

# **MSc in High Performance Computing**

## **MSc in High Performance Computing with Data Science**

### **Programming Skills**

### **Performance Experiments Coursework Assignment**

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## **1 Introduction**

In this coursework you will carry out performance experiments using the code you, and your group, developed as part of your Development Coursework Assignment.

The coursework is a group exercise where you will continue to collaborate with your fellow students from the Development Coursework Assignment to design and carry out performance experiments, and write up your experiments, and the results, in a report. As for the Development Coursework Assignment, you should ensure that the overall amount of work each member of your group does is equally divided.

## **2 Design and carry out performance experiments**

Design and carry out experiments to assess the performance of the code you produced as part of your Development Coursework Assignment. It is up to you what experiments you conduct, but some ideas include:

- Investigate the effects of compiler optimisation flags.
- Identify and quantify the main sources of overhead.
- Investigate the effects of landscapes with different proportions of land and water.
- Investigate the performance for different sizes of landscape.

When investigating performance, you should take care to justify your choice of metrics. You are *not* required to carry out all the experiments above, nor to restrict yourself to this list. Quality is more important than quantity. Credit will be given for intelligent and insightful analysis of your results, in preference to the quantity of data you present. Clear graphical presentation of performance data is strongly encouraged.

### 3 Write your group report

Your report should be structured as follows:

- **Introduction:** Short introduction to the rest of the report.
- **Performance tests and analysis:** Description on the performance experiments you did and an analysis of the results of these.
- **Conclusions:** Some brief conclusions and suggestions for future work.

Your report should be about 10 pages.

### 4 Submission and marking

You are required to submit your report and to complete a WebPA (Web Peer Assessment) contribution assessment<sup>1</sup>.

#### 4.1 Submitting your report

Report submissions are done via the Turnitin submission tool from within LEARN.

Submit your report as a PDF.

The filename of your submission must include your *exam number* which is the B number which appears on your matriculation card (this is not the same as your student number). You should also include the course identifier, `PS` for Programming Skills, and the identifier `Perf` for this coursework. So, for example, if your exam number is `B123456`, then you would name your submission file `B123456-PS-Perf.pdf`.

While every member of your group needs to submit a copy of the report so that we can return marks to all students via Turnitin and LEARN, only one of these (per group) will be marked. The one to be marked will be picked from a member of the group at random, so make sure you all upload *exactly the same copy of the report*.

#### 4.2 Completing a WebPA contribution assessment

The WebPA contribution assessment is accessed via LEARN. It is completed online. You must complete this individually. The assessment covers categories of contribution relating to the coursework. For each category, you have 100 points to assign across the members of your group, including yourself.

A more equal distribution of points in a category means that in your view all members made a similar level of contribution or contributed equally to that category. If, in your view, a group member contributed more to a specific category, you can award them more points to reflect this.

The categories are:

1. **Proposing/designing the experiments.**
2. **Executing the experiments.**

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<sup>1</sup> <https://www.ed.ac.uk/information-services/learning-technology/assessment/webpa>

3. **Analysing the results.**
4. **Writing the report.**
5. **Collaborating:** How well did the group member collaborate during the coursework? Did they propose constructive ideas and suggest alternatives options? Did they attend meetings? Did they arrive on time? Did they reply to emails in a timely way? Did they carry out their designated tasks? Did they keep to your group's deadlines? Did they let you know of any problems as soon as possible?

## 4.3 Deadline

The deadline for submission for your report, and completion of the WebPA contribution assessment, is **16:00 Wednesday 21<sup>st</sup> November (week 10) 2018** for all students.

Submission are allowed up to 7 calendar days after the deadline, with a 5% deduction per day or part-day late.

If you submit your report by the deadline then it will be marked, and you cannot submit an amended version to be marked later on.

If you do not wish the submitted version of your report to be marked, and intend submitting an amended version after the deadline, then it is your responsibility to let the course organiser know, *before the deadline*, that the submitted version should not be marked.

## 4.4 Marking

Each report will be marked out of 100 as follows:

- Description of performance experiments, results and analysis: 80
- Presentation (quality of text and report): 20
- **Total: 100**

Individual marks will then be adjusted in light of the WebPA contribution assessments. The maximum this can vary the mark for an individual student (without MSc course board intervention) is plus or minus ten marks (+/- 10). All marks are subject to moderation by the MSc course board.

Groups are expected to attempt to resolve any issues early, requesting the involvement of the course organiser if necessary, so a significantly negative mark modification should not be made without good reason. A group which assigns a significantly negative modifier to one member, without having previously contacted the course organiser with concerns about that one member, may be penalised for failing to do so.

The mark for this assessment forms 30% of your overall mark for the Programming Skills course.

## 4.5 Provisional marks

Your provisional marks and feedback will be returned no later than 16:00 Wednesday 12<sup>th</sup> December 2018. All marks are provisional until confirmed by the MSc course board.

## 5 Questions and issues

Feel free to e-mail the course organiser if you have any questions. Questions of interest to the whole class will be anonymised and them, plus their answer, forwarded to the whole class.

If problems occur in how a group is collaborating, the group should initially attempt to mediate and resolve the problems amongst themselves. Should this prove to be insufficient, issues should be directed to the course organiser. Likewise, any conflicts that cannot be resolved within the group will be mediated by the course organiser, on request.