



**IN
PARTNERSHIP
WITH
PLYMOUTH
UNIVERSITY**

Distributed Systems CNET343SL

Coursework 2020 – 2021

Term: Term 1 & Term 2

Submission Deadline: <to be decided>

Coursework Type: Group assignment

Element of Assessment: C1

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Assignment Objective:

The objective of the assignment component of the Distributed Systems module is to provide the students the opportunity to apply the theory and practical knowledge gained during the course to develop and implement a distributed system. This will help the students to enhance the individual skills of analysis, design, development, implementation of distributed systems in a practical environment.

The assignment is a compulsory component of the module which accounts for 40% of the module. Devoting a substantial amount of time for the project work consistently throughout the session is highly recommended.

Project Selection

It is the responsibility of the student groups to identify a suitable project concept. The project should comprise a substantial amount of individual and group work. The following example systems will help the students to select a project concept but the group may come up with their own concept.

- An Events Calendar service
- A Regional Weather reporting service
- Regional News collection and reporting
- A Property for Sale service

In order to support the academic aims of the assignment there are some rules intended to ensure that the system is heterogeneous and that you employ suitable middleware. The project selection should be based on and to support the academic goals of the module. But you should also consider the realistic commercial requirements and value of the selected project concept.

Guidelines

- The assignment is intended to complete as a group work, with some individual evaluation as described in section 3 of the assessment criteria.
- The group must consist of at most five students. The details of the groups (student id, name, email and contact number) must be communicated to the NSBM program office with in the first five weeks after the commencement of the module.
- After submitting the proposal, the team has to confirm with the supervisor the scope and functionality of the system and receive formal approval prior to starting the implementation work.
- The group report should clearly indicate the contribution of each individual towards the project. All individuals are expected to have a complete understanding on the total system not only the areas that they worked on.
- The group report should not contain more than 5000 words

- **Managing Heterogeneity:** The distributed system must consist of at least three devices communicating with each other. At least one device must be a PC or virtual machine running on a PC. One other device must be a mobile networked device. The mobile device, typically acting as a client, will be running an embedded operating system such as Windows Mobile OS, Apple iOS or Android. Other networked computers may include your own laptop.
- Your system should be robust and responsive, and tolerant to network failures.
- **Choosing Middleware:** You need to select a middleware in implementation and the use of suitable middleware will attract marks. You must be able to justify your choice of middleware in terms of the application architecture and functionality.
- You are expected to make use of legally available software components, APIs, templates, etc. However, YOU MUST DECLARE EVERYTHING YOU HAVE USED in your report and explain how and why you have used them.

Deliverables and submission

Information about the group submission

- System Proposal on or before 11.55 pm, <Date to be decided> (Moodle e-submission through Plymouth Digital Learning Environment (DLE))
Note: Bring a hard copy to 26th February lecture
- Completed system <Date to be decided> (Moodle e-submission through Plymouth Digital Learning Environment (DLE))
- Group Report <Date to be decided> (Hard copy via Faculty office & Moodle e-submission through Plymouth Digital Learning Environment (DLE))
- Group demonstrations <Dates to be decided>

Late submission

Please note that work submitted late without valid extenuating circumstances will be penalized. Work submitted within 24 hours after the deadline will receive a mark, but it will be capped at the normal pass mark for that module. Work submitted more than 24 hours after the official deadline will receive an automatic mark of zero.

Demonstration

The main evaluation criterion of the assignment is a group demonstration of your distributed system developed providing evidence that it meets the requirements specified, along with a viva. The students are expected to prepare a presentation to describe the system, the architecture of the system, the technologies used, problems faced and how the problems were overcome. All group members are expected to be present at the demonstration and explain the contribution towards the project. It is also

essential that your group should be available for questions and your system should be available for use so that other students are able to evaluate it during the same session as the demos. Although the normal result of this assessment is a common group grade it is possible that individual marks may be modified based on the knowledge displayed of the system.

Marking Criteria:

This assignment carries 40% of the total marks available for the whole module. The breakdown of marks and basis of assessment are as follows:

1. Project Proposal 10%
 - a. The requirements are precisely formulated and the overall architecture is clearly described 4%
 - b. The scope of the system is enough and sufficiently described 4%
 - c. The proposed system has a commercial value 2%
2. Distributed System product: 50%
 - a. System work well without any breaks during the demonstration 10%
 - b. Heterogeneity is managed and demonstrated 5%
 - c. The system is sufficiently implemented to meet the quality objectives as appeared in the initial requirements 5%
 - d. Choosing of the middleware is sufficiently justified 5%
 - e. The system is responsive and tolerated to system failures 5%
 - f. Usage of existing APIs, components, templates 5%
3. Presentation and demonstration: 20%
 - a. Degree to which the demonstration was convincing and quality of discussion 5%
 - b. The understanding of the whole group about the system 5%
 - c. Each individual sufficiently displayed the understanding about the system 10% (Individual mark)
4. Group Report: 20%
 - a. Requirements and the system scope are clearly described using appropriate models where necessary 3%
 - b. The selection of the middleware is justified adequately 3%
 - c. The declaration of the APIs, templates, components, technologies used 3%
 - d. The report described the individual effort of each member clearly and separately 3%

