NOTTINGHAM TRENT UNIVERSITY

School of Science and Technology

COURSEWORK ASSESSMENT SPECIFICATION (UG)

Details of Module and Team

What Learning Outcomes are assessed?

What are my Deadlines and how much does this assessment contribute to my Module Grade?

What am I required to do in the assessment?

What are my assessment criteria? (What do I have to achieve for each grade?)

Can I get formative feedback before submitting ? If so, how?

What extra support could I look for myself?

How and when do I submit this assessment?

How and when will I get summative feedback?

NOTTINGHAM TRENT UNIVERSITY

MODULE CODE	COMP20081
MODULE TITLE	Systems Software
MODULE LEADER	Dr João Filipe Ferreira
TUTOR(S)	Dr Jon Robinson; Dr Ali Jwaid, Dr Ayman Abufanas
COURSEWORK TITLE	Java Programming Assignment
LEARNING OUTCOMES ASSESSED	K3, K4, S3, S4, S5
CONTRIBUTION TO ELEMENT	100% of the total coursework mark
DATE SET	15/02/2019
DATE OF SUBMISSIION	10 May 2019 by 11:59pm
METHOD OF SUBMISSION	via NOW Dropbox
DATE OF FEEDBACK	31 May 2019
METHOD OF FEEDBACK	Via NOW Dropbox

Work handed in up to five working days late will be given a maximum Grade of Low Third whilst work that arrives more than five working days will be given a mark of zero.
Work will only be accepted beyond the five working day deadline if satisfactory evidence, for example, an NEC is provided. Any issues requiring NEC
https://ntu.ac.uk/current_students/resources/student_handbook/appeals/index.html

The University views **plagiarism and collusion** as serious academic irregularities and there are a number of different penalties which may be applied to such offences.
The **Student Handbook** has a section on Academic Irregularities, which outlines the penalties and states that **plagiarism** includes:
'The incorporation of material (**including text, graph, diagrams, videos etc.**) derived from the work (published or unpublished) of another, by unacknowledged quotation, paraphrased imitation or other device in any work submitted for progression towards or for the completion of an award, which in any way suggests that it is the student's own original work. Such work may include printed material in textbooks, journals and material accessible electronically for example from web pages.'
Whereas **collusion** includes:
"Unauthorised and unacknowledged copying or use of material prepared by another person for use in submitted work. This may be with or without their consent or agreement to the copying or use of their work."
If copied with the agreement of the other candidate both parties are considered guilty of Academic Irregularity.

Penalties for Academic irregularities range from capped marks and zero marks to dismissal from the course and termination of studies.

To ensure that you are not accused of plagiarism, look at the sections on **Plagiarism Support** and **Turnitin** support.

NOTTINGHAM
TRENT UNIVERSITY

I. Assessment Requirements

The Scenario

A farmer wishes to improve the management of his business through the use of technology. He hires your team to devise a distributed system on a TCP/IP-based network infrastructure composed of the following components, all connected to the network:

1. a number of digital weather stations controlled by microcomputers;

2. a number of workstations manned by the farmer's workers that will allow visualisation of information about the field, namely specific data related to each of the connected weather stations (e.g. temperature, barometric pressure, relative humidity, wind force, etc.) at the user's request through a GUI;

3. a central server machine that provides (also via a GUI):

    a. services for new weather stations to connect automatically on power-up and upload its data;

    b. services for new workstations to connect on log in (regulated by a user database), and, after successful connection, obtain an up-to-date description of the field and a list of connected weather stations, and download their respective data on request.

Your team will need to devise a Java-based **concurrent client–server model** to implement this system. Your aim is to produce **software to demonstrate this system and a technical report**.

What you need to do

Your seminar tutor will assign you to a group of 3 to 4 students. Each group must have a leader to represent the group and coordinate the group's sessions/activities. You will select your group leader and inform your seminar tutor of your choice during the first or second week of work.

The team must decide which responsibilities are to be allocated to each team member so that a software system can be produced. Your code and respective report will be submitted at the submission date and the software demonstrated to the lab tutor. To be successful, you will need to begin planning and start working on the assignment sooner, rather than later, and apply knowledge gained from taught sessions.

