1st Sit Coursework Question Paper: **Year Long 2021/2022**

Module Code:	**CC6001NT**
Module Title:	**Advanced Database System Development**
Module Leader:	**Mr. Narendra Karn / Mr. Rohit Panday (Islington College)**

Coursework Type:	Individual
Coursework Weight:	This coursework accounts for ***40%*** of the overall module grades.
Submission Date:	**Week 18**
Coursework given out:	**Week 8**
Submission Instructions:	Submit the following to Itahari International College's RTE department before the due date: ● A report (document) in .pdf format in the Google Classroom or through any medium which the RTE department specifies. ● Project in the ZIP file - SQL Queries - Script File
Warning:	London Metropolitan University and Itahari International College take plagiarism very seriously. Offenders will be dealt with sternly.

PLAGIARISM

You are reminded that there exist regulations concerning plagiarism. Extracts from these regulations are printed overleaf. Please sign below to say that you have read and understand these extracts:

Extracts from University *Regulations on Cheating, Plagiarism and Collusion*

Section 2.3: *"The following broad types of offence can be identified and are provided as indicative examples ….*

(i) Cheating: including taking unauthorised material into an examination; consulting unauthorised material outside the examination hall during the examination; obtaining an unseen examination paper in advance of the examination; copying from another examinee; using an unauthorised calculator during the examination or storing unauthorised material in the memory of a programmable calculator which is taken into the examination; copying coursework.

(ii) Falsifying data in experimental results.

(iii) Personation, where a substitute takes an examination or test on behalf of the candidate. Both candidate and substitute may be guilty of an offence under these Regulations.

(iv) Bribery or attempted bribery of a person thought to have some influence on the candidate's assessment.

(v) Collusion to present joint work as the work solely of one individual.

(vi) Plagiarism, where the work or ideas of another are presented as the candidate's own.

(vii) Other conduct calculated to secure an advantage on assessment.

(viii) Assisting in any of the above.

Some notes on what this means for students:

1. Copying another student's work is an offence, whether from a copy on paper or from a computer file, and in whatever form the intellectual property being copied takes, including text, mathematical notation, and computer programs.

2. Taking extracts from published sources *without attribution* is an offence. To quote ideas, sometimes using extracts, is generally to be encouraged. Quoting ideas is achieved by stating an author's argument and attributing it, perhaps by quoting, immediately in the text, his or her name and year of publication, e.g. "$e = mc^2$ (Einstein 1905)". A *reference* section at the end of your work should then list all such references in alphabetical order of authors' surnames. (There are variations on this referencing system which your tutors may prefer you to use.) If you wish to quote a paragraph or so from published work then indent the quotation on both left and right margins, using an italic font where practicable, and introduce the quotation with an attribution.

Coursework Details

The coursework assignment is an individual assessment weighted 40% of the marks for the module. It is designed mainly to assess students' practical problem-solving skills and critical thinking/evaluation on the design and development of database systems. It requires the student to analyse, design, and implement a web-based database application based on a given business case study. You are asked to provide a software solution as well as appropriate documentation detailing the design and implementation of the system.

1. Case Study

ABC college maintains a number of departments. Some departments conduct and manage the student examination, assignment and results, whereas some departments manage the student fees record. Only those students, who paid the college fee and attendance having 80% or more will be eligible to give module assignment/examination. A student studies different kinds of modules throughout the journey. A college allocates one teacher to one or many modules. After graduation, a student can also be part of the college as a teacher.

Your prototype of the system will be developed using Oracle SQL Developer Data Modeler and ASP.NET with C#

Fig 1. Example of Teacher allocation list

S.N.	Teacher Name	Address	Email	Module Code	Module Name	Credit Hours
1	Saul Goodman	595 Green Lake Road Black Lake 9115 Lake Street Harrietsfield	Saulthegoodman@abc.edu.np	CC12	Data Structure and Algorithm	30
2	Walter White	696 Madison St. Pierrefonds	whitywalker@abc.edu.np	CC12	Data Structure and Algorithm	30
3	Santana Lopez	6 Valley View Street Griffintown	Santanalopez@abc.edu.np	CC49	Engineering Thermodynamic	60
4	Rust Cohle	89 Coffee Dr. Plaster Rock	rustycohle@abc.edu.np	SG101 TG405	Software engineer Data Analysis	30 50

Fig 2. Example of Assignment and Examination Results

Student ID: 149893

Student Name: Mr. William Ishee

Student Address: 2508 Shinn Street New York

Module Code	*Module Name*	*Assignment Type*	*Grade*	*Status*
CC12	Data Structure and Algorithm	*Coursework*	*A*	*Pass*
CC49	Engineering Thermodynamic	*Coursework*	*B*	*Pass*
CC49	Engineering Thermodynamic	*Written Exam*	*F*	*Fail*
SG101	Software engineer	*Individual Assignment*	*B+*	*Pass*
SG101	Software engineer	*Group Assignment*	*B*	*Pass*
SG101	Software engineer	*Unseen Examination*	*A*	*Pass*

2. Requirements of the Coursework

Marks are awarded for producing a working and properly documented system that meets the requirements specified below as **deliverables**:

2.1 Contents Page

A list of sections/subsections of the document, including page numbers.

