**FACULTY OF SCIENCE AND ENGINEERING**

**COURSE:** BSc Computing Modular Scheme  
BSc Computer Studies Network

**MODULE:** Information Systems and Database Development (6G5Z1004)

**LECTURER:** Andrew Schofield/ Janice Whatley

**ASSIGNMENT NUMBER:** 1

**ASSIGNMENT TYPE:** Group (4-6 people per group)

**ISSUE DATE:**  w/c 19th January 2015

**HAND IN DATE/TIME:** Friday 27th March 2015  
 (special circumstances apply – see below)

**MITIGATING CIRCUMSTANCES:** See the Faculty Student Handbook

**PROPORTION OF MARKS AVAILABLE FOR THIS ASSIGNMENT: 50%**

**ASSESSMENT CRITERIA:** See the Assignment Brief

**Due dates for this assignment:** The hand in date given above is the final hand in for the project documentation report. **IMPORTANT**: Reports submitted after this date will receive a mark of zero (unless an exceptional factors submission is made prior to the hand in date). For reports submitted to the coursework receipting office please check what time it closes on that date. Other deadlines will be set by your tutors during the course of the project and these will be communicated to you as soon as they are scheduled via Moodle. These deadlines will include demonstration of your final product, and all contribute towards the assessment of this project. These will, therefore, be treated in the same way as other hand in deadlines, thus late and non-submissions will not be marked.

All work, is to be submitted in accordance with the instructions in the Faculty Student Handbook.

Any student found guilty of cheating, plagiarising or seeking to gain an unfair advantage will face severe penalties. See the Faculty Student Handbook for further information.

# Assignment Brief

## Aims

The primary aims of this project are to give you the opportunity to:

* Demonstrate your understanding of UML by applying it to the development of an information system
* Develop your understanding of the issues when moving from design to implementation in information systems development.
* Demonstrate your understanding of database development as used to implement a system.
* Demonstrate your ability to communicate using written, technical documentation and solve technical problems.

## Scenario

The **Global Tickets Ltd** is a start-up e-commerce business, which sells global attraction tickets to holiday makers. It is a small business and employs ten members of staff who are responsible for all aspects of the business including the database design and maintenance.

More precisely, the mission of Global Tickets Ltd is to allow customers to purchase all the attraction tickets they require for any holiday in one transaction regardless of international location, at the best price possible. The objectives of the business are to:

1. Provide customers with the ability to search for tickets for different attraction types i.e. Eifel Tower Tour, Disneyland Paris ticket. Thus, an **online catalogue of attraction** **tickets** is required where attractions can be classified as ThemePark, Sightseeing and Theatre. Customers must be able to search the product catalogue and to be able to locate attractions in the country in which they are travelling to. The search should list the attractions, the price for all tickets and a brief description of the attraction. The webpage addresses of the attraction should also be displayed for the customer to find out a more detailed description. As attractions are grouped into three different categories, a customer should also be able to search based upon the type of attraction they require (ThemePark, Sightseeing or Theatre). You will need to use different types of SQL queries, and should include joins, subqueries, wild cards, group and single-row functions and use of date, number or other string functions.
2. Provide customers with a **booking service.** In order to make a booking, the customers must first find the attractions they require, which is usually through a search process. After viewing a detailed description of the attraction product, the customer will select the attraction, the number and type of tickets, and the date if applicable, which is then added to the shopping cart.
3. **Manage Customer accounts**. If the customer has no account, they will be required to enter a user name and password in order to create a customer account otherwise they will be asked to sign in. If they have just created an account, they will be required to enter personal details including name and address for payment. Customers account should track all transactions, e.g. purchases and their details.
4. **Generate Management Reports**. A manager can see through reports such as total sales per country, the type of attraction (e.g. ThemePark, Sightseeing or Theatre). You should extract information from multiple tables, and create at least five (5) different join queries. These will reflect your understanding and "imagination" of the necessary reports that could be generated from the scenario

**PLEASE** note that the scenario may be limited in terms of description of all the necessary elements that a real-world application could have. BUT is up to you to design your application by adding some scenarios (within the limits of the project duration – i.e. 2months) that could be used e.g. a customer may withdraw from being a member, so cancel or ask to be deleted from the Global Tickets database, or cancel a booked event, or upgrade the number of people on tour etc. It is your responsibility to ensure you don’t create more complex scenarios that are difficult to achieve given the time of the project completion dates.

