COM1025 Web and Database Systems

Coursework Assignment
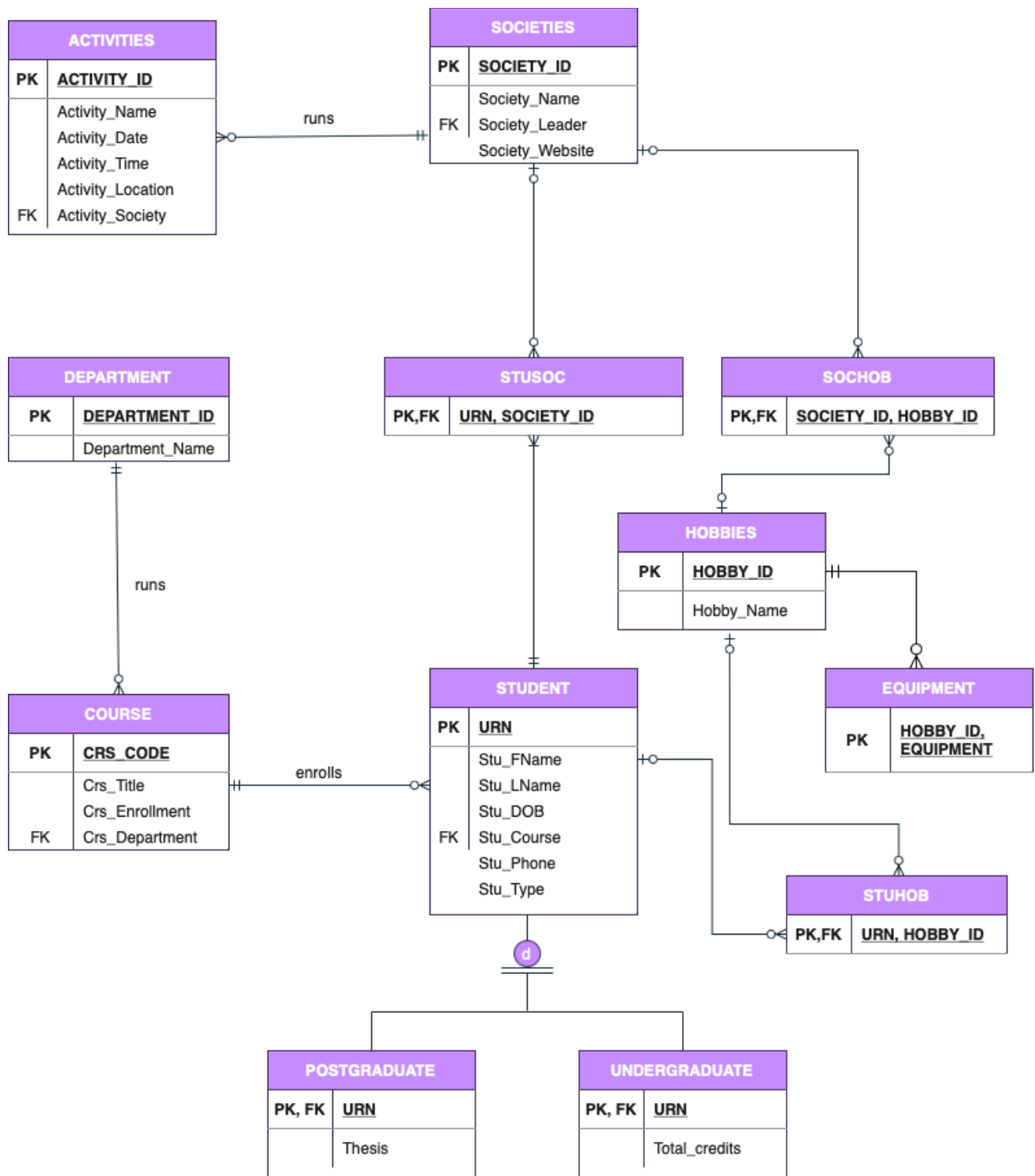
[University Database for Societies]

