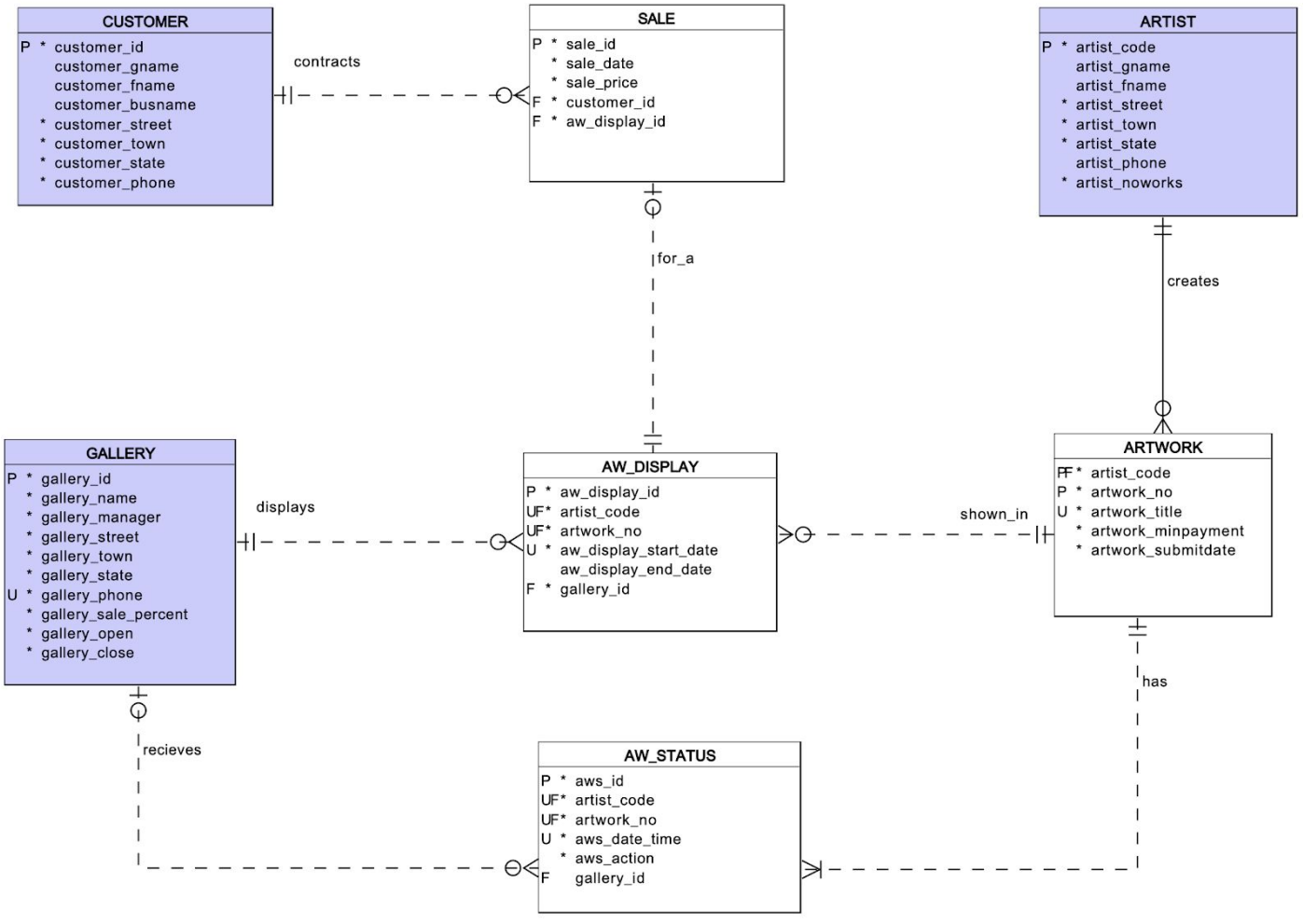
When an artwork from MAU stock is sold, the sale is assigned a unique sale id. The artwork, date of the sale, sale price and customer who purchased the item is recorded. MAU is interested in identifying which display of the artwork generated the sale.

