CCT College Dublin Continuous Assessment

Programme Title	Higher Diploma in Science in Computing (FT Sept 2022)	**Assignment Type**	Integrated
Module Titles	Databases, Web Development	**Lecturers**	aldana@cct.ie, mikhail@cct.ie
Assignment Title	ERD, HTML Tables & CSS	**Weightings**	20% – DB, 20% – Web Dev
Issue Date	13/10/2022	**Last Revision**	13/10/2022
Submission Deadline	28/10/2022 @23:59	**Submitted to**	https://moodle.cct.ie/mod/assign/view.php?id=117042
Feedback Method	Moodle gradebook	**Feedback**	Within 2 weeks after submission
Submission Requirements *All submissions must meet the minimum requirements or the mark awarded may be affected*	• Submission is only accepted as **a single PDF file** through **Moodle** with the **CCT assessment cover page** (student name, student number included) with all of the required materials/links. • Use Harvard Referencing when citing third party material • Be the student's own work	• Late submissions will be accepted up to **5 calendar days** after the deadline. • All late submissions are subject to a penalty of **10%** of the mark awarded. • Submissions received **more than 5 calendar days** after the deadline above **will not** be accepted and a mark of **0%** will be awarded.	
Learning Outcomes *This is not the assessment task (detailed on the next page). This CA will assess student attainment of the following Minimum Intended Learning Outcomes (MIMLOs):*	**Databases** 2. Analyse a real-world set of requirements and model a suitable database schema by relating the proposed design to database design principles. 3. Categorise different constraint violations and select appropriate resolution strategies.	**Web Development** 1. Overcome the limitations of static websites with dynamic web solutions making use of existing developed code libraries and state-of-the-art security features ensuring robust and thoroughly tested implementations 2. Assess the needs of clients to design and develop a bespoke solution that makes use of both client-side and server-side technologies etc.	

QQI Description of Attainment *Attainment of the learning outcomes is the minimum requirement to achieve a Pass mark (40%). Higher marks are awarded where there is evidence of achievement beyond this, in accordance with QQI Assessment and Standards, Revised 2013, and summarised in the following table:*	**% Range**	**Description**	**Level 6, 7 & 8 awards**
	90% +	Exceptional	Achievement includes that required for a Pass and in **most** respects is significantly and consistently beyond this
	80 – 89%	Outstanding	
	70 – 79%	Excellent	
	60 – 69%	Very Good	Achievement includes that required for a Pass and in **many** respects is significantly beyond this
	50 – 59%	Good	Achievement includes that required for a Pass and in **some** respects is significantly beyond this
	40 – 49%	Acceptable	Attains all the minimum intended programme learning outcomes
	35 – 39%	Fail	Nearly (but not quite) attains the relevant minimum intended learning outcomes
	0 – 34%	Fail	Does not attain some or all of the minimum intended learning outcomes

Please review the CCT Grade Descriptor available on the module Moodle page for a detailed description of the standard of work required for each grade band. The grading system in CCT is the QQI percentage grading system and is in common use in higher education institutions in Ireland. The pass mark and thresholds for different grade bands may be different from what you have experience of in the higher education system in other countries. CCT grades must be considered in the context of the grading system in Irish higher education and not assumed to represent the same standard the percentage grade reflects when awarded in an international context.

Additional Information	• Lecturers are not required to review draft assessment submissions. This may be offered at the lecturer's discretion. • In accordance with CCT policy, feedback to learners may be provided in written, audio or video format and can be provided as individual learner feedback, small group feedback or whole class feedback. • Results and feedback will only be issued when assessments have been marked and moderated / reviewed by a second examiner. • Additional feedback may be requested by *emailing by a stated deadline.* Additional feedback may be provided as individual, small group or whole class feedback. Lecturers are not obliged to respond to email requests for additional feedback where this is not the specified process or to respond to further requests for feedback following the additional feedback. • Following receipt of feedback, where a student believes there has been an error in the marks or feedback received, they should avail of the recheck and review process and should not attempt to get a revised mark / feedback by directly approaching the lecturer. Lecturers are not authorised to amend published marks outside of the recheck and review process or the Board of Examiners process. • Students are advised that disagreement with an academic judgement is not grounds for review. • For additional support with academic writing and referencing students are advised to contact the CCT Library Service or access the CCT Learning Space. • For additional support with subject matter content students are advised to contact the CCT Student Mentoring Academy • For additional support with IT subject content, students are advised to access the CCT Support Hub

Assessment Task

You are required to design and implement a database for the **HR department** of a company using a structured approach based on the below requirements.