URN	6830924
Username	rk01161
Date	30.12.2023

1 Business Rules and Assumptions

1. A university has departments that offers courses and has two categories of students: undergraduates and postgraduates.
   a. The university needs to store the following details about each student: URN, full name, date of birth, phone number, student type (postgraduate-undergraduate) and what course they are on.
   b. A student must be a postgraduate or an undergraduate, but they cannot be both at the same time.
   c. A postgraduate student will have an URN and thesis while an undergraduate student will have an URN and total credits.
   d. A student must be enrolled on one and only one course while a course can enrol no student or many students.
   e. A course has a course code, title, a department and enrolment (total number of students on the course)
   f. A department has a department ID and a department name.
   g. A department can run no course or many courses, but a course must be run by one and only one department.
2. The university also wants to keep data on hobbies of students if they wish to provide that information so that appropriate societies can be suggested to them.
   a. A student can have no hobby or can have many hobbies.
   b. A hobby can be related to no student or to many students.
   c. A hobby has an ID, name and equipment which is a multivalued attribute. (e.g., knitting is a hobby that requires multiple equipment like needles, yarn, scissors, crochet hook)
   d. That multivalued attribute called equipment is stated in another table linked to hobby table and takes HOBBY_ID as a PK. A hobby can have multiple equipment or none, but an equipment must be related to one and only one hobby.
   e. The current list of hobbies include reading, hiking, chess, knitting, ballroom dancing, football, tennis, rugby, climbing, rowing, music.
   f. A society can be related to no hobby or can be related to many hobbies.
   g. A hobby can have no society assigned to it or can have many societies assigned to it.
   h. A society has an ID, name, leader which is a student and a website.
   i. A society must have a student or many students.
   j. A student can be a member of no societies or many societies.
3. The university also keeps data of the events that societies run.
   a. A society can run no activities or many activities.
   b. An activity must be run by one and only one society.
   c. An activity has an ID, name, date, time and a location.

2   Extended Entity Relationship Diagram (EERD)

3   Logical Relational Database Schema

Department(DEPARTMENT_ID, Department_Name)

PRIMARY KEY: DEPARTMENT_ID

Course(Crs_Code, Crs_Title, Crs_Enrollment, Crs_Department)

PRIMARY KEY: Crs_Code
FOREIGN KEY: Crs_Department REFERENCES **Department**(DEPARTMENT_ID)

Student(URN, Stu_FName, Stu_LName, Stu_DOB, Stu_Phone, Stu_Course,
Stu_Type)

PRIMARY KEY: URN
FOREIGN KEY: Stu_Course REFERENCES **Course**(Crs_Code)

Undergraduate(URN, Total_credits)

PRIMARY KEY: URN
FOREIGN KEY: URN REFERENCES **Student**(URN)

Postgraduate(URN, Thesis)

PRIMARY KEY: URN
FOREIGN KEY: URN REFERENCES **Student**(URN)

Hobbies(HOBBY_ID, Hobby_Name)

PRIMARY KEY: HOBBY_ID

Equipment(HOBBY_ID, Equipment)

PRIMARY KEY: HOBBY_ID, Equipment
FOREIGN KEY: HOBBY_ID REFERENCES **Hobbies**(HOBBY_ID)

StuHob(URN, HOBBY_ID)

PRIMARY KEY: URN, HOBBY_ID
FOREIGN KEY: URN REFERENCES **Student**(URN), HOBBY_ID REFERENCES
Hobbies(HOBBY_ID)

Societies(SOCIETY_ID, Society_Name, Society_Leader, Society_Website)

PRIMARY KEY: SOCIETY_ID
FOREIGN KEY: Society_Leader REFERENCES **Student**(URN)

Activities(ACTIVITY_ID, Activity_Name, Activity_Date, Activity_Time, Activity_Location, Activity_Society)

PRIMARY KEY: ACTIVITY_ID
FOREIGN KEY: Activity_Society REFERENCES **Societies**(SOCIETY_ID)

StuSoc(URN, SOCIETY_ID)
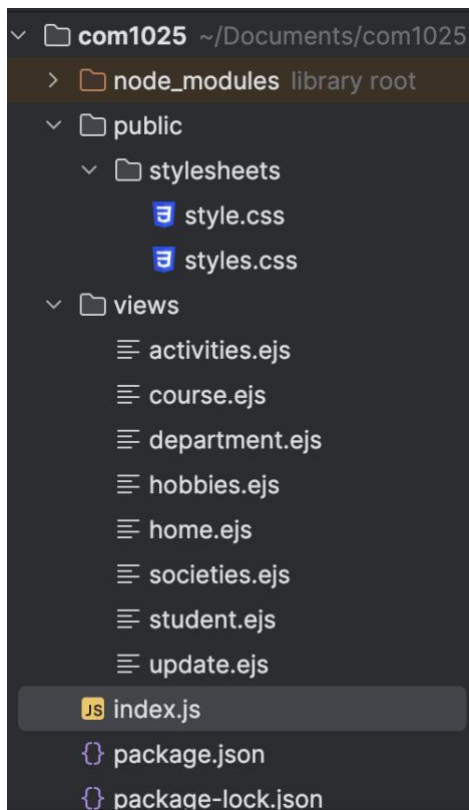
PRIMARY KEY: URN, SOCIETY_ID
FOREIGN KEY: URN REFERENCES **Student**(URN), SOCIETY_ID REFERENCES **Societies**(SOCIETY_ID)

SocHob(SOCIETY_ID, HOBBY_ID)