To allow tracking the status of an artwork, MAU would like to have recorded the status of each artwork at the current point in time and its full status history. MAU would like to record five possible values for this status:

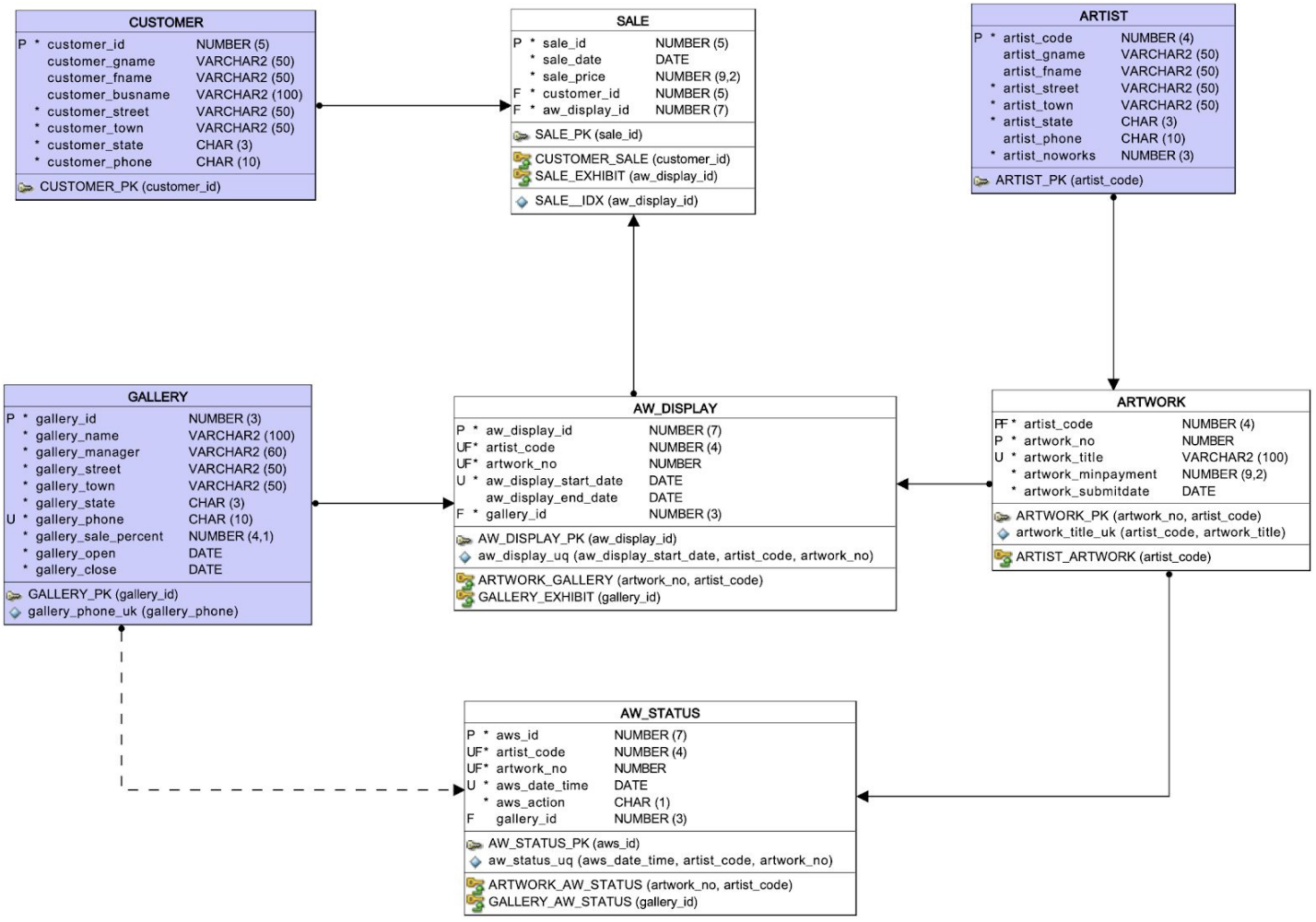
- W - in MAU storage at the MAU central warehouse
- T - in transit (being shipped to/from a gallery), *include to/from which gallery id*
- G - located at a gallery, *include gallery id*
- S - sold, or
- R - returned to the artist

These five possible values are fixed and will not need to be extended.

