CODE FIRST GIRLS
SPECIALISATION PROJECT REPORT

LINGUISTICS

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1 .Aims and objectives

a) Product description

Our product is a tool that allows the user to quickly locate common features of phonemes. We will implement our product using Python, mySQL and API'S.

b) Project Overview

We will build a tool that automates the use of the Phonetic Features Chart[1]. We will also incorporate the availability to choose a language and its corresponding common features.[2] The aim of this is to reduce time spent searching for the common features of phonemes manually.[3] We also aim to create a way for the user to add a language which will then be added.

c) Goals of project

We will create a way in which linguist enthusiasts can find the common features of phonemes quickly and efficiently, with ease of functionality.

We want the program to run so that the user can input their language and phonemes selection; then the program will search within that language how those phonemes can be characterised so that they form a unique group. This unique grouping will then be returned.

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[1] Phonetic Features Chart by Jason Riggle (current version 12.12) chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://www.artoflanguageinvention.com/papers/features.pdf

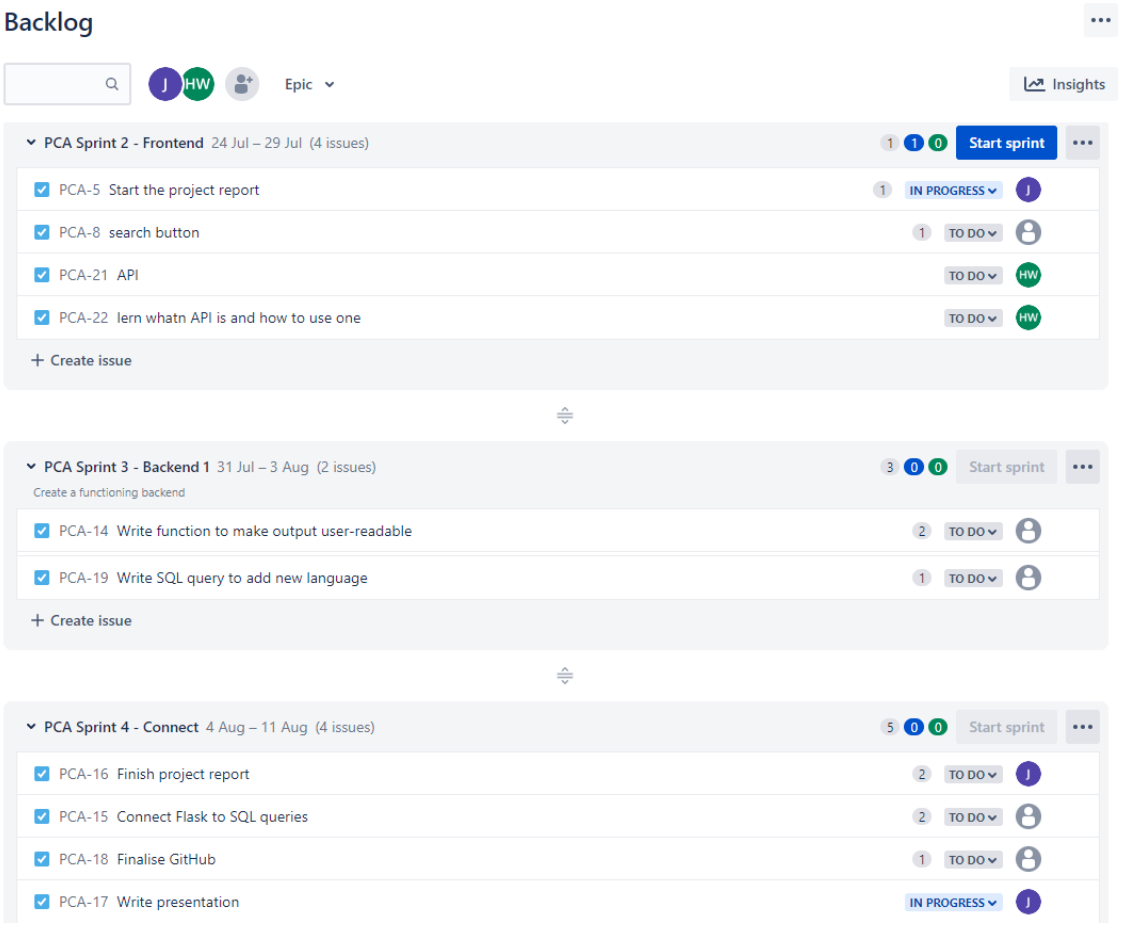
[2] 2 For more information on phonetic features refer to Chapter 12 (What is a possible language: Distinctive features, pp. 254–274) of Zsiga, E. C. (2013) The sounds of language: An introduction to phonetics and phonology. Oxford: Blackwell.

