LaTCh 'Language and Technology Chooser'

An Online Tool to Choose a Programming Language

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Dissertation

LaTCh

Abstract

This project looks at the design and creation of a website which can be used by computer programmers, mainly beginners in the area, to help them choose a programming language based on their needs.

The website has been tested and evaluated at every stage of the development with constant user feedback and a number of different testing methods.

Aims & Objectives

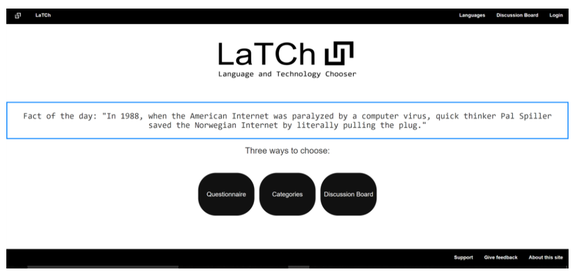
The ultimate aim of this project was to produce a website that can be used to help programmers with the process of selecting a programming language. To achieve this aim, the following objectives were set:

- ***Carry out the relevant research on programming and programming languages:*** Background research involved exploring related literature and summarising. The research carried out covers popular programming languages, programming in education, programming paradigms and more.
- ***Widely explore similar or overlapping products that already exist:*** A number of websites with similar aims were explored for inspiration and to see what could be done to improve them.
- ***Build a solution that achieves the aim:*** The product had to be well thought-out, designed and then implemented. Prototyping was used in development to make sure there was always a working version of LaTCh.
- ***Evaluate the new solution and compare it with existing products:*** The final LaTCh website was tested and evaluated by a handful of users and compared to the similar products discussed previously.

Prototypes

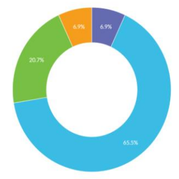
Prototyping is a process used in agile software development. It means a simple working version of the software (a 'prototype') is created early. This may have limited functionality, but allows for early user testing and feedback. Three prototypes were created and tested for this project before the final system was deployed.

- ***Prototype 1:*** This was a static website with no database connection, mainly used to get the initial interface design drawn out. It had limited functionality but allowed users to get an early look at the interface design and to explore the proposed website structure.
- ***Prototype 2:*** Using PHP and MySQL, the website would now dynamically update based on an underlying database. Languages, discussion threads and the 'fact of the day' were all being pulled from the database. Prototype 2 also allowed users to create anonymous discussion threads and write replies.
- ***Prototype 3:*** Prototype 3 extended the previous version by adding admin functionality and user logins. Security was also improved with user password hashing and PHP/MySQL prepared statements being used for form input.
- ***Final System:*** The final LaTCh website was created based on user feedback from all previous prototypes.

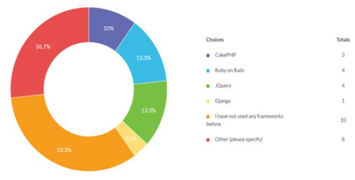


Survey

Part of the research carried out before the implementation of the LaTCh website was a survey to find out the most popular programming languages. The big languages such as Python and Java were mentioned as expected but so were some more obscure languages like CUDA, OCAML and F#.



Favourite OO (Object-Oriented) Languages



Favourite Web Frameworks

Testing

Testing was carried out after each prototype stage to allow for constant user-evaluation and feedback to take place. Testing consisted of the following:

- ***Focus group*** after prototype 1 with 5 participants.
- ***Usability study*** after prototype 2 with 7 participants.
- ***Usability study*** after prototype 3 with 20 participants.
- ***Site comparison survey*** after the final system was developed with 3 participants.

