COM1025 Web and Database Systems

Coursework Assignment

[Title of the Scenario you decided to model: University Accommodation Office/University Sports Park]

URN	6699931
Username	BR00419
Date	26/11/22

1   Business Rules and Assumptions
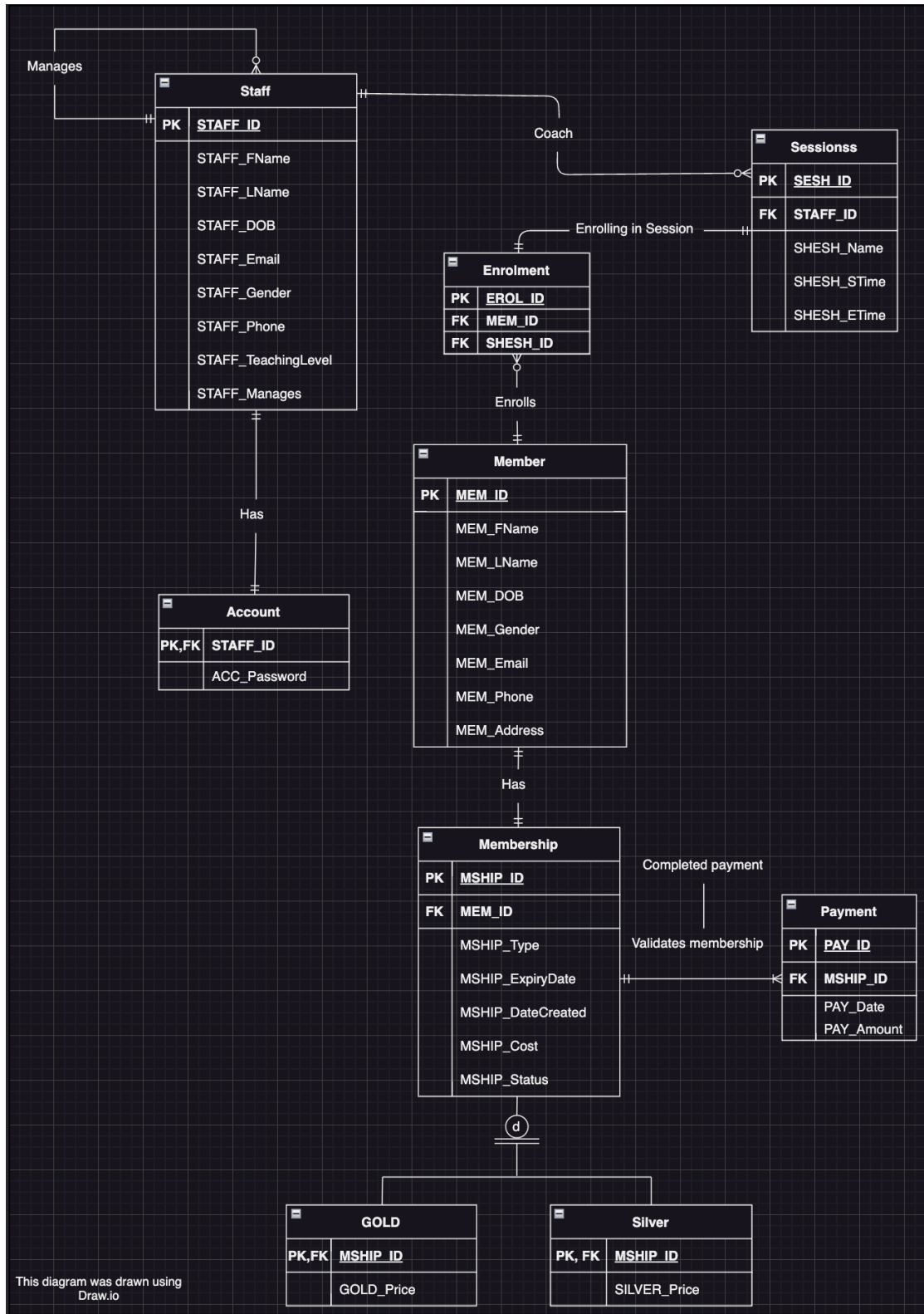
1) Staff- Staff
   a) A staff member can manage 0 or many staff members.
   b) A staff member can only have 1 manager.
   c) A new staff must be managed by a staff.
   d) An staff member cannot manage themselves.
2) Staff – Account
   a) Staff member has to have 1 account
   b) An account can only belong to 1 staff member
   c) Staff member's username will be STAFF_ID
3) Staff – Session
   a) Staff doesn't have to coach a session.
   b) Staff can coach in multiple sessions.
4) Staff
   a) A staff member is an employee therefore personal information is collected.
5) Member – Enrolment
   a) Enrolment is optional for members.
   b) Members can enroll multiple times.
6) Member – Membership
   a) Members must have a membership.
7) Member
   a) A member is a customer therefore personal information is collected.
8) Membership – Payment
   a) Completed payment will validate membership.
9) Membership
   a) Membership is invalid until payment is made.
   b) Membership will be invalid from the expiry date.
10) Membership – "Gold" / "Silver"
   a) A member can only have one type of Membership.
   b) Two types of memberships exist: "Gold" / "Silver".

