**Programming Language Research Project**

**Phase 4**

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# Introduction

This assignment is in reference to the Course Section Information and the assignment tasks.  
For the Development Environment Changes, IDE changes, such as IDE type and version, will be documented if there are any. Any changes such as using a different programming language or framework can be done.  
For the Research and Learning Resources Task, Research will be performed to find learning resources on advanced programming topics that I decide to work on for the project. In the case that has been decided upon, Cloud SQL Services with Database Integration will be done. How it would work is that the author would transfer or upload the CSV data or database information to the Cloud SQL service. He will be using Microsoft Azure services to handle SQL database and integration, but Amazon SQL services are an alternative option if things don’t go as planned.  
For the WBS and Gantt Chart Task, A new WBS will be created to break down Practical Project 4 tasks into smaller sub-tasks. A new Gantt chart will also be created to accommodate the WBS.

All documentation is in IEEE format.

# Development Environment Changes

The following programs for development have changed:

* Windows 11 Home (Version 23H2, Build 22631.4317 🡪 Build 22631.4541)
* Visual Studio Code (Version 1.93.1 🡪 1.95.3) (user setup)

Alternative:

* Visual Studio 2022 Community (Version 17.11.3 🡪 Version 17.11.4)

All other program versions remain the same.

The following programs for development will for sure without a doubt be added:

* Postman (Version 11.12.0 🡪 Version 11.20.0)

# Research and Learning Resources

Research will be conducted on the modification of the project to, in the decided case of the author, to perform cloud database integration on said project and move the data to the cloud for use with Postman. This is something that was mentioned in Research Assignment 3 but could not be done and has since been postponed to this Phase 4.  
The following websites have been decided upon for research:

1. <https://blog.postman.com/build-an-api-with-postman-node-js-and-mysql/> [1].
2. <https://www.linkedin.com/pulse/database-integration-postman-xmysql-umme-habiba/> [2].
3. <https://medium.com/@vishnu_squareshift/simplifying-database-connections-with-cloud-sql-node-js-connector-31fd2c85bbce> [3].
4. <https://stackoverflow.com/questions/51955252/using-mysql2-npm-package-on-google-cloud-sql> [4].

Note that these are the same resources that have been used in Phase 3 – since they will be used again.  
The first site shares an article on how to build an API in Postman, using Node.JS and MySQL, as well as XAMPP for administrating MySQL. The next two sites explain data integration with Xmysql (now known as NocoDB) and database connection simplification with Google Cloud SQL respectively. The last website shows a question and answer(s) to the use of connecting the local machine to Google Cloud SQL with the mysql2 module.

The C.R.A.A.P Test is used below for determining website credibility and reputation.

* The Postman Blog post on building an API with Node.JS and MySQL was created by a Guest Author.
  + The Postman Blog was first published in 2014. The post itself was published in June 6, 2023. Since it was written manually, the information may be outdated eventually.
  + The page has relevance, due to the given explanation about API building with said programs in 2023, which is a recent year. The people that mainly look at the page and overall the Postman blog are Postman API developers.
  + Greg Bulmash, the guest author of the post, is a content creator and blogger of LetMyPeopleCode. Bulmash has obtained a Bachelors in Creative Writing. His LinkedIn is the best source of information about the author [5].
  + The post contains code snippets and screenshots for use in MySQL and Node.JS, and the code snippets serve as practical examples to use.
  + The purpose of the blog is to educate people and share knowledge with them about given API development topics and how to use the content presented for various APIs/Softwares.

The Postman Blog post has “.com” in the URL, which makes it strike 1 in the strike-system credibility checklist. Other than that, it succeeds in the 2-strike and 3-strike credibility checklist and CRAAP test.

* LinkedIn Pulse is a blog-like service part of LinkedIn that provides articles and news that can be tailored to your interests, such as programming. It was launched publically on February 2014.
  + The post itself was made on April 20, 2023. Given that it was written manually, the information may be outdated eventually.
  + The information has the same relevance, purpose and accuracy as the Postman blog post, though LinkedIn Pulse is more known in the world and Postman’s blog post is more simple to read so it’s easier for some non-developers to understand database integration with Node.JS and MySQL.
  + Umme Habiba, the author of the article, is a software QA Engineer who had worked in Pakistani companies and has graduated from Lahore College for Women University [6].
  + The information is expected to be accurate for people to follow along without much issue, especially since LinkedIn Pulse and LinkedIn itself is well-known.

The LinkedIn Pulse post has “.com” in the URL, which makes it strikes 1 in the strike-system credibility checklist. Other than that, it succeeds in the 2-strike and 3-strike credibility checklist and CRAAP test.

* Medium is an online platform for publishing and promoting stories from worldwide and was first launched in 2012 by Ev Williams.
  + The post itself was made on October 6, 2023. Given that, the information provided may not support all the latest Node.JS and MySQL versions and documentation.
  + The information has about the same relevance, purpose and accuracy as the LinkedIn Pulse post, though Medium has more popularity than LinkedIn Pulse.
  + Vishnu Adithyan, the author of the post, is an computer science bachelor graduate with skills involving Java, MySQL, JDBC, among other related skills.   
    Adithyan has a LinkedIn account where they can be found there [7].
  + The purpose of the page is the same as the Postman and LinkedIn Pulse blog (see above), to educate people in database integration using Node.JS, but using Google Cloud SQL, offering a brief explanation about the usage of them.

The Medium post has “.com” in the URL, which means that it succeeds in the 2-strike and 3-strike credibility checklist and CRAAP test.

* StackOverflow is a Question-And\_Answer website platform for programmers of all experiences that provides assistance for anything program and software related.
  + The thread creation date is August 21, 2018 and the update date is 2 days ahead.
  + The information has some of the same relevance and purpose as the Medium post (see above), though is much less relevant given that the usage of the programming code is far behind in years compared to the newest updated codebase.
  + Mark Kazanski, the author of the article, is a Web Developer that works in Mansfield Marketing and has worked as an IT Technician in the Bryn Griffin company. His LinkedIn profile is available to be viewed [8].
  + The purpose of the page is somewhat the same as the Medium post, where Google Cloud SQL with Node.JS get mentioned, but is provided as a question to solve, and other people are to provide an answer.

StackOverflow has “.com” in the URL, which makes it strike 1 in the credibility checklist and CRAAP test, but succeeds in the 2-strike and 3-strike credibility checklist and CRAAP test.

# WBS and Gantt Chart

1. Phase 4: Continued Project Advancement
   1. Research, Learning
      1. Modifying the Program
      2. Language Advancements: Database
      3. Language Coding Style
      4. Language Commenting Style
   2. Development, Learning
      1. Modifying The Program Based on Advancement Goal
   3. Testing
      1. Verifying Program Output Meets Expectations
   4. Documentation
      1. Program Comments
      2. Screenshots of Program Running
      3. Writing MS Word Document
   5. Delivery
      1. Submission of Practical Project Phase 4

A screenshot of a computer

Description automatically generated

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