LEEDS BECKETT UNIVERSITY

SCHOOL OF BUILT ENVIRONMENT, ENGINEERING & COMPUTING

COVER SHEET FOR ALL ASSIGNMENT BRIEFS

Name of Module	Software Engineering for Service Computing
Name of Module Leader	Thalita Vergilio
Main Assessment or Resit?	Main Assessment and Resits
Semester 1 or 2 or Term 1, 2 or 3	Semester 2
CRN	16715
Type of Assessment (Coursework; Presentation; Phase Test etc)	Coursework + Practical
Date & deadline time of Submission	W/C 1 May 2023 Coursework (Product & Presentation) W/C 15 May 2023 Practical (Report)
Date for Return of feedback	4 weeks from submission date
Type of Submission (online via My Beckett; Handed in during Seminar; Presentation). It is expected that all assignments will be submitted electronically.	Online via MyBeckett
Feedback (please specify how will feedback be given to students)	Online and face-to-face in the labs
Franchise delivery Is the assessment for campus delivery the same for the franchise partner, if not please provide assessment for franchise partner.	N/A

School of Built Environment, Engineering and Computing

Assessment Setting Moderation Form

and

Assessment Brief

To be completed by the Module Leader:

Module name and CRN		Software Engineering for Service Computing - 16715			
Module Leader		Thalita Vergilio			
Semester	2	**Level**	7	**Approx No of Students**	50

To be completed by the module leader:

Assessment components	**Part 1: Coursework (Product, Presentation)** - 50% ● Due W/C 1 May 2023 **Part 2: Practical (Report)** - 50% ● Due W/C 15 May 2023 **Reassessment**: Complete either/both failed part(s) (cap of 50%). Coursework and Practical due by 23:59 on Monday 3 July 2023. **Deferral**: Opportunity to complete Parts 1 and 2 – full marks available. Coursework and practical due by 23:59 on Monday 3 July 2023.
Is the Assessment reused from the previous year?	**N** If Y, please give a rationale for its reuse: The module content has been updated to provide greater focus on practical skills relevant in the software engineering industry.

To be completed by the internal moderator – please enter comments on each piece of assessment listed above:

Internal moderator's comments:- A good assignment that targets the learning objectives well and is appropriate for level with clear instructions.			
Name of internal moderator	*Duncan Mullier*	**Date**	*13/1/2023*

To be completed by the module leader:

Response and action on internal moderator's comments (if required):-

Actioned by	*Thalita Vergilio*	**Date**	

May be completed by course director:

Comments:-			
Name		**Date**	*xx.xx.2021*

To be completed by the module leader (if necessary):

Response and action on comments (if required):-			
Actioned by		**Date**	*xx.xx.2021*

<ADD FURTHER RESPONSE FIELDS, IF NECESSARY>

To be completed by the external examiner:

External examiner's comments:-			
Name of external examiner		**Date**	

To be completed by the module leader:

Response and action on external examiner's comments (if required):-			
Actioned by		**Date**	

School of Built Environment, Engineering and Computing

Assessment Brief

MAIN Component 1 COURSEWORK (Log Book and Presentation)

Module name and CRN		Software Engineering for Service Computing - 16715			
Module Leader		Thalita Vergilio			
Semester	2	**Level**	7	**Approx No of Students**	50

COMPONENT TITLE: **Coursework (Product, Presentation)**

COMPONENT WEIGHTING: **50% of Module Marks**

HAND-OUT DATE: **Week 1 of Semester 2 in Module Handbook**

SUGGESTED STUDENT EFFORT: **50 hours + Lab and Lecture Material**

SUBMISSION DATE: **W/C 1 May 2023**

SUBMISSION INSTRUCTIONS: **MyBeckett**

FEEDBACK MECHANISM: **Via VLE within 3 weeks of submission**

LEARNING OUTCOMES ADDRESSED BY THIS COMPONENT:

1. *Demonstrate knowledge and understanding of a range of perspectives and approaches to modelling software systems as services.*
2. *Demonstrate knowledge and understanding of a range of SOA techniques and approaches.*
3. *Recognise the necessity to adopt a critical and evaluative stance towards software systems development approaches and techniques.*
4. *Critically evaluate a range of service level design strategies and techniques.*

NOTES:

This is an individual assessment. Submission of an assessment indicates that you, as a student, have completed the assessment yourself and the work of others has been fully acknowledged and referenced.