# Running the Project

## Analysis and Design (25%)

For the initial part of the project each team member will individually produce an initial Use Case Diagram for the system. Team members will then get together and produce a group use case Diagram, and document the discussion and decisions made in arriving at this diagram. You should also identify any additional Use Cases not identified in the original diagram. Once the use Case diagram has been finalised, the team should prioritise the Use Cases and divide up them amongst the team, so that each member produces Use Case Specifications for their set of use cases. After this, derive appropriate class diagrams for the scenario using your use cases.

You will be graded on the correctness of your UML (use cases and class diagrams), appropriateness of the diagrams used, and the quality of your reporting.

## Finalising the Design (20%)

The team phase of the project will involve, merging and finalising the UML designs and then allocating the database development amongst the team. This will require the finalisation of the Use Cases, and development of a system Class Diagram. From this class diagram you will produce an ERD (Entity Relationship Diagram), with appropriate keys for each entity. For this part you will be graded on the quality of your UML, your ability to evaluate different designs to arrive at a decision, and your ability to produce an ERD from a class diagram.

## Developing the Database (40%)

Once the designs are finalised you will need to build the database and write queries, both simple and complex ones. Firstly, create tables using CREATE TABLE statements as a script file (\*.sql) with appropriate DROP commands, then populate tables using INSERT and perform some queries. A simple query is one that lists columns from a single table with some (or no) conditions. Complex queries can include joining tables, use of aggregate functions, single-row functions, wild cards, subqueries, use of complex date formatting queries etc. You should be able to clearly demonstrate the relationship between your UML Models and the Database tables and queries.

Here you will be graded on your ability to create a database from UML designs, write relevant complex queries which include joins, group functions, subqueries, wild cards, date/numbers/character strings etc, with appropriate levels of complexity that support the required functionality of the system, and evaluate your design as a result of implementation.

## Developing the User Interface (15%)

Once the designs have been implemented you should be able to create the user interface. Work must be divided amongst team members and you should be able to clearly show the relationship between the user interface and the UML designs.

Here you will be graded on your ability to develop a user interface that matches the processes you have specified in the design and use appropriate user interface controls to reflect the requirements of the system. You will also be assessed on your ability to present your work. These will be assessed, primarily, during your demonstration. Your user interface should connect to the database. You can use PhP/MySQL as introduced and taught in the unit or any other software tools to achieve the same purpose for your user interface connecting to the database.

## Setting up the Team

In industry it is very unlikely that you will be able to choose your team. However, in this case we will allow you to select your team members by emailing **a list of 4-6 names** (no more no less) to ([a.schofield@mmu.ac.uk](mailto:a.schofield@mmu.ac.uk)). Team members must be from ***the same tutorial group*** (that is the one on the timetable not the one you may happen to be attending). **This email must be received by** **4pm on Wednesday 28th January** **at the latest**. Anyone who has not emailed by then will be allocated a team, and from this time the teams will not be negotiable. You will receive a response to your email giving you a group ID, so if you do not receive a response you must assume it has not arrived.

Once all students have been allocated to groups a list will be published on Moodle. Once it has been published this list will not change. You are advised to organise your team and start work immediately. If you have any difficulty doing this then contact your tutor (the one allocated on your timetable) straight away and they will be able to advise you on the best course of action. The initial part of the work can be done individually and so do not use the lack of a team as an excuse to lose time on this project.

