

BACHELOR OF SCIENCE

Honours Computer & Information System

**OXFORD
BROOKES
UNIVERSITY**



COURSEWORK SUBMISSION FORM

Instructions

1. Please complete the form using Capital Letters.
2. Coursework must be submitted through the Service counter and it is the responsibility of the student to complete the Coursework Submission Log Book.

Name of Student:								
E-mail Address:					Contact No:			
Name of Lecturer:	Peter Lo							
Student ID:				Class Code:				
Subject Code:	U08182 – Information Systems Design			Assignment No.: 1	T1 – 2012			
No. of pages including this cover page :				Other Specifications:	CD ____ enclosed			
Submission Date:				Due Date:				
Declaration : I declare that this assignment is my original work and that I have acknowledged any use of published or unpublished works of other people. I understand that I will be penalized for plagiarism and late submission.							Signature :	
Question							P	Total
Marker								
Internal Moderator								
External Moderator								
Marker's Comment:								

- Please submit **one hard copy and one soft copy** (CD, in one Word File)
- Assignment deadline : on or before 8pm, 17 Apr 2012
- Submission Centre : **3/F, Pacific Center, Tsim Sha Tsui**
- Late submission will not be accepted

U08182 INFORMATION SYSTEM DESIGN

TERM 1, 2012

ASSIGNMENT 1

SOFTWARE ARCHITECTURAL DESIGN

1. **BACKGROUND**

This coursework is designed to test your attainment of the following learning outcomes.

1.1. Knowledge and Understanding

Develop Knowledge and Understanding of:

Techniques for systems design at architectural level
Application of techniques within a systems development methodology: application of Software architectural styles in software design
The effects of software architecture on software quality, especially on software reusability, modifiability and maintainability
Using an appropriate notation to represent software architectural designs

1.2. Disciplinary/Professional Skills

Develop Specific Skills in:

Selection and use of appropriate techniques for designing information systems at architectural level
Specifying software designs in appropriate languages and notations

1.3. Transferable Skills

Practise the following Transferable Skills:

Self Management skills
Learning skills
Communication skills
Problem Solving skills
Uses of information technology

2. **SPECIFICATION OF THE PROBLEM TO BE SOLVED**

Asia Builders is a leading construction company with major projects all over the world. The company is interested in developing a computer-based information system to maintain records on selecting contractors, estimating quotations, allotting jobs to the contractors and supervising the progress of a job and so on.

The company has the following departments to do the above mentioned tasks as described below.

TENDER DEPARTMENT

The Tender department of *Asia Builders* invites quotations to build buildings from contractors. Contractors submit quotations. Whenever a quotation is received from a contractor, the company first checks whether the contractor is a registered member. A quotation includes a number and date of submission. The quotations includes estimates on the jobs to be done.

ESTIMATION DEPARTMENT

The estimation department of *Asia Builders* checks the estimates mentioned in the quotations.

The estimation department submits a report to the job allotment department and recommends a contractor for a job.

JOB ALLOTMENT DEPARTMENT

The job allotment department allots jobs to the contractors.

The job allotment department sends a letter of offer to the contractor.

If the contractor accepts the offer, the job will be assigned to the contractor.

If a contractor rejects the offer with the new estimates, another contractor may be chosen.

Records of acceptance and rejection of the offers are maintained in the database.

JOB SUPERVISION DEPARTMENT

The job supervision department monitors the progress of the each job periodically.

Please note that the above scenario is intentionally brief, to make students produce a sensible draft set of requirements based on the level of understanding. In reality, more information may be needed to establish a clear set of requirements.

3. DESCRIPTION OF THE COURSEWORK

In this coursework, you are required to work in a group of five students to make 5 designs of a software system to meet the above specification of the problem.

3.1. Tasks

You must perform the following tasks in order to complete the coursework.

(1) Definition of design problem

The specification of the design problem should be examined and analyzed so that hidden constraints that are implicitly specified or implied by the specification are discovered and explicitly expressed in a design problem definition.

(2) Make 5 designs in different architectural styles of a software system

Each group is required to make 5 designs in different software architectural styles that solve the design problem. (Contingency plan for groups with less than five students will be allowed to concentrate one design per person in the group).

(3) Comparison of designs

The designs made by the group must be compared with each other against the quality attributes modifiability, reusability, performance and testability.