By submitting this assessed work, you are declaring that you are fit to submit, and you will therefore not normally be eligible to submit a request for mitigation for this work.

If your result for this assessment is recorded as Non-Submission or your mark for this assessment and for the whole module is below 40%, you will have the opportunity to take

reassessment (see Reassessment information). If you are granted deferral through the mitigation process, you may complete the reassessment with a full range of marks available.

For further information, please refer to your Course Handbook or University Assessment Regulations.

DETAILS OF THE ASSESSMENT

This assessment has two components:

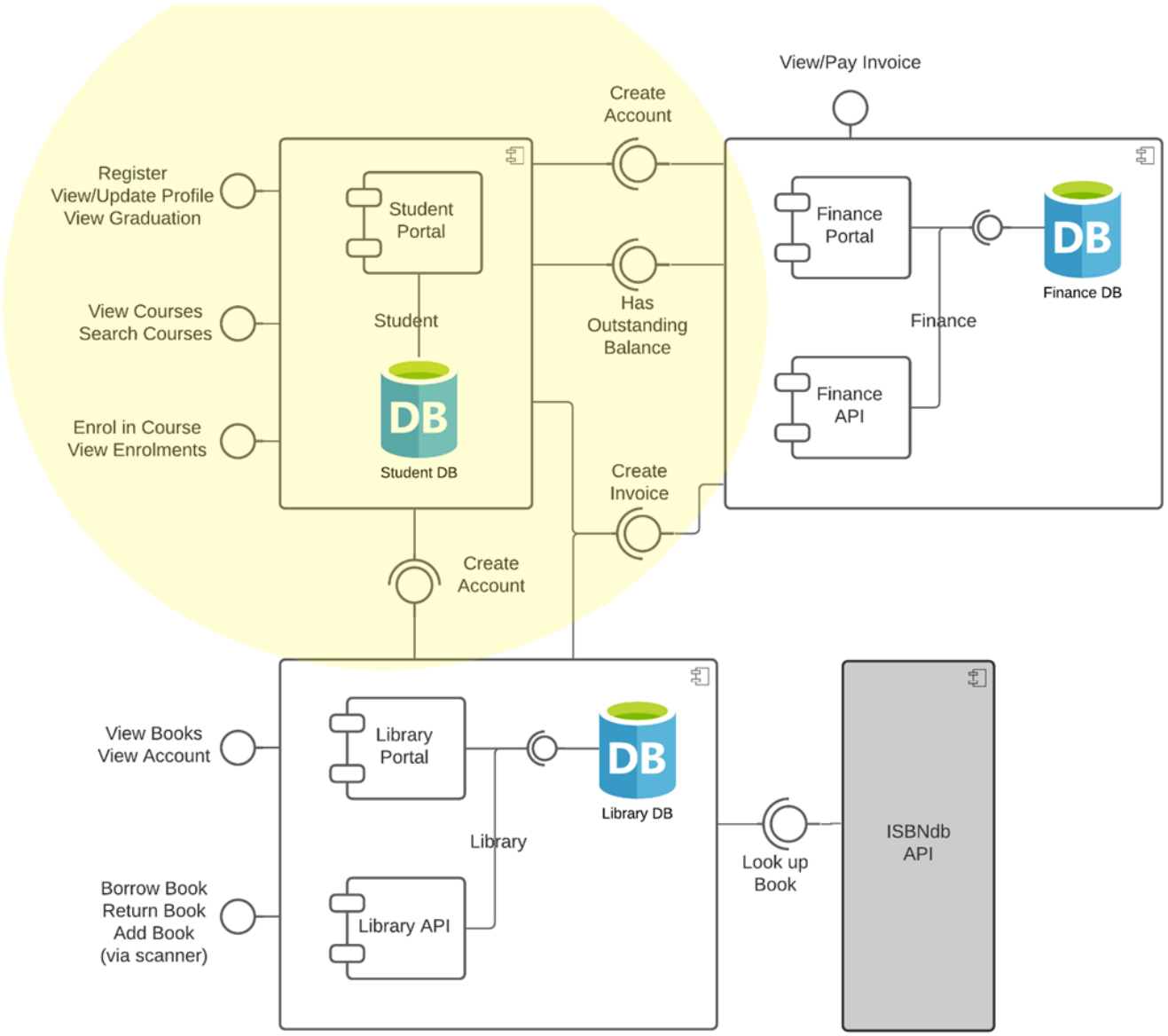
Component 1A - Product (**30% of the module marks**)