Please note that, regardless of how work is distributed within your group, **every single team member will be asked questions during the software demonstration session and will be penalised if the tutor is not satisfied with the answers**. **There will also be a peer assessment process to provide insight on the weight of individual contributions. This will be used to help guide what the final individual marks are.**
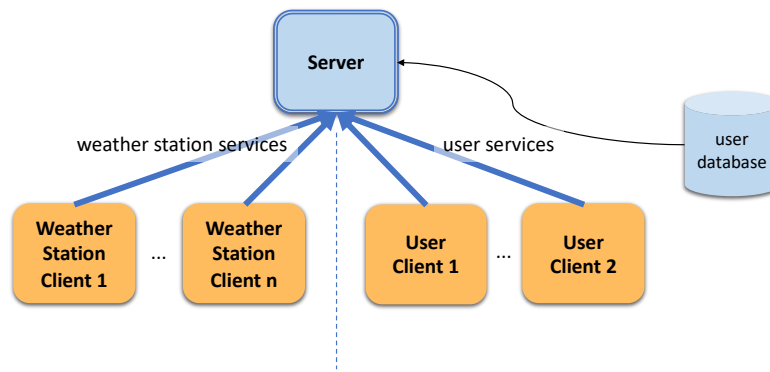
Figure 1 - Distributed system on a TCP/IP-based network infrastructure.

Submission and Assessment

You should use Java to implement your solution (**using Netbeans**). You must submit a server and several client objects. The clients that you need to submit have to include both Weather Station Clients and User Clients (see Figure 1). You must also produce a graphical user interface for the User Client and server systems.

The required functionality of the Server is as follows:

- It **must** be able to distinguish between incoming client connections and launch the correct service provider handler for each:
  - In the case of a Weather Station Client it **must** provide services in order to allow the client to:
    - connect automatically and register its ID;
    - upload its data, which must include GPS positioning, temperature and humidity (note: additional information is optional and will result in bonus marks).
  - In the case of a User Client:
    - it **should** allow the client to connect via a password-protected login process supported by a simple static text-file-based database (**no other types of database will be allowed**) containing user names and passwords of all authorised users;
    - it **must** allow the client to obtain an up-to-date description of the field (e.g. area, current crop, etc.);
    - it **must** allow the client to obtain a list of connected weather stations and download their respective data on request (e.g. through clicking on a specific weather station ID from a drop-down menu list).
- It **should** include a GUI to display an updated list of all users and weather stations.

The required functionality of the Weather Station Client is as follows:

- it **must** be able to connect automatically to the server via an appropriate handshake procedure, so that the server is able to recognise it as a Weather Station Client (i.e. differentiating it from other types of clients) and receive its specific ID;

NOTTINGHAM
TRENT UNIVERSITY

- it **must** be able to continuously send the server updated weather information coming from readings taken from its "sensors" (e.g. using random numbers to simulate those readings).

The required functionality of the User Client is as follows:

- it **must** be able to connect to the server via a password-protected login process;
- it **must** be able to request, download and display an up-to-date description of the field;
- it **must** be able to request, obtain and display a list of connected weather stations and download their respective data on request (e.g. through clicking on a specific weather station ID from a drop-down menu list);
- it **should** be able to automatically display up-to-date information without the need for user intervention;
- it **should** include a GUI to mediate user interaction and display field data and weather information.

All functionality marked with "**must"** will **cap the mark if not provided**, while extra features not listed above will potentially lead to bonus marks (depending on the caps) – **also see assessment criteria in section II**.

All groups are required to demonstrate during lab sessions in the week spanning from the 25ᵗʰ to the 29ᵗʰ of March a <u>minimal implementation</u> of the concurrent client-server system in order to obtain feedback and <u>avoid penalties</u>.

The submission date is **Friday** 10ᵗʰ May 2019 by 11:59pm, where <u>each group member</u> is expected to submit **a copy of all code in a ZIP file (no RARs or 7z or any other format allowed) and a single MS Word / PDF report document to the NOW Dropbox for the module**. Each group member is responsible to make sure that <u>individual submissions</u> are made before the deadline. I**f a group member fails to submit their personal copy, they will be marked as a zero due to non-submission**. In the week that follows, demonstration sessions will be timetabled during which the group is expected to:

- demonstrate the software and defend its solution **using a single computer** (either a NTU PC or personal laptop connected to the NTU network) to run all the software modules for both the clients and server;

- deliver completed copies of the peer assessment forms (which will be available on NOW) for each team member. These will need to be folded for confidentiality.

