**Record of Invention - contains Software**

The aim of this form is to provide a detailed and comprehensive account of the invention, new plant variety, copyrighted work or other IP, which you have developed.

* It helps Warwick Ventures Ltd. (WVL) assess if the work is patentable
* It helps the patent attorney draft the patent, if WVL decides to proceed.
* It provides an important record of the date of the invention, which could be important in the future of the patent process.
* It helps give WVL an indication of The University of Warwick’s ownership of the invention.

In this document, inventions, plant varieties, copyrighted works and other IP will be referred to as ‘inventions’.

Complete this form as fully as possible and then return it to your Business Development Manager or email it to [ventures@warwick.ac.uk](mailto:ventures@warwick.ac.uk).

**Important**

This form, and the information within it, is confidential. Disclosure of your invention, before filing a patent application, may render the invention non-patentable. To avoid disclosure of your invention please consult with WVL before discussing the invention with anyone outside of the University or the group of inventors you have identified in this form.

**Stage One**

Enables WVL to start the Commercial Opportunities Appraisal Process (COAP), to give the project and initial rating and to determine how best to proceed.

1. **Short Title**

Please give the invention a short descriptive title. For software please give the application name and version number.

logic-ex (version 0.1.04fed31)

1. **Describe the invention briefly covering the points below.**

Attach a fuller account as a separate document if appropriate; also let us know if you have data available to support any inventions.

1. Please give some general background information to put the invention in context.

Teaching logic usually involves software for automated marking, and for tracking students’ progress.

1. What is the problem you are trying to solve?

Logic students need rapid, insightful and continuous feedback on their work; their tutors and lecturers need to monitor their progress and provide feedback.

1. What are the current solutions to this problem?

Please outline the problems with the current solutions.

At Warwick we've been using the leading software package for nine years. It has many virtues, but it’s quite clunky, it hasn’t been significantly updated and it costs each student around £45, which many object to paying.

1. What is your solution to the problem? How and why does it work?

Logic-ex is a web application that presents students with logic exercises, automatically grades many of them, allows tutors to grade exercises that need manual grading, and tracks students’ progress.

1. What is new about your invention?

Very little. It enables students to access exercises more easily (via the web). It permits greater flexibility in how sequences of exercises are presented and set, and allows some new kinds of exercises to be set. It enables students to request and receive help with particular problems. It provides opportunities for tutors to provide feedback to students. It can be integrated with existing online course materials.

1. Explain your inventive step. How have you moved forward from the current knowledge or current state of the art?

I created a way to present logic exercises and feedback to students via the web.

1. What are the main features, advantages and benefits of your solution over the current solutions?

For students: It is easier to use. It is closely linked to lectures. It is possible to request help directly. It eliminates the need for some manual submission of exercises.

For tutors: Where automatic feedback is not provided, feedback given for one mistake is stored and re-used.

For lecturers: It makes it possible to do slightly more logic, raising standards. It should also make it slightly easier to manage large discrepancies in ability, which are typically found.

1. Does your invention have any disadvantages or limitations?

Some of the automatically generated feedback is not easy to understand. The stores of manually entered feedback, and of exercise sets, are limited at this point.

1. **Please list those who have contributed to the invention**

I am the sole contributor. The software makes use of a number of open source libraries.

1. **How might the invention be used?**
2. What is the main commercial use of your invention?

Please include the types of people or organisations that may wish to use the invention either directly or indirectly. Are there any actual or potential commercial applications of the invention? Please include specific examples of companies and any contact details you might have. List the potential markets and industries likely to benefit from the invention.

The software is most likely to be used in delivering a course in formal logic at a university. It could be used independently by individuals.

1. To date has there been any commercial interest shown in the invention? If so please provide details.

No.

1. Are there any other uses of the invention?

No

1. **Do you plan to submit a paper or thesis or to present or disclose the invention?**

If so please tell us the timescale and where the publication will take place. If there is already a draft please send us a copy. Please include oral presentations, posters, abstracts, news or media coverage, websites, discussion with industry representatives or any other conversations with non-University, non-contributing associates. Will any such discussions be covered by CDA?

Not at this stage.

**Stage Two**

Enables WVL to define ownership of the invention.

1. **Have any grants or industrial sponsorship been used to fund the invention?**

Please list the Principal Investigator, industrial sponsors etc.

No.

1. **Are there any restrictions on the invention?**

For example IP clauses in grant awards, industrial sponsorship agreements, license agreements, material transfer agreements, confidential/non-disclosure agreements, ethical consents etc. As far as you are aware, is the invention subject to any other contracts not otherwise raised by the questions posed in this form?

No.

**Stage Three**

Enables WVL to determine the patentability of the invention and the IP protections strategy.