You should come to a conclusion that which design is more suitable for the given problem.

(4) Teamwork exercises

Teamwork exercises form an important part of the coursework. The following are some additional instructions for the coursework.

(A) The group of students should collaborate on the coursework with clear division of responsibility and delegated task(s) and help with each other, for example, through cross checking the outcomes and progresses of other members of the group, discussing issues raised by the members, commenting on the documents prepared by the group members, and preparing a coherent document to be submitted as the outcome of the whole group.

(B) Each group must meet regularly, at least once a week. Each meeting should have (a) a chairperson responsible for organizing the meeting such as setting the agenda and keep the meeting focused on the coursework task(s), (b) someone to minute the meeting, etc. Each group meeting must have a minute, which must be submitted as a part of the coursework.

(C) A teamwork exercise report (1~2 pages) must be produced by each group to cover the following issues:

- *Collaboration mechanism of the group*: a description and explanation of how the group worked together to achieve the group's common goals;
- *Individual's contributions*, a summarization of who did what in the group (e.g. using a table).
- *Lessons learned in the teamwork exercises*: a discussion of the achievement of the group and individuals, as well as how to improve teamwork effectiveness in the future.

All meeting minutes should be attached to the report as appendix. Each member can (but not compulsory) attach a memorandum to the report to provide additional information or explanations about his/her teamwork performance.

(5) Documentation

Each group is required to prepare and submit a design document that specifies their designs based on the outcomes of the above tasks. The document should cover the following aspects:

(a) Definition of design problem; **(15%)**

(Hint. In addition to the information given in section 2 of this document, you also need to state explicitly the new constraints that you discovered during the design process and assumptions made in the design.)

(b) Descriptions of designs in various styles that contains at least the following contents to a satisfactory detail for each design, **(40%)**

- ◆ **Rationale**: explanation of the ideas and the rationale of the design.
- ◆ **Structure**: the structure in the form of a diagram in software architecture visual notation.
- ◆ **Components**: the functions and key features of the components of the system.
- ◆ **Connectors**: the features and interface of the interactions between the components.

(Hint. A criterion of whether the level of details is right is that there is no ambiguity that the design specification may lead to so that further development can be performed based on the document.)

(c) A discussion of the advantages and disadvantages of each design against the quality attributes modifiability, reusability, performance and testability and a comparison of the designs. A final conclusion to choose a best design. **(25%)**

4. SUBMISSION OF COURSEWORK

4.1. What to be submitted

Each group must submit a word-processed document in print out format using the standard coursework cover page. The document must consist of the following two parts.

- (a) A design document as specified in section 3.1.5 above; (Maximum 15 pages)
- (b) A teamwork exercise report (maximum 2 pages) + the complete set of meeting minutes as appendix and.
- (c) Turnitin.com report

5. MARKING SCHEME

This coursework bears 30% toward your total assessment of the module. The mark will be calculated from two parts:

Design document (**80 marks**): The distribution of the marks to various parts of the design document is given above in 3.1.5.

Teamwork performance (**20 marks**): The marking scheme for teamwork exercises is give below.

MARKING SCHEME FOR TEAMWORK EXERCISES

The following gives the criteria for the calculation of each student's teamwork performance mark according to the information presented in the teamwork report and meeting minutes.
Performance of the team as a whole (the same **3 marks** is given to all members of the group)

The organization of teamwork: **(2 marks)**

Clear division of tasks/responsibilities.

Balanced allocation of tasks/roles to the team members.

Regular group meetings (the group meets at least 6 times)

Group meetings are well organised (each meeting has an agenda and well recorded minutes)

Effective communications and collaborations between team members: **(2 marks)**

Cross checking of each other's work;

Maintaining consistency between various parts of the document;

Individual performance: (each student is given a mark according to his/her performance with respect to the following aspects) **(8 marks)**

Contribution to the development activity and outcomes: **(3 mark each)**

Contributions to collaborations as recorded in the meeting minutes.

Responsible to a significant part of development activity with a good outcome.

Contribution to the teamwork organisation and outcomes, such as chairing at least 1 group meeting with good agenda and minutes will be given up to **(2 marks)**.

NOTE

Assignment submission will be checked against detection software and work found to have been plagiarized will be referred to Plagiarism Committee.