PRIMARY KEY: SOCIETY_ID, HOBBY_ID
FOREIGN KEY: SOCIETY_ID REFERENCES **Societies**(SOCIETY_ID), HOBBY_ID REFERENCES **Hobby**(HOBBY_ID)

4   Website Working with MySQL Database

style.css / styles.css: They both are used to format/style the website. They have all the information about the layout of the website including text fonts, alignments, backgrounds, colours etc.

activities.ejs: This one has the *"Activities"* table and includes the functionality to view all and view one from the activity table which is given with rows. It also includes a navigation bar at the top that allows the user to go to other tables.

course.ejs: This one has the *"Course"* table and includes the view all and view one functionalities from the course table which is given with rows. It also includes a navigation bar at the top that allows the user to go to other tables.

department.ejs: This one has the *"Department"* table and includes the view all and view one functionalities from the department table which is given with rows. It also includes a navigation bar at the top that allows the user to go to other tables.

hobbies.ejs: This one has the *"Hobbies"* table and includes the view all and view one functionalities from the hobbies table which is given with rows. It also includes a navigation bar at the top that allows the user to go to other tables.

home.ejs: This one is the *"Home page"*. It has a header that includes a button that directs the user to "Societies" table, content navigation bar like the other files and an "About" part.

societies.ejs: This one has the *"Societies"* table and includes the view all and view one functionalities from the societies table which is given with rows. It also includes a navigation bar at the top that allows the user to go to other tables.

student.ejs: This one has the *"Student"* table and includes the view all and view one functionalities from the student table which is given with rows. Additionally, and unlike the other files, this one also includes update and delete functionalities. Update functionality allows the user to change any data about a student except their URN. This update route has validations that if the user tries to update a student's information that is valid, text colour will be green and allow the user to update it. But if the information that is entered is not valid, text box will turn red, and user won't be able to update it. It also includes a navigation bar at the top that allows the user to go to other tables.

update.ejs: This one has update route. It is only linked to student table, and it allows the user to click on the update button next to each student and edit their information. If the information that is edited is valid it will turn green, if not it will be red and won't allow to update it. Each information that is edited requires to follow a specific pattern. This file also includes update button in it.

index.js: This one includes all the tables, validations, view all, view one, update and home routes. Each file accesses their table through here. What to access for each table is written with sql queries. Validations are specified with if statements through here as well.

5   Advanced Tasks

For Part 1:

- Except from the given EERD, and the required hobby and two more tables in Section 2, I did one extra table. In total I have 6 main tables alongside with bridge entities and a table for the multivalued attribute called "Equipment" which is linked to Hobbies table. I translated all those tables from my EER Model to Relational Schema in Section 3.

- I also wrote 3 more queries as an extra challenge.

For Part 2:

- I added functionality to delete rows of data from "student". (Both update and delete functionalities apply only for student table).

6   References

1. GitHub. (2023). *student-database-exercise/public/main.css at main · joeappleton18/student-database-exercise.* [online] Available at: https://github.com/joeappleton18/student-database-exercise/blob/main/public/main.css [Accessed 31 Dec. 2023].

    https://github.com/joeappleton18/student-database-exercise/blob/main/public/main.css

2. GitHub. (2023). *space-park/styles.css at main · joeappleton18/space-park*. [online] Available at: https://github.com/joeappleton18/space-park/blob/main/styles.css [Accessed 31 Dec. 2023].

    https://github.com/joeappleton18/space-park/blob/main/styles.css

3. www.foo.com. (2023). *Foo.com*. [online] Available at: http://www.foo.com [Accessed 31 Dec. 2023].

    Based on the html template of http://www.foo.com

4.   Surrey.ac.uk. (2023). Available at: https://www.ias.surrey.ac.uk/wp-content/uploads/2019/10/university-of-surrey-aerial-view.jpg [Accessed 31 Dec. 2023].

    https://www.ias.surrey.ac.uk/wp-content/uploads/2019/10/university-of-surrey-aerial-view.jpg

7   Appendix: Screenshots of Website

University of Surrey Societies

Welcome to University of Surrey

Explore Societies

About our Societies and Activities

Welcome to UoS. Our University has many activities run by our societies. You can see all the upcoming events on our "Activities" page that you can access through the content part. We keep the data of every each one of our students in order to suggest them some societies that are related to their hobbies if they want be suggested some. So if you want to see some available societies and events held by our university that may interest you, make sure to contact us!