1. **Are there records which establish the invention’s date of origin? When did you first describe the invention electronically or in hard copy?**

For example lab notebooks, personal notes, publications, emails etc. Please give the date.

Yes. I started writing the software on February 19, 2012.

1. **Have you told anyone about the invention? When, where and how did this happen? Was there a CDA in place?**

I’ve spoken to various colleagues about this project and shown them the software.

1. **Have you published the invention or anything relevant to it, either verbally, electronically, or in writing?**

If so what was published, where and when? Please include any abstracts, web pages, presentations, published articles or anything else you consider to be relevant.

Yes. The source code, in two parts, is here:

https://github.com/butterfill/love-logic/tree/master/love-logic\_new\_project

and here:

https://github.com/butterfill/love-logic-server/tree/master/love-logic-server

1. **Do you know of any published literature (including patents) relevant to your invention? Have you done any literature searches? If so please provide details.**

No.

1. **What are your future plans for the development of the invention? Do you have funds available to carry out this work and what are you hoping to achieve in the next 12 months?**I am currently devising plans with the aim of disseminating the software .

**For inventions that include software please provide the following additional information.**

**Please provide the software name and version number**logic-ex (version 0.1.04fed31)

1. **For software created by the researchers identified in question 3 above:**
   1. What files were created? Please provide a list
   2. Which programming languages were used
   3. Which development tools were used to create or generate the software?
   4. What copyright protection notices are included in the files?
   5. If this is a new version of existing software, which files have changed, been added or removed since last version? Were different authors involved?
   6. What documentation or other files are required for others to use, develop and maintain the software. Please provide a list
   7. Please indicate if the software, or any part of it, has been distributed outside the University, and if so, in what form, and to whom?
   8. Is the software available as a web download? If so, please provide the download URL and state the terms under which the download is available.
   9. Was any part of the software created by people not listed in Question 3 above, or from outside the University (external contractors, people not employees or students of the University etc.) If so, please provide details.

a) please see the above github links

b) javascript, coffeescript

c) JISON (https://zaach.github.io/jison/docs/#license); browserify (https://github.com/substack/node-browserify)

d) Some files start with ‘(c) Stephen A. Butterfill 2015. All rights reserved. Contact me if you want to use this code.’

e) n/a

f) The core part of the software includes a set of tests which describe many of the functions. For users there is a collection of guides here: http://logic-1.butterfill.com/logic-ex-guide.html

g) No.

h) It is deployed here https://logic-ex.butterfill.com with these terms of use https://logic-ex.butterfill.com/termsOfUse

i) no

1. **Third party software or components (not development tools or programming languages).** 
   1. Please list all software or components (files, libraries, dll’s, databases, open source software etc) that are required by the software, that were not written by the academics identified in question 3.
   2. Which organisation owns each piece listed in a)
   3. How was each piece listed in a) obtained?
   4. What licence is applicable to each piece listed in a)
   5. As we may not have the rights to distribute the components listed in 15, can the software identified in question 14 be distributed to a third party with installation instructions, and without the external components listed in question 15, and work as intended? This assumes the third party could independently obtain all the components listed in question 15 e.g. from URL links in the installation instructions or from other organisations or companies.

**The core part** (parsers etc): lodash (https://lodash.com/license); tests use mocha (https://github.com/mochajs/mocha) and chai

**The web & database part**:

meteor framework (https://github.com/meteor/meteor) plus these packages: accounts-password, appcache, blaze-html-templates, check, coffeescript, jquery, kadira:blaze-layout, kadira:debug, kadira:flow-router, meteorhacks:aggregate, meteorhacks:cluster, meteorhacks:kadira, mobile-experience, momentjs:moment, mquandalle:jade, mquandalle:stylus, msavin:mongol, reactive-var, reload, session, u2622:persistent-session, useraccounts:flow-routing, useraccounts:materialize.

libraries: codemirror (https://github.com/codemirror/codemirror); underscore; jquery; jquery-ui; gridstack (http://troolee.github.io/gridstack.js/); materialize(https://github.com/Dogfalo/materialize); xxhash (https://github.com/Cyan4973/xxHash); MurmurHash.js (http://github.com/garycourt/murmurhash-js);

b) as linked.

c) They were downloaded from the web using the relevant package manager (npm/meteor).

d) These dependencies are either MIT Licensed or come with a similarly permissive license.

e) The software could be distributed to a third party with installation instructions, and without the external components listed in question 15, and work as intended

**Please sign and date the invention record.**

**Signature **

**Name Stephen A. Butterfill**

**Date 1 Dec 2015**

**Return the completed form to:**

**WVL, University House, or ventures @warwick.ac.uk.**