[3] http://www.artoflanguageinvention.com/papers/features.pdf

2. Planning

a) Roadmap of the report

To plan out the journey of the project we will also utilise Jira project tracking software. This will enable us to set out our objectives, milestones and timetables. The backlog of our roadmap is displayed below ;



b) Project Roles

In order to ensure effective communication regarding the project goals and ideas, the project team will communicate over chat in Slack. We will also use GitHub for the purpose of work sharing amongst our group so that we can all have access to what it is we are working on collectively.

Micheala will deal with documentation for the project, including the project report and presentation. Juli will construct the database in mySQL, write queries and test in Python. Hannah will work on Python and use of API's. Anushka will work on Python, use of API's and html.

c) Scope of Work

We will build a database in SQL that contains linguistic characteristic searchers. We will complete test driven development in Python to ensure query accuracy. We will also complete unit testing. We will utilise HTML functionality in python for ease of user access.

3. Requirements

Our project must be easy to use and implement. We will have group discussions about what requirements are needed.

a) Functional requirements

We will utilise mySQL, Python and the use of API'S for our project. We will first need to create a database in mySQL to store our linguistics characteristic searchers. The database will contain 3 tables ; phoneme chart table of phoneme characteristics, a bridge table of languages with the selection options being English, Hungarian and Spanish and a final table of each of these languages phonemes and their phoneme characteristics. The tables will link together through use of their primary keys.

b) Usability requirements

Who are the users of our product? Our product is intended for use by those interested in linguistics, specifically phonemes. Whether this be teachers, students, researchers or just those interested in the field.

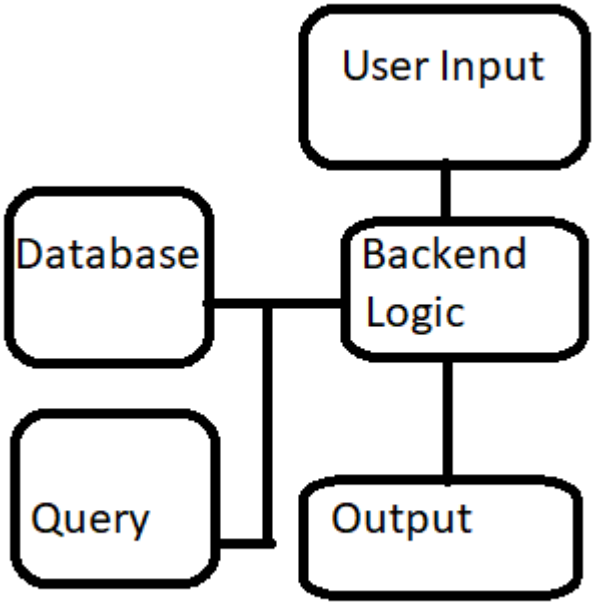
The objective is to create ease of access to phonemes with similar characteristics. As it is not anticipated that the end user will be literate in

software development, we want the product to be as easy to use as possible.