As part of this module, you will design a microservices-based web application which provides courses online. This assessment covers both theoretical and practical aspects from the program. We recommend that you use the same programming language, frameworks and technologies introduced in the weekly labs, particularly if this is your first time working with the concepts covered in the module. You are, however, free to select a technology stack of your choice for the assignments.

Requirements:

To develop a microservices-based student portal and implement the following features:

- **Register/Log in** - create a portal user and log in.
- **View Courses** - view all the courses offered.
- **Enrol in Course** - enrol in course. If this is your first enrolment, a student account is created at this point.
- **View Enrolments** - view all the courses you are enrolled in.
- **View/Update Student Profile** - view profile (includes student ID), update name and surname.
- **Graduation** - view eligibility to graduate (must not have any outstanding invoices).



Integration Requirements:

1. Database

The application must integrate with a database.

2. Finance

The application must integrate with the Finance microservice, available through the following repository: https://github.com/tvergilio/finance

- When a student is created, a request is sent to the Finance microservice to create an account.

- When you enrol in a course, a request is sent to the Finance microservice to create an invoice.
- Upon checking the eligibility to graduate, a request is sent to the Finance microservice to see if there are any outstanding invoices.

3. Library

The application must integrate with the Library microservice, available through the following repository: https://github.com/tvergilio/CESBooks

- When a student is created, a request is sent to the Library microservice to create an account.
- When a book is returned late, a fine is issued. A request is sent to the Finance microservice to create an invoice.

Product:

You will be required to submit a 1-page document via MyBeckett containing the URLs of the repositories where your source code is to be found. You must remember to make your repository public, and you should not commit further changes to it until the module is finished. By default, the master branch of each repository will be considered for marking, unless you indicate otherwise in your submission.

As a general guidance of expectations:

- **A product that is awarded 70% or above** will have all requirements completed. All three microservices will be developed from scratch using appropriate technologies. The code will be clean, well formatted and fully commented. All design decisions will be fully justified and critiqued.

- **A product awarded between 60 and 69%** will have all requirements completed. In addition to this, one of the two optional microservices will be redeveloped using appropriate technologies. The code will be clean, well formatted and fully commented. Most design decisions will be fully justified.

- **A product awarded between 50 and 59%** will have most requirements completed. The code will be legible, without excessive verbosity or duplication. Not many design decisions will be justified or critiqued.

- **A product awarded between 40 and 49%** will have some of the requirements completed to produce a minimal, but working service. The code may be cluttered, but will be functional. The design decisions will be unjustified.

- Generally, **a product that does not pass** will not follow the provided guidelines and will not represent a feasible product.