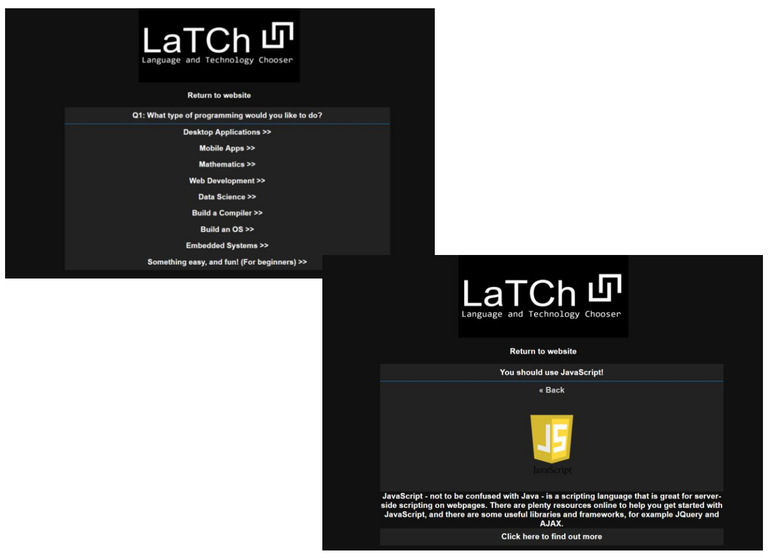
This testing also helped to evaluate the LaTCh website to make sure it was meeting the aims and objectives.

Main Features to help you choose a language:

Choosing a programming language is not easy… with a huge number of different options and (in theory) the possibility to solve any computational problem in any programming language you like. LaTCh looks to provide a number of ways to choose, with the aim of giving all users coming to the website an option that suits them.

Questionnaire

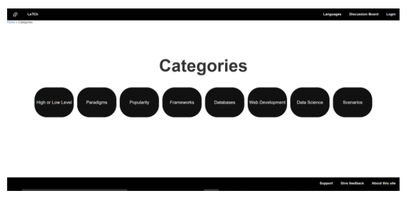
Find a language that suits your needs in 3 questions or less! This function aims to be as simple and efficient for users as possible. The questionnaire covers 18 different languages and includes 26 possible routes to an answer.



Categories

The categories section breaks the collection of languages down to make them simpler to search. Find languages based on the following categories:

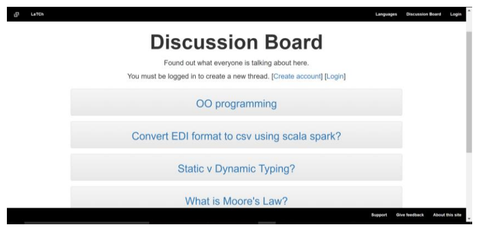
- High or low-level
- Popularity
- Paradigms
- Frameworks
- Databases
- Web Development
- Data Science

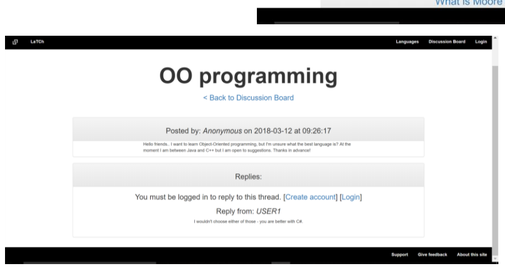


There are lots of different types of category to try and suit every users needs and interests. The 'Scenarios' category also provides a number of real-life scenarios users may be able to relate to. This is an extendable feature that allows for any number of categories to be added.

Discussion Board

'What programming language should I use?' is not always an easy question to answer. Sometimes answering a few questions or choosing a category is not enough to provide users with an answer. That's where LaTCh Discussion Board comes in. This feature allows users to interact with each other and discuss their problems with the community.





Languages

The 'Languages' section allows users to view a comprehensive list of all programming languages and other technologies in the LaTCh database. They can also select individual languages to find out a bit more about them, with overview pages including descriptions of how beginner friendly a language is and links to tutorial sites. Future plans for this website include having every existing programming language in the database, as well as built-in LaTCh tutorials.

Language Information Pages

Each language in the LaTCh database has it's own information page. Here, a user can see the following info about the language:

- Overview
- A 'Beginner Friendliness' rating
- The average salary for developers using that language.
- Links to further information and tutorials.

Future plans for these language information pages involve allowing users to contribute their own information and vote for their favourite languages.

Fact of the Day

Upon landing on the LaTCh home page, a user will see today's 'Fact of the day'. This is automatically updated at midnight by an underlying algorithm. Users can suggest new facts through the 'Feedback' page.