

UNIVERSITY OF WESTMINSTER

Computer Science & Software Engineering

5COSC020W DATABASE SYSTEMS COURSEWORK (2023/2024)	
Module leader	Ragu Sivaraman
Unit	Database Systems Coursework – INDIVIDUAL COURSEWORK
Weighting:	40% of the module assessment
Qualifying mark	30% (<i>overall module average over 40% with both components over 30%</i>)
Description	Produce a conceptual data model & a logical data model following given specs. Write SQL statements to complete specific tasks. Produce a supporting report.
Learning Outcomes Covered in this Assignment:	LO1 Design a robust relational database schema using UML notations;
Handed Out:	12th October 2023
DUE DATES	<p>> MONDAY 30 OCTOBER 2023 at 13:00:00 – Part A.</p> <p>> MONDAY 20 November 2023 at 13:00:00 – Part A + Part B.</p>
DELIVERABLES	<p>> MONDAY 30 OCTOBER 2023 at 13:00:00 – Part A. One report in PDF format, font Calibri size 11</p> <ul style="list-style-type: none"> • 1 cover page for part A, student details & tutorial group. • 1 side featuring conceptual EERD. <p>> MONDAY 20 November 2023 at 13:00:00 – Part A + Part B.– FINAL One report in PDF format, font Calibri size 11</p> <ul style="list-style-type: none"> • 1 cover page for part A+B, student details & tutorial group. • 1 side featuring Conceptual EERD. • 5 Business Questions + 5 bullets points for Reflective Commentary. • 4 Data Dictionary tables supporting conceptual EERD. • 1 side featuring Mapped Logical ERD.
SUBMISSION	Online in “ Coursework ” area on Blackboard.
Type of Feedback and Due Date:	<p>PART A: global formative feedback on conceptual EERD.</p> <p>PART A + B: online feedback and marks using Blackboard Rubrics, 25-30 working days (5-6 weeks) after the submission deadline.</p> <p>All marks provisional until formally agreed by Assessment Board.</p>
BCS Accreditation Criteria	<p>2.1.1 Knowledge and understanding of facts, concepts, principles & theories</p> <p>2.1.2 Use of such knowledge in modelling and design</p> <p>2.2.1 Specify, design or construct computer-based systems</p> <p>2.3.2 Development of general transferable skills</p> <p>3.1.3 Knowledge of systems architecture</p> <p>3.2.1 Specify, deploy, verify and maintain information systems</p>

‘Subject to external examiner approval’

Assessment regulations

For detailed information regarding University Assessment Regulations on how you are assessed, penalties and late submissions, what constitutes plagiarism etc. please refer to the following website:
<http://www.westminster.ac.uk/study/current-students/resources/academic-regulations>

Penalty for Late Submission

If you submit your coursework late but within 24 hours or one working day of the specified deadline, 10 marks will be deducted from the final mark, as a penalty for late submission, except for work which obtains a mark in the range 40 – 49%, in which case the mark will be capped at the pass mark (40%). If you submit your coursework more than 24 hours or more than one working day after the specified deadline you will be given a mark of zero for the work in question unless a claim of Mitigating Circumstances has been submitted and accepted as valid.

It is recognised that on occasion, illness or a personal crisis can mean that you fail to submit a piece of work on time. In such cases you must inform the Campus Office in writing on a mitigating circumstances form, giving the reason for your late or non-submission. You must provide relevant documentary evidence with the form. This information will be reported to the relevant Assessment Board that will decide whether the mark of zero shall stand. For more detailed information regarding University Assessment Regulations, please refer to the following website:

<http://www.westminster.ac.uk/study/current-students/resources/academic-regulations>

Part A Project Brief: Vacoliday

Vacoliday is a touristic company that offers high-end highly-customizable holidays, with a great emphasis on localness and well-being, in Vacomedita, a lovely town on the Mediterranean coast.

Vacoliday has several residences around the town of Vacomedita which they use to accommodate holiday makers. These residences offer two types of bookable accommodation: fully-integrated apartments and stand-alone rooms. The apartments are typically larger with one or more bedrooms and other rooms like kitchens, bathrooms, washing rooms, dining rooms, and lounges. The standalone rooms are essentially bedrooms with possibly an en-suite bathroom.

The company offers various attractive meal options that can also be booked. Collective meals can be taken at specific times at one of the stylish dining suites available at the Vacoliday residences. However, meals can also be delivered to people's accommodation, if pre-booked in advance.