Component 1B - Presentation (**20% of the module marks**)

During the scheduled delivery of the module, you will work on the implementation of a microservices-based web application which provides courses online. The aim of this assessment is for you to explore and reflect on the topics covered in the module, and explain how you have applied them in your design and implementation decisions. At the end of the module, you will record a 15-20 min video presentation of your product, which should contain an introduction, a formal presentation of the technology stack and code base, as well as a live demo. You should aim to address all the marking criteria.

Allocation of marks are described below. Marking will be conducted using a spreadsheet that generates marks based on performance in each of the marking scheme areas. For example, each requirement will have a number of comments describing possible outcomes (such as “Clear, succinct introduction covering all the main aspects of the product”, or “Fair introduction covering a few aspects of the product”, or “No introduction”). Marking will involve selecting or creating appropriate feedback. As a consequence, you can expect detailed feedback once your presentation has been marked.

Marking criteria are detailed below. Structure your presentation based on these headings.

- **10% Introduction** - Briefly introduce the web application you developed, including its purpose, architectural overview and technology stack. Describe the scope of your development, main features implemented and your testing approach.

- **10% How the web application works** - Describe how the web application works from an end-user perspective. You may find it useful to utilise a combination of diagrams, wireframes and/or screenshots to depict this. Clearly identify different actors and their interactions with the system.
- **10% Demo -** Briefly demonstrate how your web application works from an end-user perspective. Focus on one “happy path”.
- **10% Microservices** - Indicate how your product has implemented the microservices pattern, and discuss the pros and cons of alternative approaches.
- **10% Dependency Management** - Describe the dependency management approach used in your implementation. Discuss alternative tools commonly used in the industry and justify your selection and implementation decisions. Provide a concrete example of how you used dependency management in your project.
- **10% Dependency Injection** - Describe the dependency injection approach used in your implementation. Discuss alternative frameworks commonly used in the industry and justify your selection and implementation decisions. Provide a concrete example of how you used dependency injection in your code.
- **10% Service Integration -** Describe the service integration approach used in your implementation. Discuss alternative approaches commonly used in the industry and justify your selection and implementation decisions. Provide a concrete example of how you used SOAP/REST to enable your services to communicate with each other.
- **10% Testing** - Describe the testing strategy used in your implementation. Discuss alternative testing approaches commonly used in the industry and justify your selection and implementation decisions. Provide a concrete example of how you used automated tests in your code.
- **10% Conclusion** - Summarise your product and discuss its limitations.
- **10% Presentation –** Points for the overall quality of the presentation.

As a general guidance of expectations (keeping in mind the weightings provided above):

- **A presentation that is awarded 80% or above** will precisely follow the above guidance to clearly and succinctly describe and demo an outstanding product, with clear screenshots/screen sharing of the relevant code and appropriate diagrams illustrating excellently justified insightful design decisions. The presentation will be delivered to a professional standard.

- **A presentation awarded between 70 and 79%** will follow the above guidance to describe and demo a very good product, with clear screenshots/screen sharing of the relevant code and diagrams illustrating competently justified design decisions. The presentation will be delivered to a very good standard.
- **A presentation awarded between 60 and 69%** will follow the above guidance to describe and demo a good product, with some screenshots/screen sharing of the relevant code and diagrams illustrating some design decisions. The presentation will be delivered to a good standard.
- **A presentation awarded between 50 and 59%** will mostly follow the above guidance to describe and demo an acceptable product, with most features implemented to a fair level. Very few screenshots/screen sharing of the code and/or diagrams will be provided, and the design decisions will be poorly justified or not justified. The presentation will be delivered to a fair standard.
- Generally, **a presentation that does not pass** will not follow the provided guidelines and will not meaningfully describe or demonstrate a feasible product.

Student Instructions for Submission of Coursework

This module requires you to submit your work online.

You MUST submit your work through MyBeckett using the link set up by the tutor. Receipt of your work will be recorded.