- e. The report describes the issues faced during the implementation of the system and the approach adopted to resolve them 4%
- f. Proper referencing of the report and are the relationships between the contents of the cited sources and the contents of the report are appropriate 2%
- g. The report is structured and presented properly and there is a summary and a set of conclusions, based upon the contents of the report 2%

Threshold Criteria:

- >40% - 50%:

- Demonstrate satisfactory level understanding of the system at the proposal level in terms of scope, requirements and overall technical architecture
- Sufficient implementation of the system according to the initial agreed scope and the requirements with proper selection of the middleware, using existing APIs. Satisfactory level demonstration of the system.
- Demonstration of the satisfactory level understanding of all individuals in the team regarding the system and its implementation
- The report should include
 - Sufficient description of the requirements, scope and a satisfactory technical architecture diagram.
 - A sufficient justification of the middleware, APIs and technologies used
 - The description of the issues faced during the implementation
 - With a proper structure, presentation and appropriate referencing

- >50% - 60%

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- Demonstrate adequate understanding of the system at the proposal level in terms of scope, requirements and overall technical architecture
- Sufficient implementation of the system according to the initial agreed scope and the requirements with proper selection of the middleware, using existing APIs. Successful demonstration of the system
- Satisfactory level discussion during the presentation. Demonstration of adequate understanding of all individuals in the teams regarding the system
- The report should include
 - Sufficient description of the requirements, scope and complete technical architecture diagram.
 - A satisfactory level justification of the middleware, APIs and technologies used
 - The description of the issues faced during the implementation and the steps taken to resolve them
 - With a proper structure, presentation and appropriate referencing

- >60% - 70%

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- Demonstrate adequate understanding of the system at the proposal level in terms of scope, requirements and overall technical architecture and the realization of the commercial value that the system can provide by solving a real world inefficiency
- Adequate implementation of the system according to the initial agreed scope and the requirements with proper selection of the middleware, managing heterogeneity using existing APIs. Successful demonstration of the system
- Adequate discussion during the presentation. Demonstration of the adequate understanding of all individuals in the teams regarding the system
- The repost should include
 - Appropriate description of the requirements, scope and complete technical architecture diagram.
 - A clear justification of the middleware, APIs and technologies used
 - The description of the issues faced during the implementation and the steps taken to resolve them
 - Elaboration of the usefulness in the real world applications
 - With a proper structure, presentation and appropriate referencing

>70

- Demonstrate comprehensive understanding of the system at the proposal level in terms of scope, requirements and overall technical architecture and the realization of the commercial value that the system can provide by solving a real world inefficiency
- Complete implementation of the system according to the initial agreed scope and the requirements with proper selection of the middleware, managing heterogeneity and tolerating system failures using existing APIs. Successful demonstration of the system without any failures
- Convincing and quality discussion during the presentation. Demonstration of the clear understanding of all individuals in the teams regarding the complete system and its implementation
- The repost should include
 - Comprehensive description of the requirements, scope and complete technical architecture diagram.
 - A clear justification of the middleware, APIs and technologies used
 - Elaboration of the usefulness in the real world applications
 - The description of the issues faced during the implementation of the system and the actions taken to overcome
 - The future enhancements to the system
 - With a proper structure, presentation and appropriate referencing

Feedback

Individual written feedback will be provided through email within 20 days after the final demonstration.

Academic offences:

(the following is a fragment of Section AST10.2 from https://www.plymouth.ac.uk/uploads/production/document/path/8/8388/Section_D_Assessment.pdf)

Academic offences occur when activity is undertaken which could confer an unfair advantage to any candidate(s) in assessment. The University recognises the following (including any attempt to carry out the actions described) as academic offences, regardless of intent:

- a) Copying or paraphrasing of other people's work or ideas into a submitted assessment without full acknowledgement (plagiarism).
- b) Unauthorised collaboration of students (or others) in a piece of work (collusion).
- c) Making false declarations in an attempt to obtain either modified assessment provisions or special consideration (e.g. of extenuating circumstances).
- d) Persuading another member of the University or partner institution (student, staff, or other) to participate in any way in actions which would be in breach of these regulations.
- e) Misrepresenting research outcomes and results.
- f) Being party to any arrangement which would constitute a breach of these regulations.
- g) The inclusion in a piece of assessed work (other than an examination or test) of material which is identical or substantially similar to material which has already been submitted for any other assessment within the University.
- h) Any other activity which could confer an unfair advantage to any candidate(s).

For full details on the academic offences framework and procedures, consult Section AST10 from https://www.plymouth.ac.uk/uploads/production/document/path/8/8388/Section_D_Assessment.pdf