**Database Development**

**7CS082**

Dr. Bo Yuan

Database Development (7CS082)

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# Module Leader

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# Key dates and details

|  |  |
| --- | --- |
| **Assessment Type:** | Coursework part 2 |
| **Assessment weighting:** | 40% |
| **Word Count** | 1500 +/- 10% |
| **Learning Outcomes:** | 2 |
| **Submission Method:** | Turnitin for report  Blackboard for data, source code and supporting files |
| **Date Set:** | 9:30am UK time, 22/09/2021 |
| **Submission Date:** | Part 2: 23:39 UK time, 17/Dec/2021 |
| **Provisional Feedback Release Date:** | Part 2: 14:00 UK time, 21/Jan/2022 |

# Description of the assessment

Airline Company

We want to design a database for an airline company to underpin a system that will store information on flight schedules, passengers and their bookings, and the staff assigned to the planned flights. There is a particular need to track pilots and their ability to fly certain aircraft types.

The database will allow users to know:

* The passengers of a flight,
* The crew of a flight,
* What plane is assigned to a particular trip,
* The pilot's type rating.  A type rating is a license a pilot is granted to fly a particular type of aircraft.
* What are the flight schedules: e.g. Paris-Caracas (weekly schedule), etc?

**Staff**: Each member of staff in the company is identified by a number (*EMPNUM*), and is described by his or her name (*SURNAME*), given name (*NAME*), address (*ADDRESS*), telephone number (*PHONE*) and his or her monthly salary (*SALARY*). Among the staff, pilots are distinguished to indicate the type ratings they hold and the planes they can fly with these ratings.

**Airplane**: Each airplane owned by the company has a serial number (*NUMSER*). Each airplane is also identified by its manufacturer and model number. Together, these constitute what we call the aircraft: e.g., BOEING 747.

**Passenger**: Passengers are identified by their surname (*SURNAME*), given name (*NAME*), address (*ADDRESS*), telephone number (*PHONE*). A departure is a flight on a certain date (*DATE*). Flights are identified by a number (*FLIGHTNUM*), origin (*ORIGIN*) and a destination (*DEST*) and various intermediate cities (each pair of connected cities defines a stretch). For each city served, we record the time of arrival (*ARR-TIME*) and departure time (*DEP-TIME*) of the flight concerned.

The planes that can be assigned to a flight needs to be recorded. For each flight, a pilot must have been appointed and a particular airplane must have been allocated.

You are required to design, develop and produce two implementations of a database for the airline company. **The assignment will be implemented in two parts:**

* **Part 1:** Database design and optimisation (learning outcome 1)
* **Part 2:** Implementation of queries and interactions with the database (learning outcome 2)

Modelling must be shown in the form of an entity-relationship diagram. For simplicity, it is advised that in a first stage of the design, assume that each flight has no connection. Later, update the design to assume that a flight can have several connections and that passengers and crew may change during travel.

# Assessment Content for Part 2 – Implementation of queries and interactions with the database

You are required to use **one of the implementations produced** in Part 1 to develop and implement a front-end system that enables end-users to interact with your database. The system should include sufficient test data to demonstrate core functionalities of querying and interactions. (Note: Your MS-Access (or other front-end) must connect to the SQL database backend. Use of MS-Access to construct both a front-end and a back-end without connection to one of your SQL back-end implementations will receive a failing grade).

**Follow these STEPS carefully. You are required to:**

1. Take into account the feedback given to the first part of your assignment to improve your database design.
2. Produce a detailed **report of approximately 1500 words (+/- 10 %) in length** where you provide justifications/evaluations for the database selection, and upgraded database schema design if needed. In addition, you will need to detail
   * 1. the front-end user interface, frontend and
     2. backend functionalities,
     3. the SQL queries you developed.

Note: you can update the database design in the light of feedback provided in Part 1 but bear in mind that this will not affect awarded grade for Part 1. However, it might increase your marks in Part 2 of the assignment. Failing to meet this requirement, your work will be marked down up to 5 penalty marks.

1. Provide details about the front-end development and implementation process including the navigation map and a user manual explaining the operation and functioning of the system. The report should also provide a reflection on the use of the chosen technology.
2. An assignment demo and peers’ feedback will take place during the teaching session of Week 12.
3. A copy of the complete source code and database files for developed queries and front-end system should be uploaded with the report in a zip file (see submission section for requirements).
4. The queries and interactions should reflect the use of the system described above.

You must demonstrate the following basic functions:

1. Manage staff (add/delete/update and view)
2. Manage flights (add/delete/update and view)
3. Manage machines (add/delete/update and view)
4. Browse/search:
   * + Booking details
     + Machine details and list of pilots eligible to fly it
     + Passengers and their list of bookings
5. Make a new booking:
   * + For one or more passengers
6. Generate reports:
   * + Pilots schedule by month
     + Number of passengers by flight
     + Number of working hours for all pilots (ascending and descending order)
     + List of the company destinations and their schedule
7. Cancel or amend a flight booking.