## During the Project

### Team Meetings

During the course of the project you are expected to hold weekly (at least) team meetings. These meetings are separate from the actual design/development work on the product and are for the purpose of reviewing, monitoring and documenting progress. All members of the team should attend these meetings.

At these meetings you should review the current project plan, identify problems, and adjust the plan accordingly. The problems discussed, and their solutions, should be clearly documented along with the revised project plan. If the changes to the plan have any implications for the final product (e.g. reduced functionality) then these should also be documented. At each meeting you should allocate a member of the group to be a scribe and record the minutes of each meeting. All this information should be kept in a project folder and will be used to create the Project Log. This should be submitted as an appendix to the final report to assist with the grading of the work.

# Deliverables

There are four main parts to this assignment:

### Group Report

This should contain all of your UML designs and ERD (Entity-Relationship Diagram). It should discuss the results of your group’s design evaluation and the final specification of the system you will implement. It should also contain a description of changes made to the design after implementation had started and reasons for those changes.

The report should clearly show the relationship between the UML models of the system and the implemented database, queries and the user interface, with screen shots of the user interface clearly visible.

You should also include the project log as an appendix.

### The Product

A fully functioning version of the specified product, submitted on a CD. This should include sufficient data to demonstrate that the system is working. You will also be asked to demonstrate this system live in the departmental labs (see below).

### Product Demonstration

This will be carried out during normal lab sessions around the submission deadline date for the project. A schedule of demo times/dates will be published on Moodle nearer the time. You will need to set up your application for demonstration beforehand and ensure it is working correctly either on MMU lab PCs or your own laptops. The demonstration must start on time and will last for up to 15 minutes. You will be given a short time to provide an overview of the product, with each member participating in the question and answering session, and then be asked to demonstrate specific functionality by your tutors. Please prepare carefully to avoid any embarrassment or disasters. This part of the assessment will clearly show your level of achievement and how you thought about the scenario given, different alternative designs or further future work possible.

**(4) Peer Assessment**

Each student will provide a brief peer report, that evaluates the contribution of each team member which should address each stage of the work (approx 100 words on each team member should be sufficient). Failure to assess your peer(s) may result in loss of marks (5% per peer). Under each peer name, use a scale of 1 to 5 (1 – worst, 5 – excellent) to assess peers using the following:

1. General Engagement/involvement
2. Communication (verbal, email, etc)
3. Technical Contribution (writing, coding, designs, queries, etc)
4. Attendance to meetings
5. General support to peers
6. Problem solving

## Submission of Deliverables

**Each team** will submit **ONE** paper copy of the group report, which will include a CD containing documents and code to the CRO office.

**Each team member** will also submit an electronic copy of the whole group report, which will have an additional appendix containing their initial individual Use case Diagram and their Peer Assessments, on **MOODLE**.

## Teamwork

Each member of the team must clearly demonstrate their contribution to EACH STAGE of the project. Each team member will be expected to have contributed to all aspects of the project including the design, implementation, testing, and demo. Team members should attend all project meetings. If a team has any problems then they should, as a team, see their tutor as soon as possible.

Time is short on this project. As a team member you are responsible for getting your work completed on time. If you find this is not possible for some reason you must communicate this to your other team mates, so that they can re-allocate the work.

The members of your team will have different skills. However, in this project each member will be expected to contribute to all aspects of the project. For those areas where a team member is highly skilled, they should support the rest of the team. For those areas where any team member has less skills, they should be supported by the rest of the team.

**Employability skills**

This assessment will be testing your skills that are valuable to employers in the Computing industry as follows:

**Communication skills** – through peer to peer working and project presentation.

**Verbal Presentation skills** – through the project demo presentation.

**Report Writing** – through the project log and final report of the project.

**Programming skills** - through use of SQL and potentially scripting languages such as PHP.

**Interpersonal skills** – through group work

**Problem solving** – throughout the assignment