Based on these requirements a logical model has been created for MAU:



From this logical model the following relational model has been created:



For this assignment, you will populate these tables with appropriate test data and write the SQL queries specified below. You must ensure that any activities you need to carry out in the database to complete the assignment conform to the requirements of the provided data model.

The schema/insert file for creating this model is available in the archive ass2-student.zip - this file creates the Monash Art Union tables and populates several of the tables (those shown in purple on the supplied model) - you should read this schema carefully and be sure you understand the various data requirements. **You must not alter the schema file in any manner, it must be used as supplied**. This schema file contains a single commit after the inserts have completed since this is setting up an initial state of the database for you to work with, you should not use this as your method of approach.

IMPORTANT points for you to observe, when completing this assignment, are:

1. The ass2-student.zip archive also contains four SQL scripts for you to code your answers in, **you should ensure these files are regularly pushed to GitLab server so a clear development history is available for the marker to verify (a minimum of four pushes are required).** In each file, you ***must*** fill in the header details with your name and student ID before beginning any work. Your script files **must not include any SPOOL or ECHO commands**. Although you might include such commands when testing your work **they must be removed before submission** (a 5 mark grade penalty will be applied if your documents contain spool or echo commands)
2. You are free to make assumptions if needed. However, ***your assumptions must align with the details here and in the assignment 2 forum*** and must be clearly documented (see the required submission files).

   REMEMBER you must keep up to date with the Ed assignment 2 forum where further clarifications may be posted (this forum is to be treated as your client). **Please be careful to ensure you do not post anything which includes your reasoning, logic or any part of your work to this assignment forum as doing so violates Monash plagiarism/collusion rules.**

3. Queries that use subqueries and SQL conditions ***unnecessarily*** to get required data will be *penalised*. Views ***must not*** be used in arriving at any solutions for the tasks you are required to complete as part of this assessment.

4. In handling dates, the default date format must not be assumed; ***you must make use of the TO_DATE and TO_CHAR functions where appropriate***. Failure to do so will incur a 50% grade *penalty* for questions involving dates.

5. PL/SQL (ie, user created functions, procedures, triggers, packages or PL/SQL structures) **must not be used** for any part of the solutions to these assignment tasks. Any question which makes use of such structures will not be graded.

6. In completing the following tasks, you must ***design your test data so that you always get output for the SQL scripts/queries specified below*** - this may require you to add further data as you move through completing the required tasks. ***Queries that are correct but do not produce any output ("no rows selected" message) using your test data will lose 50% of the marks allocated***, so you should carefully check your test data and ensure it thoroughly validates your SQL queries.

You may need to rerun the schema, especially when you have been experimenting with your solutions and may have corrupted the database unintentionally. If you suspect that there might be such problems, simply rerun the schema. The schema includes the appropriate drop commands at the head of the file.

Assignment Tasks

Using the supplied schema file (mau_ass2_schm_insert.sql) create the tables for the Monash Art Union System and insert the supplied values. This provides you with a *starting point* for the following tasks.

TASK 1: Data Manipulation (20 marks):

(a) Load selected tables with your own additional test data using the supplied **Q1a-mau-insert.sql** script file, and SQL commands which will insert, as a minimum, the following sample data -

- 15 ARTWORKs
- 10 AW_DISPLAYs
- 4 SALEs, and
- the required AW_STATUS entries to support the ARTWORK, AW_DISPLAY and SALE data you add.

Please note, these are the *minimum number of entries you must insert*; you are encouraged to insert more to provide a richer data set to draw from.

For this task **only**, data that you add in the database should follow the rules mentioned below:

1. *You may treat all of the data that you add as a single transaction since you are setting up the initial test state for the database.*
2. The primary key values for this data should be hardcoded values (i.e., **NOT** make use of sequences) and must consist of values below 100.
3. Dates used must be chosen between the 1st January 2019 and 31th July 2020.
4. Artworks that you add must be from at least 10 different artists.
5. AW_Displays that you add must have at least 3 different start dates and must involve both the years permitted, i.e., 2019 and 2020.
6. At least 2 different galleries must have AW_Displays displayed in them.