Besides, Vacoliday offers a wide range of exciting bookable experiences. These experiences can take place on-site at a specific residence or off-site, out and about the area surrounding Vacomedita. There are three main kinds of on-site experiences: fitness classes (such as yoga, pilates or any other well-being physical activities) under the guidance of a fitness instructor; craft workshops during which Vacoliday customers can learn a local craft with a workshop instructor; and cooking classes for which holidaymakers are taught how to prepare local dishes by a chef. On the other hand, off-site experiences are led by a guide and come mainly under two broad categories: excursions to places of interest and walking hikes. Thus, hikes are on foot and involve walking in the countryside or wilderness around Vacomedita. Excursions are run by a driver on a bus and allow the visiting of places of interest, beauty spots and other landmarks across the stunning Vacomedita region.

In terms of staffing, Vacoliday relies on highly-trained employees with well-defined roles. Guides oversee all off-site experiences. Drivers use their buses to accompany people on excursions. Chefs take care of meals but also teach cooking classes. Housekeeping attendants are responsible for the good maintenance of their allocated accommodations. Finally, instructors come under two groups: the fitness instructors who run the exercise classes for well-being and the craft instructors who lead and deliver the workshops in which people learn exciting local craft skills.

Part A Questions

You have been hired by Vacoliday as a **Database Architect** to undertake a database project to support the data needs of the company. Your job in this first part is to investigate the Vacoliday company, produce a high-quality **CONCEPTUAL ENHANCED ENTITY RELATIONSHIP DIAGRAM (EERD)** to support its data needs and document it with a data dictionary.

Prefix the names of all entities and attributes with your student id number starting with w (see end of doc).

QUESTION 1: INVESTIGATION, BUSINESS QUESTIONS & REFLECTIVE COMMENTARY

(10 Marks)

- Study the Vacoliday Project Brief very carefully and start identifying the building blocks of the Conceptual EERD: entities, specialisations, relationships, multiplicities, attributes, and primary keys.
- Formulate five Business Questions (BQs)** for the Vacoliday's Board of Directors to investigate the company and clarify your understanding of the building blocks of the Conceptual EERD. Your questions must be formulated in a way that is understandable to Managing Directors who do not have technical knowledge in the field of database systems. Your questions must be unique and formulated by you only. Questions directed at lecturers will not be accepted.
- Post your five Business Questions** on the Coursework Q&A Forum on Blackboard **by Friday 27 October 2023 at 17:00:00**. The forum is available at:
https://learning.westminster.ac.uk/ultra/courses/_94125_1/outline/discussion/_4770618_1?view=discussions&courseId=_94125_1
- Insert screenshots of your five Business Questions** and the related answers in your report, clearly identifying your full name.
- Write a five bullet points-based Reflective Commentary** to explain how each of your Business Questions helped you clarify your understanding of the building blocks of the Conceptual EERD.

QUESTION 2: ENTITIES

(08 Marks)

- Identify and list the main **entities** for Vacoliday.
- Create an **Entity Data Dictionary Table** to document the identified entities.
To produce this supporting documentation, fill in the table below to briefly explain each entity.

Entity name	Brief Explanation

For more information, please refer to page 510 of the 6th edition of the Connolly's textbook.

QUESTION 3: SPECIALISATIONS

(07 Marks)

- Identify and list the main **specialisations** for Vacoliday.
- Create a **Specialisation Data Dictionary Table** to document the identified specialisations.
To produce this supporting documentation, fill in the table below to briefly explain each specialisation.

General entity	Specialised entity	Brief explanation

For more information, please refer to page 510 of the 6th edition of the Connolly's textbook.

QUESTION 4: RELATIONSHIPS & MULTIPLICITIES**(15 Marks)**

- a) Identify the main **relationships and multiplicities (participations + cardinalities)** for Vacoliday.
- b) Create a **Relationship & Multiplicities Data Dictionary Table** to document the identified relationships and associated multiplicities.
To produce this supporting documentation, fill in the table below to briefly explain the relationships and multiplicities.

Entity name	Multiplicity	Relationship	Multiplicity	Entity name	Brief justifications for the multiplicity (4 statements for each relationship)

For more information, please refer to page 513 of the 6th edition of the Connolly's textbook.

QUESTION 5: ATTRIBUTES & PRIMARY KEYS**(5 Marks)**

- a) Identify the main **attributes and primary keys (PKs) of the entities** for Vacoliday.
- b) Create an **Attributes Data Dictionary Table** to document the identified attributes and primary keys.
To produce this supporting documentation, fill in the table below to briefly explain the attributes and primary keys identified for each entity.