2.2 Normalisation

[15 Marks]

Produce a set of fully normalised tables for the system:

- You may use Figure 1 and Figure 2 as a starting point for normalisation.
- You may also add additional attributes where appropriate.
- Show clearly all the steps of normalisation, up to the 3rd normal form.
- Two separate normalisation is done showing the correct transition between UNF to 3NF.
- Proper identification of Primary/Foreign Key, Repeating Groups, Partial Dependency, and Transitive Dependency

2.3 E-R Model

[10 Marks]

Use *Oracle SQL Developer Data Modeler* to produce an Entity Relationship Diagram. The final ERD should be consistent with the outcome of your normalisation. Submit a copy of the ERD:

- Proper ERD of the textual description with proper entities and correct cardinality (entities must show all primary keys and foreign keys involved).
- Explanation of assumptions made in order to make the ERD (must show the process to remove the duplication of entities(relations) from Relational Model, Normalization 1 and Normalization 2)

2.4 Data Dictionary

[5 Marks]

Use *Oracle SQL Developer Data Modeler* to produce a list of attributes for each entity. Submit a print-out copy of these lists:

- Data Dictionary must contain well-defined Name of Tables, Attributes, Appropriate Data Type and Size of Attributes, Constraints of Each attribute, Reference Tables and Attributes along with Example Data

2.5 Generation of Database

[3 Marks+ 4 Marks+ 3 Marks]

- Use *Oracle SQL Developer Data Modeler* to convert the E-R diagram into a set of database tables. Provide a print-out of the DDL script for generating the tables (relevant 'CREATE statements only).

- Use *Oracle SQL Developer* to populate these tables with suitable data values (using 'INSERT' statements), at least 5 rows for SETUPS, and 10 rows for CONFIGURATION and TRANSACTION tables with proper screenshot.

- Provide a print-out of contents for all the tables (using 'SELECT' statements) with a proper screenshot.

2.6 Implementation of Web-based Database Application

- Implementation of a web-based database application which includes the following webforms (web pages) using ASP.NET with C#:

  - **Basic Webforms:**

    [15 Marks]

    - Student Details
    - Department Details
    - Teacher Details
    - Address Details
    - Module Details

    All these forms should facilitate input, update and delete of information.

  - **Complex Webforms:**
    (Provide SQL Queries and Complex forms)

    [6+14 Marks]

    - ***Teacher – Module Mapping Form*** (for any teacher, show details of the teacher and the details of all modules that he/she teach)

    - ***Student Fee Payment Form*** (For any Student, show the detail of the student and payment with amount and date of payment)

    - ***Student – Assignment Form*** (for any student, show the details of students with their module assignment result details).

- Implementation of a homepage website that includes an options menu with an Attractive Graphical Dashboard.

[5 Marks]

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2.7 Documentation of the system (as implemented in 3.6)

FOR EACH FORM

Implementation document

- Provide a set of screen dumps for all the web pages (webforms) you have produced.
- Basic Forms to show CRUD operation (form view and list view screens with Template Fields for Foreign Keys))
- Complex Forms (Proper Filter Demonstration using List Box/Grid and Template Field (foreign keys))

Testing Document

[10 Marks]

- Provide a copy of the initial data (table contents) in your system.
- For each form implemented, list the individual tests that have been carried out together with their results.
- Proper test cases with Before and After Screenshots of data
- At least 2 failure cases with proper correction measures

FOR THE APPLICATION

The URL address for the uploaded website (connected with the Oracle database)

User Manual (up to 5 pages)

[5 Marks]

- The User Manual should have a contents page and separate sections for each form provided.
- The User Manual should contain clear instructions on how to use the system and how to run each of the forms available to it.
  - Easy to read user manual with Arrows and Graphics to explain the process

2.8 Further Discussion

[5 Marks]

Your discussion should summarise your experience in undertaking this coursework with the mention of 5 tools/techniques learned during coursework.

-----------------------------------End of the Coursework------------------------------------