## Title

## An interactive debugger to improve the usability of syntax error messages for novice programmers

## CRSid of project leader

lm615

## Names of applicants

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## Start date

## End date

## Type of study

‘Controlled experiment…’

## Brief description

Provide a brief description of the research objectives and how the study will be carried out, including how participants will be recruited.  
Supporting material which might include questionnaires which will be used, or user manuals given to study participants should be uploaded later in reply to the confirmation email you receive after you click submit.

The objective of the research is to determine whether my system is useful for novice programmers, and the extent to which it helps them learn to program.

The study will be carried out as follows:

* The participants will complete a short questionnaire.
* They will be asked to complete four short programming tasks.
  + The tasks will revolve around using a turtle graphics module for Python. Participants will have to instruct the turtle to draw various shapes, using various different programming constructs.
  + Each task should take no more than 15 minutes. Task sheets, which explain the task, will be given to participants in a specific order.
  + Each task must be either completed or abandoned by the participant before moving on to the next.
* The participants will complete another short questionnaire.

Participants will be using their own laptops. The system will be loaded onto a USB stick, ready for the participants to use. They will not need to install anything, and the system will not be left on their computers after the end of the experiment.

While the participant is using the system, their actions will be logged. This log will store interactions with the system, such as clicking the interface buttons. Each time an action is logged, a copy of the code will be stored. The log will be analysed, looking at the difference between each successive entry. This will be used to track how a user fared with each task, and how much they used the features offered by the interface.

Participants will be given two short questionnaires.

The first questionnaire will be used to try and gauge the participants previous programming experience. This will be used possibly to screen out participants who have had too much experience. It may also be used in the evaluation as context for how the user interacted with the system.

The second questionnaire will be used to evaluate the user’s experience with the system. It will be looking for areas in which it may be improved. This may also be used to justify why a user was having trouble with some of the tasks.

In order to connect the questionnaires to the logs, at the start of the experiment each user assigned a logging number. This will be the only way in which participants will be identified.

Participants will be recruited from my college, Peterhouse. As compensation, I will be offering free food and drink during and after the study.

## Precautions taken