The **HR department** needs to record information about its employees, job titles, and the departments that they work at. You are given the following requirements that need to be stored.

- **Employees** should have a unique identifier, date of birth, name, gender, salary, and hire date.
- **Job Title** (or Role) should be stored for each employee. You are free to choose storing just one **Job Title** per an employee (only the current Role) **OR** also storing previous **Job Titles** with dates for which the employee held that title.
- **Departments** have a name and a unique identifier. A department can have several managers over different periods, and at the same time.
- **Department manager** should have the unique department number, the employee number, and the dates they managed the department.

You are also given the following information:

- An **employee** (including the dept manager) can belong to a different **department** at different **dates**, and possibly concurrently.
- **Salary** changes, such as **promotions** and **increases**, should be recorded by storing the **salary dates**.
- The company currently holds around 200,000 employees, 25 of whom are managers (CEOs/Managers). For this design consideration, try to avoid or minimise the use of NULL values.

For this assignment, you will use a visual database design or administration tool, such as **draw.io**. You are required to do the design in 4 different stages. **Tasks 1-3 are Database tasks, while task 4 is a Web Development task.**

1. **Conceptual:** produce an **ER Diagram** (using **Chen** notation) of your database requirements in **draw.io** [8 marks, DB]. For this, you need to identify:
    a. Entities and, if necessary, identify entity types, such as weak or strong entities.
    b. Attributes and the attribute types.
    c. Relationship between tables, including cardinality ratios and a suitable verb for the relationship.
    d. Relationships can have attributes, if necessary.
2. **Logical:** Transform the **ER Model** into the **Relational Data Model** and produce it with a visual database design, such as **draw.io** [8 marks, DB]. For this, you need to include:
    a. All relations (i.e., tables).
    b. All relationships (using **Crow's Foot** notation), indicate cardinality and optionality for each relationship, primary and foreign keys (which are fine to be included in your Logical Data Model) and all data types.
    c. If you used attributes for relationships previously, these must be converted into relations (i.e. tables).

    Note: the logic between the conceptual and logical design phases has to be consistent
3. **Normalisation** [4 marks, DB]: Make sure your final database is in 3rd Normal Form, which should be reflected in your **Relational Model**.

4. **Produce an HTML (with CSS styling)** file per each final table in your database, that includes [20 marks, WebDev]:
    a. Visible **table name** (entity) outside of the table
    b. **Table attributes** (styles as a header row inside the table)
    c. **Primary and secondary keys** should have **suitable image icons** that tell a reader which is which
    d. Attribute **data types** (also styled in a desired way)
    e. **At least 10 records (rows)** showing the actual table content **ordered by the primary key**
    f. Each **HTML file should be named after each table** it represents
    g. All **HTML pages should be linked together** with an anchor (<a>): reference all of these as links in all of your files
    h. Make sure you reset **Default Table Styles with CSS** before loading a page
    i. Include **Zebra Striping** styling of your tables
    j. Use **Fixed Header** in your tables
    k. Use **Colspan** or **Rowspan** where appropriate
    l. You are free to **style HTML tables** any way you like with **external CSS** as long as it is appropriate
    m. Your **HTML page** should be **well-formed** and **pass validation** – https://validator.w3.org
    n. The **CSS file** should be **external**, be **shared among all HTML pages** and **should pass validation** – https://jigsaw.w3.org/css-validator/
    o. All the files should be presented in a public **GitHub repository** (must be called **webdev_ca1**) with **at least 5 commits history** and the link to this repository must be included on the cover page of the **submitted PDF** – this aspect is also critical and is being marked (all final files must also be included in the zip with your submission).

You might get 0 for WebDev if the proper GitHub link is not present or if it is not presented in the correct format: https:/github.com/<username>/webdev_ca1