Apart from the above 7 functions, correctly implementing more relevant functionality will increase your marks.

# Assessment Rubric

Assessment Criteria for assignment 2: **Implementation of queries and interactions with the database** (40%):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Criteria** | **5-39%**  **Fail** | **40 – 49%**  **Narrow fail** | **50 – 59%**  **Pass** | **60 – 69%**  **Good** | **70-79%**  **Very good** | **80-89%**  **Excellent** | **90-100%**  **Outstanding** |
| Design and Implementation of the system (40%) | Failed to demo the system properly; Failed to present the knowledge and understanding of the main concepts and key theories. | Failing to present basic knowledge and understanding of the main concepts and key theories. The SQL query statements contains many errors; | Appropriate design and implementation of the system, but few errors found in SQL query statements;  Basic reflection or improvement made to the feedback of the assignment 1. | Good design and implementation of the system, very few errors found in SQL query statements; Some reflection and improvement to the feedback of the assignment; | Very good design and implementation of the system; no error found inside SQL query statements;  Clear reflection to the feedback of the assignment 1; | Excellent standard ability achieved.  Relevant generic skills are demonstrated at a excellent level.  Referencing is consistently used, complete and accurate. | Meets all criteria in 80-89% range, plus demonstrates exceptional ability and insight, indicating the highest level of technical competence. |
| Operation and functioning of the system (50%) | Failed to provide the basic functions of the system; | Failing to demonstrate basic operations and functions of the system; Failing to show a basic understanding of their implementations. Descriptions contain many errors. | The student has demonstrated a clear understanding of the system and provide adequate operation and functions of the system. May contain few errors. | Include all the necessary functions, and very few errors found; good description about the front-end development and implementation process; Not include the navigation map or that is not well presented. | Include all the necessary and/or additional functions, and no errors found; very good description about operation and function of the front-end development and implementation, provide the navigation map in details as well; | Excellent standard ability achieved.  Relevant technical skills are demonstrated at a very high level. |
| Report writing:  (10%) | Riddled with errors, incoherent and disjointed.  Many references are inconsistent between the text and the list; a number of mistakes in the reference list. | Frequent errors. Somewhat incoherent and disjointed.  Some references are inconsistent between the text and the list; Reference list with many mistakes. | Occasional errors.  Generally coherent. Lack of clarity in places.  Referencing and citation style is consistent between the text and the list; reference list with some mistakes. | Few errors. Coherent and clearly expressed.  Referencing and citation style is consistent between the text and the list; reference list with only a few minor mistakes. | Free of errors. High coherence and clarity of expression.  Referencing and citation style is correct and consistent between the list and the text; reference list completely concise without errors. | Excellent standard ability achieved.  Referencing is consistently used, complete and accurate. |
| % Mark  1-4% | **Nothing of Merit:** Nothing of value is contained in the submitted work. The work presents information that is irrelevant and unconnected to the task; no evident awareness of appropriate principles, theories, evidence or techniques | | | | | | |
| NS | **Non-submission:** No work has been submitted | | | | | | |
| Z | Academic offence notation Applies to proven instances of academic offence | | | | | | |

# Submission

You will have **two submission points for report and source code, respectively**:

1. **Turnitin submission point for reports**

**Formatting Requirements:** Please submit each report as a single Word document in the Blackboard Assignment Submission link for the module. The file name must use the following format:

For part 2: nnnnnnnnn-7CS082-report-part2.docx

where nnnnnnnn is you student number

1. **Blackboard submission point for the source code, database files and relevant supporting files.**

If you have used a specific database development tool, or third-party packages outside of those mentioned above, it has to be provided as well.

**Formatting Requirements:** All data and source code should be included in a single zip file andsubmit in the Blackboard Assignment Submission link for data. The file name must use the following format:

For part2: nnnnnnnnn-7CS082-data-part2.zip

where nnnnnnnn is you student number

**Please note that all assignments will be checked for plagiarism using computer software.**

Failure to submit all these items by the specified deadline and without an authorized extension will result to a FAIL grade. For detailed information about Late Submissions terms see the “Assessment” page in the Blackboard system.

# Anonymous Marking

You must submit your work using your **student number** to identify yourself, not your name. You must not use your name in the text of the work at any point. When you submit your work in Turnitin you must submit your student number within the assignment document and in the *Submission title* field in Turnitin. The principle behind the usage of anonymous marking of assignments is to reassure students that all assignments are marked in an equitable and unbiased manner, thereby ensuring the maintenance of high academic quality standards within the marking of the assessments

# Assessment Regulations

The [University’s regulations, policies and procedures](https://www.derby.ac.uk/about/academic-regulations/) for students define the framework within which teaching and assessment are conducted. Please make sure you are familiar with these regulations, policies and procedures.

**End of Assignment Specification**