Entity name	Attributes for each entity (include PK)	Brief explanation

For more information, please refer to page 516 of the 6th edition of the Connolly's textbook.

QUESTION 6: CONCEPTUAL EERD QUALITY & NOTATIONS**(5 Marks)**

Produce a complete high-quality **CONCEPTUAL EERD** for Vacoliday. This **CONCEPTUAL EERD** needs to include all the identified **entities, specialisations, relationships, multiplicities, attributes, and primary keys**.

- It should fit on one page of the report and be easy to read.
- It should use **UML notations** as learnt in this module and no other notations.
- The use of non-UML notations will be penalised and marks will be deducted.
- The names of all entities & attributes should be prefixed with the student id number starting with w.
- The diagram is ultimately what is being assessed. The absence of a diagram will lead to zero marks.

**Reminder: Using the Coursework Q&A Forum**

To provide you with the support you need as a Database Architect and answer any questions you may have about the Vacoliday brief, an interactive Q&A is offered. This allows you to ask specific questions to the Vacoliday Board of Directors about the Vacoliday business so that to improve your understanding of the business and your conceptual EERD. Questions must be asked by **by Friday 27 October 2023 at 17:00:00 on the Blackboard Coursework Q&A Forum:**
https://learning.westminster.ac.uk/ultra/courses/_94126_1/outline/discussion/_4709172_1?view=discussions&courseId=94126_1

(Questions sent by email will not be accepted)

Part A Marks Allocation

Part A will be marked based on the following marking criteria:

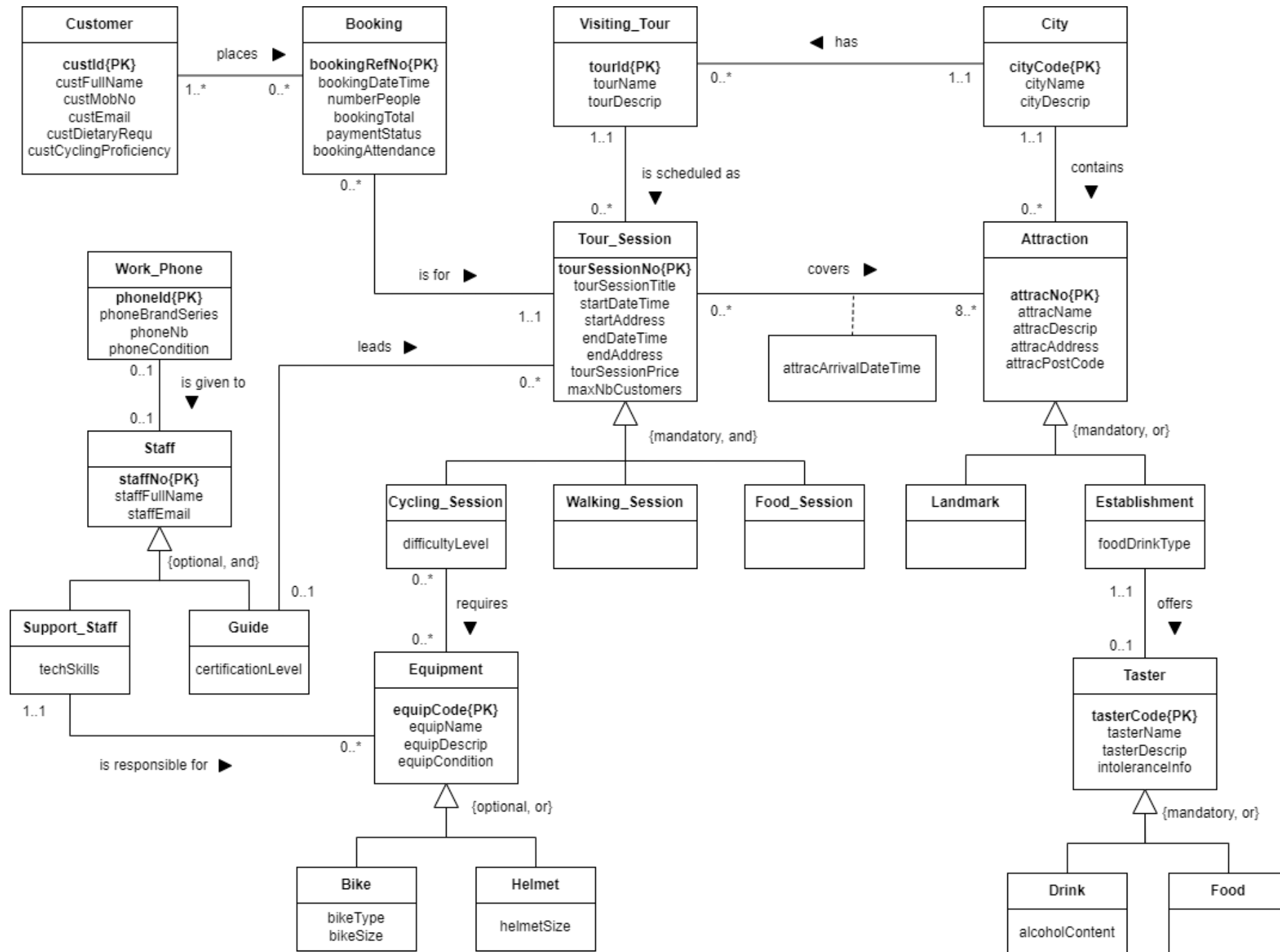
Marking Criteria	Marks
Relevance and correct formulation of questions & solid justifications of the use of answers	10
Correct identification of entities	08
Correct identification of specialisations	07
Correct identification of relationships & multiplicities	15
Correct identification of attributes & primary keys	05
High quality of representation of the conceptual EERD and correct use of UML notations	05
PART A TOTAL	50

