



FIT3142 Assignment Part 2: Distributed Application Performance

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Contents

1	Assignment Task Definition (100 Marks/15 percent)	3
2	Submission Checklist	4

1 Assignment Task Definition (100 Marks/15 percent)

Your individual task comprises the following:

1. Answer the following series of questions, based on relevant documents that you can find.
2. The answer to any question should not exceed 600 words, but also be no shorter than 400 words:
 - (a) Summarise and discuss the differences between the Amdahl and Gustafsson performance models.
 - (b) Summarise and discuss the differences between the LogP and MRM performance models.
 - (c) Summarise and discuss the differences between the harmonic speedup and Erlang performance models.
 - (d) State which of these six performance models is most suitable for Big Data Storage and Clouds, and state in points exactly why this is so.
 - (e) Summarise and discuss the differences between the Alluxio, Spark and Hadoop schemes.
3. **IMPORTANT: Note that the questions do NOT include “describe” or “explain” how the subject item works or what it does. Zero marks will be awarded for descriptions or explanations of the topical items, marks will only be awarded for actual answers summarising differences. If you “pad” your answers with descriptions or explanations, you will only be marked for the actual answers, not for any descriptions or explanations. If you answer a question by producing only descriptions or explanations your result will be ZERO marks for that question.**
4. In assessing items (a), (b), and (c), students are expected to assess both differences, and strengths versus weaknesses.
5. In assessing item (d), students are expected to evaluate or assess the suitability of these models by looking carefully at what performance parameters we are interested in in such systems, and assessing how well each model performs in estimating these important performance parameters.
6. In assessing items item (e) students should consider the abstraction level, the middleware, functionality and performance of these schemes.

7. *The quality of English language grammar used in the assignment will NOT be marked. The structure, content, understanding, and referencing WILL be marked. Expect to cite at least 3 to 4 references per question.*
8. No additional marks will be given for assignments that are over the specified length. No additional marks will be given for assignment content not requested or specified. If the assignment is more than 50% longer than specified, the total mark will be decreased by 10% for every excess page in the report.
9. *Pasting from websites is NOT permitted. Please include all references and use proper citation technique. Failure to properly cite will result in the loss of marks. Failure to cite will be considered to be plagiarism (see below). If citations by word count are more than 10 percent of the total word count, marks will be deducted for a lack of original content.*
10. Learning objectives: this assignment is intended to provide you with experience in independently collecting and understanding research materials, as you will be expected to do in industry jobs. The use of the books, information found on the web and other journal and conference papers is important. The assignment provides an opportunity for you to test your understanding of basic ideas in *Distributed Computing* against real world examples.
11. Time budgeting is important. Plan your time carefully and start early if possible on the assignment.
12. Provide clear references for any theories, arguments, claims, diagrams, equations and any related material that you get from elsewhere. Citations of lecture slides or *Wikipedia* pages will not be counted as independent original content.
13. *You will then submit a **PDF** format assignment, in a single file which includes your student number, name, the report and the references. Please do NOT submit Word files, text files or scanned images of paper pages. If you submit in a format other than **PDF**, your assignment will NOT be marked. The format is A4, with 1.5 cm left and right margins, 10 point sans serif font (eg Helvetica or Arial).*

2 Submission Checklist

Submit an electronic copy of this work by 16:00 hrs Friday, Week 11 via Moodle.

The report must be in PDF format, MS Word will not be accepted.

All files must be named using the convention MyStudentNumber-3142-Ass-2.pdf. Marks will be deducted for bad formatting if naming conventions are not followed.

Late submission without a good reason agreed in advance of submission due date will result in a penalty deduction of 10 marks per calendar day or part thereof. If you believe that your assignment will be delayed because of circumstances beyond your control such as illness you should apply for an extension before the due date. Medical certificates or certification supporting your application may be required.

It is an academic requirement that your submitted work be original. Zero marks will be awarded for the whole submission if there is any evidence of copying, collaboration, pasting from websites, or copying from textbooks. Previously, students who plagiarised have been referred to the disciplinary committee.

1. One PDF report as detailed above.

Revision Status:

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