4. Design

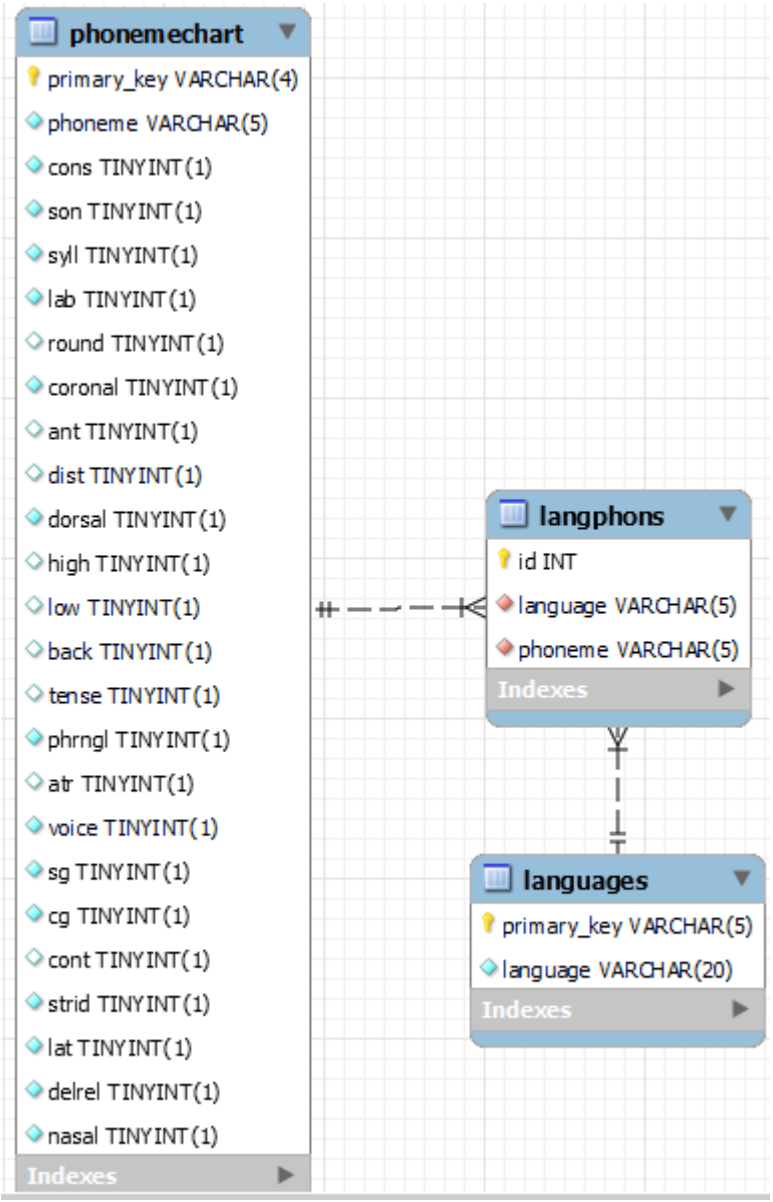
a) System design

Here is a diagram showing the design of our product. There will be user input that interacts with the database and outputs the results. The user inputs the language and phonemes they wish to be grouped by unifying characteristics.



b) Proposed software architecture

This is a diagram to illustrate our database created by Juli in mySQL that shows how the tables relate to one another.



5.Implementation and Execution

a) Development approach

After the development of the product, it will be implemented. The functionality between front end and back end logic is established by Hannah, with front end development completed by Anushka and Juli.

b) Tools and libraries

To enable functionality of our program, we will utilise tools in Python. We will use mysql.connector in order to be able to access our linguistic characteristic searcher. We will use itertools.combinations in order to create combinations of common featured phonemes.

c) Process

When the database is connected to python, we will then create queries within python. This will be done by creating functions with queries nested within those functions. For example we will create a function called compare_phonemes which will compare phonemes passed in the function in the given language. If the phonemes passed do not form a natural grouping, the next smallest possible group is returned.

Further into the development of the project Juli thought the product would benefit from a checkbox selection system in order to help with user functionality. This would help users pick their selection quicker.

6. Testing and Evaluation

a) Testing strategy

Testing will be completed throughout the development life cycle in order to ensure a quality product. We will complete unit testing in Python. We will each test each element of the code to ensure it runs correctly and efficiently and attempt to see if possible errors can be identified and corrected before the final product is released. This is crucial to ensuring the product runs correctly to the best of our abilities.

An example of unit testing is below :

```
def test_compare_phonemes_error_2(self):
    with self.assertRaises(IndexError):
        functions.compare_phonemes("en", "a")
```

This will return IndexError when run.

b) Maintenance

When the product is finalised, we will supervise the product and continue to perform testing and ensure no possible errors can be detected and if they occur, correct them to ensure the product performs as it should.

7. Conclusion