Your "Turnitin assignments" in MyBeckett can be set up so that you can check your assignment yourself as you submit it. This checking is done by creating an "Originality Report". If this report shows that there are some problems with your work, such as un-cited quotations, you should be able to make corrections and re-submit the work again before the due date. More information about Turnitin is available online here: https://libguides.leedsbeckett.ac.uk/mybeckett/turnitin

Please note: Tutors will follow up any suspected unfair practice found after the submission date as per University policy. Late penalties will apply as per University Regulations.

Reassessment and deferral

Reassessment only applies to students who did not pass the module (less than 50% final marks reported via Results Online from the main student portal login). Access your marks

via the Provisional Grades section in the VLE module website, so that you can determine which elements you may complete.

If you failed the module and achieved less than 50% for Component 1, your reassessment is to redo the Product and the Presentation, with the same assessment specifications as detailed in the module handbook.

Submit the Product and Presentation via the appropriate Turnitin link in the Assignment submission area.

The Product and Presentation are due by 23:59 on Monday 3 July 2023.

Your final grade will be calculated based on your resubmitted work (capped at 50%) and previously passed components.

Deferral students will submit the assignment by 23:59 on Monday 3 July 2023.

School of Built Environment, Engineering and Computing

MAIN Component 2 PRACTICAL (Applied Research)

Module name and CRN		Software Engineering for Service Computing - 16715			
Module Leader		Thalita Vergilio			
Semester	2	**Level**	7	**Approx No of Students**	50

COMPONENT TITLE: **Practical (Applied Research)**

COMPONENT WEIGHTING: **50% of Module Marks**

HAND-OUT DATE: **Week 3 of Semester 2**

SUGGESTED STUDENT EFFORT: **50 hours**

SUBMISSION DATE: **w/c 15 May 2023**

SUBMISSION INSTRUCTIONS: **Turnitin via MyBeckett**

FEEDBACK MECHANISM: **Feedback via VLE within 3 weeks of submission**

LEARNING OUTCOMES ADDRESSED BY THIS COMPONENT:

1. *Demonstrate knowledge and understanding of a range of perspectives and approaches to modelling software systems as services.*
2. *Demonstrate knowledge and understanding of a range of SOA techniques and approaches.*
3. *Recognise the necessity to adopt a critical and evaluative stance towards software systems development approaches and techniques.*
4. *Critically evaluate a range of service level design strategies and techniques.*

NOTES:

This is an individual assessment. Submission of an assessment indicates that you, as a student, have completed the assessment yourself and the work of others has been fully acknowledged and referenced.

By submitting this assessed work, you are declaring that you are fit to submit, and you will therefore not normally be eligible to submit a request for mitigation for this work.

If your result for this assessment is recorded as Non-Submission or your mark for this assessment and for the whole module is below 40%, you will have the opportunity to take reassessment (see Reassessment information). If you are granted deferral through the mitigation process, you may complete the reassessment with a full range of marks available.

For further information, please refer to your Course Handbook or University Assessment Regulations.

DETAILS OF THE ASSESSMENT

Component 2 - Applied Research (**50% of the module marks**)

Report [3,000 words]

You will conduct a rigorous investigation of the technology(ies) used in the implementation of the product described in Component 1A.

You will identify some quality of the architecture, platform, or technology used in your implementation, and design a set of experiments to measure this quality. You may wish to use benchmark tests to compare the performance of different implementations. You will then analyse the data and prepare a report (3,000 words) with your findings. Examples of qualities to measure are:

- data transfer speed
- data transfer volume (network utilisation)
- fault tolerance
- performance
- energy consumption

For example, you could compare the difference in energy consumption between equivalent implementations using SOAP and REST. Or you could compare the performance of equivalent implementations using SQL and NoSQL databases. You could also compare how quickly fault tolerance is provided by different deployment platforms. Your goal is to critically evaluate the technology/platform/feature selected and present your findings in the report.

A marking scheme for Component 2 is available.

