School of Computing
CA326 Year 3 Project Proposal Form

SECTION A

Project Title Natural Language Programming Language
Student 1 Name Jack Farrell ID Number 20352136
Student 2 Name Conall Kavanagh ID Number 20478414
Student 3 Name _____ ID Number _____
(A third team member is exceptional and requires detailed justification.)
Staff Member Consulted Dr David Sinclair

Project Description (1-2 pages):

Description - Minimum 250 word description of the proposed project.

The project will be to write a simple programming language with the goal of being easy to learn. The language will be designed with inspiration from natural language (mainly English) in order to make it easier to understand. Projects in the past, such as CLOnE (Controlled Language for Ontology Editing) have shown positive results for this method of language design [1]. Applescript, which is inspired by natural language, is a widely used scripting language on MacOS and was developed by Apple for general users to be able to interact with their operating system and automate simple tasks. It has been a success as it is still used in the Mac ecosystem.

Due to the examples above, we believe that there is merit to the idea that basing a programming language on how we speak, which people already have a lot of familiarity with, can lead to the language being easy to learn. We shall test that our language is easy to learn through a survey with beginner programmers comparing it to another traditional language considered easy to learn, such as Python. They will be shown example programs from both languages, and be asked what the program does, and then they shall be asked which language they felt was clearer to understand. They will also be asked to write simple programs in both languages, and we will see how quickly they come up with a solution in both languages, and ask them about their experience writing programs with each language.

The language will also support syntax similar to python as well as natural language allowing the user to use syntax that is used in other languages. This allows them to understand how the syntax works by comparing the outputs of their code with and without the syntax.

Some Examples of our syntax could be:

5 in X
X value of 5

Assigning the value 5 to the variable X

loop (n)
*	//code here*

a loop that repeats the code indexed underneath it n times e.g. 5

*on *Function name**
*	//Function Code*
end

Creating a function and the code that is associated with it.

**Function name*()*

Calling a function

Division of Work - Outlines how the work is envisaged to be split equally among the team members.

Both members of the team shall contribute equally to any research required, and the general high-level design of the language. The code will be split based on the different modules/classes required.

Programming language(s) - List the proposed language(s) to be used

Python
C/C++
Java

Programming tool(s) - List tools (compiler, database, web server, etc.) to be used

ANTLR 4

Learning Challenges - List the main new things (technologies, languages, tools, etc) that you will have to learn

ANTLR 4
Abstract Syntax Trees
Parse Trees
Interpreters
Regular Expressions
Programming language design

Hardware / software platform - State the hardware and software platform for development, eg. PC, Linux, etc.

Linux

Special hardware / software requirements - Describe any special requirements.

N/A

References

1. Funk, A., Tablan, V., Bontcheva, K., Cunningham, H., Davis, B., Handschuh, S. (2007). CLOnE: Controlled Language for Ontology Editing. In: , *et al.* The Semantic Web. ISWC ASWC 2007 2007. Lecture Notes in Computer Science, vol 4825. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-76298-0_11