Assumptions

1) All payments is in person.
2) Staff will oversee payment.
3) Staff will be free to do sessions at customers choice.
4) ONLY YEARLY PLAN IS AVAILABLE
5) If the member pays £300 they are getting Gold Membership
6) If the member pays £240 they are getting Silver Membership
7) Staff who have not been managed (STAFF_Manages = NULL) are owners who did not require training.
8) Only Gold and Silver are available plans
9) Public and Student have the same pricing

2 Extended Entity Relationship Diagram (EERD)

This diagram was drawn using Draw.io

3   Logical Relational Database Schema

Staff(STAFF_ID, STAFF_FName, STAFF_LName, STAFF_DOB, STAFF_Email, STAFF_Gender, STAFF_Phone, STAFF_TeachingLevel, STAFF_Manages)
PRIMARY KEY: STAFF_ID
FOREIGN KEY: STAFF_Manages REFERENCES **Staff**(STAFF_ID)

Account(STAFF_ID, ACC_Password)
PRIMARY KEY: STAFF_ID
FOREIGN KEY: STAFF_ID REFERENCES **Staff**(STAFF_ID)

Sessionss(SHESH_ID, STAFF_ID, SHESH_Name, SHESH_STime, SHESH_ETime)
PRIMARY KEY: SHESH_ID
FOREIGN KEY: STAFF_ID REFERENCES **Staff**(STAFF_ID)

Member(MEM_ID, MEM_FName, MEM_LName, MEM_DOB, MEM_Gender, MEM_Email, MEM_Phone, MEM_Address)
PRIMARY KEY: MEM_ID

Enrolment(EROL_ID, MEM_ID, SHESH_ID)
PRIMARY KEY: EROL_ID
FOREIGN KEY: MEM_ID REFERENCES **Member**(MEM_ID)
FOREIGN KEY: SHESH_ID REFERENCES **Sessionss**(SHESH_ID)

Membership(MSHIP_ID, MEM_ID, MSHIP_Type, MSHIP_ExpiryDate, MSHIP_DateCreated, MSHIP_Cost, MSHIP_Status)
PRIMARY KEY: MSHIP_ID
FOREIGN KEY: MEM_ID REFERENCES **Member**(MEM_ID)

Payment(PAY_ID, MSHIP_ID, PAY_Date, Pay_Amount)
PRIMARY KEY: PAY_ID
FOREIGN KEY: MSHIP_ID REFERENCES **Membership**(MSHIP_ID)

Gold(MSHIP_ID, GOLD_Price)
PRIMARY KEY: MSHIP_ID
FOREIGN KEY: MSHIP_ID REFERENCES **Membership**(MSHIP_ID)

Silver(MSHIP_ID, SILVER_Price)
PRIMARY KEY: MSHIP_ID
FOREIGN KEY: MSHIP_ID REFERENCES **Membership**(MSHIP_ID)

4   Website Working with MySQL Database

index.php

LogIn.php

SignUp.php

MemberInfo.php

5   Advanced Tasks

In this section, please list what advanced tasks you have done. If you did some advanced tasks but forgot to include them in this section, you might bear the risk that such advanced tasks may not be noticed by the marker and thus additional marks may not be awarded. **If you did not attempt any advanced task, still include this section but just say you didn't attempt any.**

1.5 I have included an unary relationship in my EERD in the Staff where Staff members can be managed by another staff member.

2.6 I have not attempted 2.6

3.8 I have specified other constraints and/ or more complicated queries.

4.8 I have completed it and its validated to some extent

5.5 Not attempted

2.5

6   Self-Reflection & Taking Feedback on Board

Brief discussion on how you incorporated the feedback given to you on the EERD as well as what you have learnt from the project: aspects that were more challenging or easy, and things you would do differently in retrospect.

One section that presented a significant challenge for me during the development process was the implementation of the code for user registration. This difficulty was primarily due to the complex structure of my Entity-Relationship Diagram (EERD). Specifically, I struggled to understand the concept of a foreign key constraint, which required me to first generate a STAFF_ID in the staff table before creating a new account in the account table. However, this ended up being a fortuitous requirement, as it allowed me to simultaneously create a new staff member and a new account by fulfilling the requirement specified in the EERD that an account must be associated with a staff member. This was a crucial aspect of the system design, as it ensured the integrity of the data by enforcing the relationship between the two entities.

        I made an error in the design of the staff registration page that allowed users to input "0" as the Staff ID of their manager, which caused the code to fail due to the UNSIGNED nature of the field. This meant that the Staff ID must be a positive integer, starting from 1. This oversight on my part resulted in the failure of the code, and to ensure that the data input for the Staff ID field was in compliance with the constraints of the database schema I implemented business rules and assumptions to make sure 0 was not something a new staff member signing up could input.
In order to prevent such issues in the future, I will implement input validation on the staff registration page to ensure that the Staff ID field only accepts positive integers starting from 1. This

could be done through server-side or client-side validation, depending on preference and the specific requirements of the application.