Part B Project Brief: Tourmato

Tourmato is a touristic company that offers exciting “off-the-beaten track” visiting tours around several cities across Europe. Essentially, Tourmato takes groups of customers around European cities to visit them and experience their unique atmospheres, under the direction of a local experienced tour guide. To provide a range of experiences, every city covered by Tourmato offers many visiting tours. A tour session is a visiting tour that has been assigned a specific start date and time, a start address, an end date and time, an end address and a specific price. Tourmato customers can place a booking for a variety of exciting tour sessions, depending on what they like.

The conceptual EERD for Tourmato is given in Figure 1 (see next page).

Figure 1. Conceptual EERD for Tourmato



Part B Questions

You have been hired by Tourmato as a **Database Consultant** to undertake a database project to support the data needs of the firm. In this second part, you are given a conceptual data model for Tourmato (figure 1), and your first goal is to **map it** onto a high-quality **LOGICAL ENTITY RELATIONSHIP DIAGRAM (ERD)** to logically represent how the key business data needs can be organised as a set of interrelated tables that can then be implemented. These tables need to be interconnected according to the strict rules of the relational model to be implementable.

Prefix the names of all tables and attributes with your student id number starting with w (see end of doc).

QUESTION 7: MAPPING CONCEPTUAL EERD TO LOGICAL ERD

(50 Marks)

Map the Conceptual EERD given on **figure 1** to produce a complete **LOGICAL ERD** for Tourmato.

This **LOGICAL ERD** needs to include all the **correct tables, relationships, multiplicity constraints, attributes, primary keys** and **foreign keys**. It should be easy to read and needs to fit on one page of the report.

- It should fit on one page of the report and be easy to read.
- It should use **UML notations** as learnt in this module and no other notations.
- The use of non-UML notations will be penalised and marks will be deducted.
- The names of all tables & columns should be prefixed with the student id number starting with w.
- The diagram is ultimately what is being assessed. The absence of a diagram will lead to zero marks.

Part B Marks Allocation

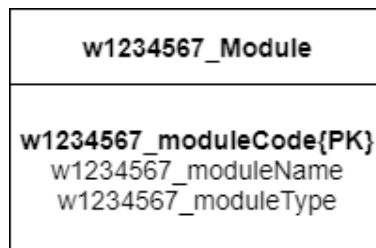
Part B will be marked based on the following marking criteria:

Marking Criteria	Marks
Clarity, formatting, and structure of the logical ERD with correct UML notations	05
Correct mapping of specialisations	25
Correct mapping of many-to-many relationships	12
Correct mapping of one-to-many relationships	06
Correct mapping of one-to-one relationships	02
PART B TOTAL	50

KEY REQUIREMENTS FOR THE ENTIRE COURSEWORK

- Only **UML notations** are accepted for this coursework, as introduced in this module.
- You need to **prefix** all your entities, tables, and attributes with “w + the 7 digits of your ID number” as provided by the University, both for **Part A (Vacoliday Conceptual EERD)** and **Part B (Tourmato Logical ERD)**.
- Failure to use UML notations and to prefix entities, tables and attributes with an ID number will be penalised and marks will be deducted.

For example, if my name is Francois Roubert and my ID number is w1234567, when I identify the entity or table “Module” and its attributes “moduleCode”, “moduleName” and “moduleType”, I will have to represent it this way:



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