For this task **ONLY**, you can look up and include values for the loaded tables/data directly where required. However, if you wish, you can still use SQL to get any non-key values.

You are reminded again that in carrying out this task you must not modify any data or add any further data to the tables which were previously populated by the supplied schema file.

[10 marks]

For all subsequent questions (Q1b onwards) **you are NOT permitted to manually**:

- lookup a value in the database, obtain its primary key or the highest/lowest value in a column, or
- calculate values external to the database, e.g., on a calculator and then use such values in your answers. Any necessary calculations must be carried out as part of your SQL code.

You must ONLY use the data as provided in the text of the questions. Where a particular case (upper case, lower case, etc.) for a word is provided you **must only use that case**. You may divide names such as Zora Mandrey into the first name of Zora and a last name of Mandrey if required. **Failure to adhere to this requirement will result in a mark of 0 for the relevant question**.

(b) For the following tasks, **your SQL must correctly manage transactions and use sequences to generate new primary keys for numeric primary key values** (under no circumstances may a new primary key value be hardcoded as a number or value). Your answers for these tasks must be placed in the supplied SQL Script **Q1b-mau-dm.sql**

You may use the following artwork statuses with an artwork as and when required:

- **W** - in MAU storage at the MAU central warehouse
- **T** - in transit (being shipped to/from a gallery), include to/from which gallery id
- **G** - located at the gallery, include gallery id
- **S** - sold, or
- **R** - returned to the artist

You are reminded again that queries that use subqueries and SQL conditions *unnecessarily* to get required data will be penalised.

(i) Create sequences which will allow entry of data into the AW_STATUS, AW_DISPLAY and SALE tables - the sequences must begin at 300 and go up in steps of 1 (i.e., the first value is 300, the next 301, etc.)

[1 mark]

(ii) Suppose it is now 10 AM on 22nd October 2020 and an artwork called “Saint Catherine of Siena" has just been received by the MAU central warehouse from the artist with artist code 17. The minimum payment this artist is prepared to accept for this artwork is $500,000. Take the necessary steps in the database to record the required entries for this new arrival.

[3 marks]

(iii) *Using the timing* as indicated, take the necessary steps in the database to record the following activities. You may assume that *no other artworks have been added by this artist (artist code 17)*.

a) On the same day at 11 AM, this new arrival is sent from the MAU warehouse to Karma Art gallery (Ph:0413432569).
b) It is received by the gallery 3 hours and 15 minutes after leaving the MAU warehouse. MAU is immediately informed of the safe arrival of this extremely precious artwork through a telephone call.
c) On the next day the gallery places the artwork on display for a total of 10 days.

[4 marks]

(iv) It is now 2:30 PM on the 5th day since this artwork has been displayed. *No other artwork has been put on display after this artwork was displayed in any gallery (ie. it is the most recent display).* It is now sold to a customer (customer id 1) for $850,000. Take the necessary steps in the database to record the required activities.

[2 marks]

TASK 2: SQL Queries (60 marks):

Your answers for these tasks must be placed in the supplied SQL Script **Q2-mau-queries.sql**

ANSI joins must be used where two or more tables are to be joined, ***under no circumstances can "implicit join notation" be used*** *- see the week 7 workshop slide 22 and tutorial*

Where a question indicates "Your output must have the form shown below" - this means the same appearance and alignment of columns/data as the sample output shows. Clearly your actual data may be different.

(i) List the artist code, artist name (as a single attribute) and full name of the state for all the artists who live in either VIC, NSW or WA. You should only show those artists who either do not have a given name, a family name or a phone number.

The output must be displayed in ascending order of Artist Name, where two artists have the same name order the output by artist code.

The column headings in your output should be renamed as Artist Code, Artist Name and Artist State. Your output must have the form shown below. Your actual data may clearly be different from the data shown below.