Report Structure

These guidelines are drawn from the University's Skills for Learning website https://libguides.leedsbeckett.ac.uk/skills-for-learning/

Title - Provide a suitable title.

Abstract - Provide a brief summary of the main contents, findings, conclusions and recommendations in the report. This enables the reader to quickly scan the report for relevance. It should include:

- a concise statement of the subject of your research
- discussion of what your research sets out to do
- the research methods used
- the conclusions drawn

It should be about 100 words.

Introduction - This should introduce the main part of the report. It lets the reader know what the report is about; it outlines the key issues and concerns. It should be fairly concise and should include:

- an explanation of what your research is about
- context of your research
- aim, objectives, research questions or hypotheses clearly defined and discussed briefly
- rationale of your research
- scope of your research
- novel contribution of your research
- an outline of the contents of the report

It should be about 200 words.

Literature Review - Conduct a critical literature survey on existing related work which is relevant for your research. It is useful to keep reminding yourself of the aim, objectives, research questions, etc, of the research, and include literature that is specific to these.

It should be about 800 words.

Methodology - discussion of the appropriate approach/es and research methods that you have employed to collect primary data for the purpose of this assignment. Additionally, this section ought to include a critical discussion of the data analysis techniques you have chosen. You are expected to provide embedded citations to support your discussion.

It should be about 800 words.

Findings and discussion - you are expected to show the analysis of your collected data, interpretation derived from your data analysis, use of appropriate methods to present your findings, and draw useful conclusions for the next section.

It should be about 500 words.

Recommendations - You should provide your evidence-based recommendations based on your analysis and interpretation of results.

It should be about 200 words.

Conclusion and Future Work - This section should highlight the findings of the report. It should emphasise the themes raised in the introduction and summarize what has been found. To produce a good summary, make sure that you review the evidence and arguments contained in the main body of your report and map them directly to your research questions or hypotheses. Remember that the conclusions you reach will be based on the evidence you have considered – primary, and secondary sources. It is important to bear this in mind so that you do not make the mistake of drawing conclusions that cannot be justified from the evidence you have considered.

Write the conclusion of your report in a form that enables the reader to understand the major issues, points and findings of your research simply from reading this section alone.

It should be about 300-400 words.

References - All research reports require a bibliography that is composed of references you have cited in the text of your report. Leeds Beckett uses the Harvard Referencing System because, unlike systems involving numbering, it is not affected by altering the text. Failure

to cite and reference sources will result in plagiarism and could have a negative impact on your results due to poor research and scholarly practice.

Appendices - If you require more word counts for your paper, you can use your Appendix for additional explanation. Try not to exceed 1,500 words.

Student Instructions for Submission of Coursework

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Reassessment and deferral

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If you failed the module and achieved less than 50% for Component 2, your reassessment requires you to resubmit the report.

The report is due by 23:59 on Monday 3 July 2023.

Your final grade will be calculated based on your resubmitted work (capped at 50%) and previously passed components.

Deferral students will submit the product by 23:59 on Monday 3 July 2023.

Feedback on your Assessments

Feedback forms a large part of your learning experience and is vital to your personal and professional development. The Presentation, Product and Report will have written feedback, returned within a few weeks of the submission. In addition to that, you can ask for feedback from your tutor directly during the weekly labs, or online on Discord.

Late Submission Opportunities

Without any form of extenuating circumstances, standard penalties apply for late submission of assessed work. Full details of the penalties for late submission of course work are available in the Academic Regulations.

Extenuating Circumstances and Mitigation

If you are experiencing problems which are adversely affecting your ability to study (called 'extenuating circumstances'), then you can apply for mitigation. You can find full details of how to apply for mitigation at: https://www.leedsbeckett.ac.uk/studenthub/mitigation/.

The University operates a fit to sit/fit to submit approach to extenuating circumstances which means students who take their assessment are declaring themselves fit to do so. More information is available at the above link and here: https://www.leedsbeckett.ac.uk/studenthub/examinations/