Department Table

DEPARTMENT_ID	Department_Name
1	Computer Science
3	Electrical Engineering
2	Information Technology
4	Physics

Department Table

DEPARTMENT_ID	Department_Name
1	Computer Science

Course Table

Crs_Code	Crs_Title	Crs_Enrollment	Crs_Department
100	BSc Computer Science	150	1
101	BSc Computer Information Technology	20	2
200	MSc Data Science	100	1
201	MSc Security	30	2
210	MSc Electrical Engineering	70	3
211	BSc Physics	100	4

Course Table

Crs_Code	Crs_Title	Crs_Enrollment	Crs_Department
100	BSc Computer Science	150	1

Student Table

URN	Stu_FName	Stu_LName	Stu_DOB	Stu_Phone	Stu_Course	Stu_Type		
612345	Sara	Khan	6/20/2002	01483112233	100	UG	Update	Delete
612346	Pierre	Gervais	3/12/2002	01483223344	100	UG	Update	Delete
612347	Patrick	O-Hara	5/3/2001	01483334455	100	UG	Update	Delete
612348	Iyabo	Ogunsola	4/21/2002	01483445566	100	UG	Update	Delete
612349	Omar	Sharif	12/29/2001	01483778899	100	UG	Update	Delete
612350	Yunli	Guo	6/7/2002	01483123456	100	UG	Update	Delete
612351	Costas	Spiliotis	7/2/2002	01483234567	100	UG	Update	Delete
612352	Tom	Jones	10/24/2001	01483456789	101	UG	Update	Delete
612353	Simon	Larson	8/23/2002	01483998877	101	UG	Update	Delete
612354	Sue	Smith	5/16/2002	01483776655	101	UG	Update	Delete
612355	James	Potter	1/1/1999	01483553344	200	PG	Update	Delete
612356	Sirius	Black	3/7/2000	01483007733	210	PG	Update	Delete
612357	Lily	Evans	6/6/2000	01483117744	201	PG	Update	Delete
612358	Marlene	McKinnon	8/9/1999	01483226699	211	PG	Update	Delete
612359	Mary	McDonald	7/14/2001	01473225555	200	PG	Update	Delete

Student Table

URN	Stu_FName	Stu_LName	Stu_DOB	Stu_Phone	Stu_Course	Stu_Type		
612345	Sara	Khan	6/20/2002	01483112233	100	UG	Update	Delete

URN: 612345
Stu_FName: Sara
Stu_LName: Khan
Stu_DOB: 19/06/2002
Stu_Phone: 01483112233
Stu_Course: 100
Stu_Type: UG

Update

8

Hobbies Table

HOBBY_ID	Hobby_Name
1	reading
2	hiking
3	chess
4	knitting
5	ballroom dancing
6	football
7	tennis
8	rugby
9	climbing
10	rowing
11	music

Hobbies Table

HOBBY_ID	Hobby_Name
4	knitting

Societies Table

SOCIETY_ID	Society_Name	Society_Leader	Society_Website
1	Book Club Society	612345	www.bookclubsoc.com
2	HikingSoc	612346	www.hikingsoc.com
3	ChessSoc	612347	www.chesssoc.com
4	CRAFTsoc	612350	www.craftsoc.com
5	Ballroom and Latin Dance	612356	www.ballroomandlatindance.com
6	Football Society	612358	www.footballsociety.com
7	Tennis Society	612357	www.tennissoc.com
8	Rugby Society	612349	www.rugbysociety.com
9	Climbing Society	612359	www.climbingsoc.com
10	Boat (Rowing) Society	612351	www.rowingsoc.com

Societies Table

SOCIETY_ID	Society_Name	Society_Leader	Society_Website
1	Book Club Society	612345	www.bookclubsoc.com

Activities Table

ACTIVITY_ID	Activity_Name	Activity_Date	Activity_Time	Activity_Location	Activity_Society
1	Hiking day	Sat Mar 02 2024 00:00:00 GMT+0300 (GMT+03:00)	12:10:00	SSP2	2
2	Chess competition	Fri Dec 01 2023 00:00:00 GMT+0300 (GMT+03:00)	14:00:00	SSP1	3
3	Ballroom	Sat Jul 06 2024 00:00:00 GMT+0300 (GMT+03:00)	13:30:00	USSU1	5
4	Mountain Climbing	Mon Dec 11 2023 00:00:00 GMT+0300 (GMT+03:00)	15:00:00	SSP3	9
5	Rowing competition	Tue Jan 02 2024 00:00:00 GMT+0300 (GMT+03:00)	12:20:00	SSP4	10
6	Knitting Day	Tue Dec 12 2023 00:00:00 GMT+0300 (GMT+03:00)	16:00:00	USSU2	4
7	Origami	Wed Dec 13 2023 00:00:00 GMT+0300 (GMT+03:00)	15:30:00	USSU2	4

Activities Table

ACTIVITY_ID	Activity_Name	Activity_Date	Activity_Time	Activity_Location	Activity_Society
1	Hiking day	Sat Mar 02 2024 00:00:00 GMT+0300 (GMT+03:00)	12:10:00	SSP2	2