7   References

Put the links of the websites you used for eliciting the business rules and any other references. Make sure you cite every reference in the main body of your report. You are recommended to use Harvard referencing.

If you used a CSS template or any external libraries in your website, make it clear in the main body of the report and add proper references (with URLs if relevant). Make sure you have the needed permission to use such templates and libraries as well (you should be aware of such legal issues and what are your responsibilities).

HTML references
• W3schools.com. 2023. HTML Tutorial. [online] Available at: https://www.w3schools.com/html/ [Accessed 4 January 2023].
CSS Template
W3.CSS Templates. 2023. W3.CSS Templates. [ONLINE] Available at: https://www.w3schools.com/w3css/w3css_templates.asp. [Accessed 04 January 2023].
Figure 1 index.php
images.unsplash.com. 2023. No page title. [ONLINE] Available at: https://images.unsplash.com/photo-1526506118085-60ce8714f8c5?ixlib=rb-4.0.3&ixid=MnwxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8&auto=format&fit=crop&w=1287&q=80. [Accessed 04 January 2023].
Figure 2 index.php
images.unsplash.com. 2023. No page title. [ONLINE] Available at: https://images.unsplash.com/photo-1591258370814-01609b341790?ixlib=rb-4.0.3&ixid=MnwxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8&auto=format&fit=crop&w=1287&q=80. [Accessed 04 January 2023].
PHP refrences
 Stack Overflow. 2023. Stack Overflow - Where Developers Learn, Share, & Build Careers. [ONLINE] Available at: https://stackoverflow.com. [Accessed 04 January 2023].

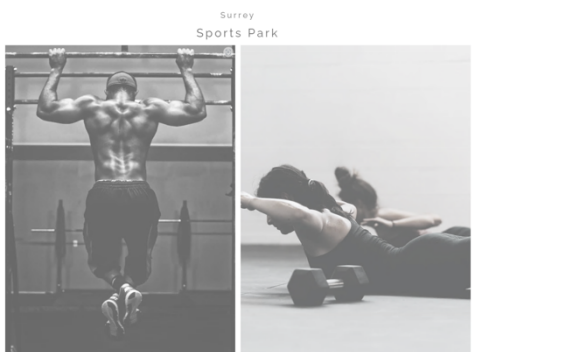# 8 Appendix: Screenshots of Website

Figure above: Top of webpage for index.php
Left image: Figure A
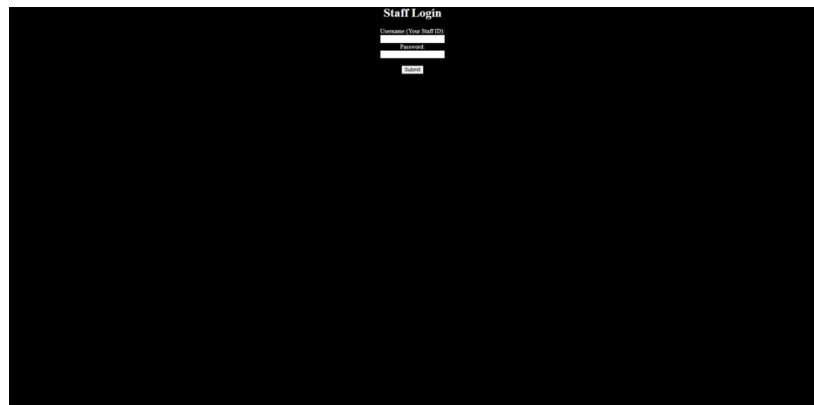Right image: Figure B

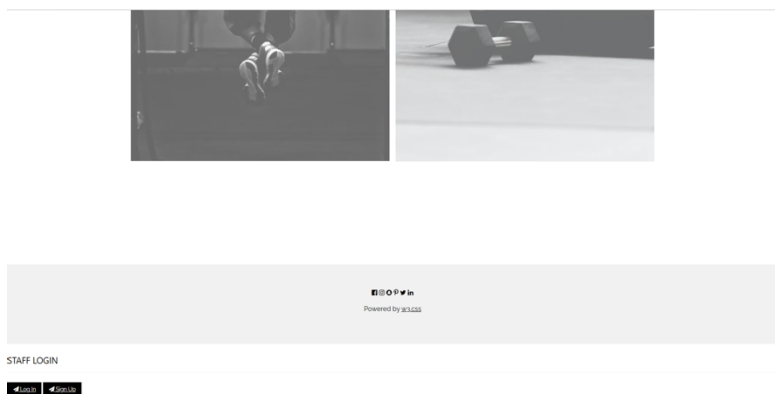

Figure above: Login Page for LogIn.php

Figure above: Bottom of webpage for index.php

Figure above: Member and membership data table for MemberInfo.php

Figure above: Sign up webpage for SignUp.php