

Propose a vacation student project for Summer 2020

This call is now closed

The deadline for making your proposal(s) was 18:00 Friday 13 March 2020.

This form is for one project proposal, so to propose multiple projects please submit a separate form for each project. Any queries, do ask - Toby.

Project supervisor email *

suzanne.m.embury@manchester.ac.uk

Title of the project *

Automated Assessment and Feedback Tools for Advanced Git Coursework

Source of funding *

- Department funding requested
- You have your own funding (e.g. research grant)

Objective of the project *

To develop software and materials for a new individual coursework exercise for COMP23311 that will guide students through some more advanced Git concepts, such as non-trivial merges, conflict resolution and rebasing. The software will automatically modify GitLab repositories so that they contain scenarios matching these concepts, as well as marking work and generating feedback.

Number of students requested (justify if > 1) *

1

Start date, end date, total duration (weeks) *

8th June 2020 to 14th August 2020 (10 weeks)

The benefit to the Department *

Git skills are important for employability, and therefore developing effective ways of helping more students to acquire them benefits our students and the department.

The project will also deliver a cost-effective and innovative form of assessment for one of our largest student cohorts, saving many hours of TA marking effort so they can be redirected into helping students face-to-face.

The benefit to the student *

This project will give experience in coding against public APIs (such as the GitLab API), and in developing software that will be reused and extended in the future. It will also give experience in developing training/teaching materials, and at producing code and materials to strict deadlines. It is also likely that the student undertaking the project will gain a deeper understanding of core Git concepts, and of how to manipulate Git repositories and GitLab projects programmatically. An agile approach, with lean start-up elements, will be taken to managing the project. It is likely that the project may involve some source code analysis techniques.

Skills needed by the student. *

Ability to write clear code suitable for future extension by others
Ability to write unit tests
A good understanding of basic Git concepts
Ability to write clear and concise documents
Ability to work independently to meet deadlines and deliver on requirements

The main language of implementation will be Python, plus Groovy scripts for interacting with Jenkins. Some Java coding may be required for the secondary parts of the project.

Since this project develops coursework materials for COMP23311, only students who have already passed that course unit will be eligible for the post.

Details of the work that the student would do *

The project will involve experimenting with programmatic ways of triggering the Git scenarios tested by the coursework: for example, artificially adding commits to a Git repository so that when a student undertaking the coursework merges their own feature branch, a merge conflict is forced. We already have ideas on how to achieve this, but the project will involve some experimentation with different mechanisms (commit hooks, CI processes, etc) to find the most reliable one.

Once a reliable mechanism is found that matches all the desired learning outcomes for the coursework, the project student will construct coursework materials (description, marking scheme) that will be used in the coming academic year. Once a suitable marking scheme is created, we will write code that will automatically mark coursework submissions, uploading feedback to the GitLab issue tracker, following the model successfully trialed in the current academic year.

The project student will also help us develop and trial teaching materials covering the topics assessed by the coursework, that are not already included in our current teaching materials.

The next stage of the work will be to extend and update the Lab Troubleshooter with entries to help guide students through the coursework designed. Additional troubleshooter entries will be made based on common errors made by students in the current academic year.

The current Lab Troubleshooter can be found here:
https://wiki.cs.manchester.ac.uk/index.php/LabHelp:Main_Page

Finally, if time allows after all this, the project student will help us to test out the new features planned for the COMP23311 coursework in the coming academic year. This will involve proposing and implementing new features in Java, in the context of the Stendhal code base we will use for the new semester.

Infrastructure requirements and any required staff support other than the project supervisor *

Access to Dept lab machines

Supervision arrangements throughout the duration of the project (named staff and dates covering the entire duration) *

Supervised throughout period by Suzanne Embury

Location of the project work (building/room) NB projects must be on-campus *

Kilburn Labs

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