The following factors may influence the <u>final individual mark</u> as either bonuses or penalties: (1) <u>additional features</u>; (2) quality of the GUIs (3) <u>report quality</u>; (4) <u>individual answers to questions during demonstration</u>; (5) <u>peer assessment</u>. All bonuses and penalties will be justified through summative feedback and feed forward comments – **see section III** for more details.

II. Assessment Criteria

Class	General Characteristics
FIRST (Excellent)	The report and implemented solution demonstrates outstanding/excellent knowledge and understanding of the chosen area. The report and developed code shows that you are typically able to go beyond what has been taught (particularly for a mid/high 1st). Evidence of extensive and appropriate selection and critical evaluation / synthesis / analysis of reading / research beyond the prescribed range of information given in lectures and labs. The submission shows an excellent demonstration of relevant skills and knowledge. *In particular, you are required to implement a multithreaded client-server system based on a server with two handlers and at least two Weather Clients and two User Clients (including a password-protected login procedure with respective database for the latter). The User Clients and server use a graphical user interface to perform their activities. The server implements asynchronous communication to update the User Clients with the list of currently connected weather stations and respective up-to-date weather information.*
UPPER SECOND (Very good)	The report and implemented solution demonstrate very good knowledge and understanding of the area of study. The report shows evidence of appropriate selection of reading/research, some beyond the prescribed range of information given in lectures and labs in the development of the solution. *In particular, you are required to implement a multithreaded client-server system based on a server with two handlers and at least two Weather Clients and two User Clients (including a password-protected login procedure with respective database for the latter). The User Clients and server use a graphical user interface to perform their activities.*
LOWER SECOND (Good)	Good knowledge and understanding of the area of study balanced towards the descriptive rather than analytical (i.e. more evidence of more complete descriptions rather than more in-depth understanding of the process behind the given area and its implementation). Both the developed code and report shows evidence of an appropriate selection and evaluation of reading/research but is generally reliant on set sources to advance the work and implementation. Both the report and developed code may be limited in range and complexity. The report and code shows clarity but structure may not always be coherent. *In particular, you are required to implement a multithreaded client-server system based on a server with two handlers and at least two Weather Clients and two User Clients (including a password-protected login procedure with respective database for the latter).*
THIRD (Sufficient)	Knowledge and understanding is sufficient to deal with terminology, concepts and algorithms but fails to make meaningful synthesis. Some ability to select and evaluate reading/research for the development of the code is present, however work may be more generally descriptive and not provide detail into how the chosen area algorithmically works or the potential complexities. Both the report and code shows strong reliance on available sources to advance the work and content/code may be weak or poorly constructed. The submission shows adequate demonstration of relevant skills over a limited range but contains some weaknesses. *In particular, you are required to implement a multithreaded client-server system based on a server with two handlers and at least two Weather Clients and two User Clients (including a login procedure which might be unprotected but still provide user identification to the server).*
FAIL (Insufficient)	Insufficient knowledge and understanding of the area. Concepts, algorithms and the development of code is generally descriptive and fails to address requirements of the assessment.
Zero	Work of no merit OR absent, work not submitted, penalty in some misconduct cases.

III. Feedback Opportunities

Formative (Whilst you're working on the coursework)
You will frequently be given informal verbal or written feedback regarding your performance on tasks relating to the coursework assessment during the surgeries or laboratory sessions. Attendance is therefore important for your development and coursework success.

Summative (After you've submitted the coursework)
You will receive specific feedback regarding your coursework submission together with your awarded grade when it is returned to you. Your Lab Tutor will provide you with the following as a minimum:

- your grade;
- a feedback comment (a statement regarding the quality of your work);
- a feed forward comment (a statement regarding how you could improve your data analytic knowledge and skills for the future).

IV. Resources that may be useful

Referencing styles please use Harvard as detailed here
Guidance for presentations as detailed here and think about what lectures you have liked and why
Guide to planning your time here and an automated planner here
Guidance for revision is here
Guidance on avoiding cheating is here

Remember to use Outlook or physical calendars to block out time between lectures and labs to work on this coursework.

V. Moderation

The Moderation Process

The assessment is subject to a two-stage moderation process. Firstly, any details related to the assessment (e.g., clarity of information and the assessment criteria) are considered by an independent person (usually a member of the module team). Secondly, the grades awarded are considered by the module team to check for consistency and fairness across the cohort for the piece of work submitted.

NOTTINGHAM
TRENT UNIVERSITY