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ELEC3225 Applied Programming Concepts

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**Integrate and Configure**

**Requirement Specification**

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| **Goal:** This program aims to replicate Wentworth’s registration/scheduling system called LeopardWeb. This system would allow students, instructors, and administrators to create and manage course schedules for each semester as needed. The code will use a combination of structure of classes, objects and databases to store and retrieve data. A simple and user-friendly interface (UI) will be developed for easy use. |

**Component Analysis**

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| **Current Solutions Evaluation:**  This step involves looking at existing market solutions that could be used in our system. For the Leopard Web system, we may outsource the database and user interface components, as the class structure is a custom element that doesn't need to be outsourced.  **Database Solutions:**   * **Google Cloud SQL:** Google Cloud SQL is a database that supports SQL databases. It offers backups, scaling, and maintenance, which I believe makes it a great choice for managing the course scheduling for Leopard Web.   + Link: [Google Cloud SQL](https://cloud.google.com/sql?utm_source=google&utm_medium=cpc&utm_campaign=na-US-all-en-dr-bkws-all-all-trial-e-dr-1707554&utm_content=text-ad-none-any-DEV_c-CRE_678241001037-ADGP_Hybrid+%7C+BKWS+-+MIX+%7C+Txt-Databases-Cloud+SQL-KWID_43700077212830003-kwd-28489936691&utm_term=KW_google%20cloud%20sql-ST_google+cloud+sql&gad_source=1&gclid=Cj0KCQjwxqayBhDFARIsAANWRnTqekCRfVVjR6QDn2nUoStFN0ikZpevoY9dR_4YK7pLjY-0m7reMnoaAoIdEALw_wcB&gclsrc=aw.ds)   + **Integration:** We would set up a Google Cloud SQL instance, configure the database to store course information, schedules, and user data.   + **Configuration:** We would control access to ensure secure data handling, set up backups that are automated, and utilize Google's tools for when we need to check the system's performance or in the case that we need to scale and make the system bigger. * **Amazon RDS (Relational Database Service):** Amazon RDS is a database solution with support for multiple database engines, such as MySQL, PostgreSQL, and Oracle. It is an additional database that offers backups, availability and integration with other Amazon Web services if we service.   + <https://aws.amazon.com/rds/>   + **Integration:** We would create an RDS instance, design the database according to our needs, and use AWS SDKs to connect our application to the database.   + **Configuration:** To ensure that the system is secure, we could configure the security of the database, set up multi-AZ (availability zone) deployment for high availability, and automate backups and updates. |

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| **User Interface Solutions:**   * **Angler Tech:** [**https://www.angleritech.com/services/design-services/user-interface-development/**](https://www.angleritech.com/services/design-services/user-interface-development/) * Angler Tech allows you to attractive graphical user interface solutions for any application. They are known for effectively branding products and improving the user experience which makes it a viable option. |

**Requirement Modification**

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| This phase involves adjusting the original system requirements to fit the new components. Given the customizability of Anglertech, we would be able to modify any changes within the system. We can work with these companies to smoothly integrate the database and user interface with our class structure. |

**System Design & Reuse**

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| In this stage, we would review and adjust the system design to meet any new specifications required by the user/school/customer. Since at this point in the process we have a small number of components to integrate, the transition should be straightforward. |

**Development & Integration**

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| This step involves finalizing code revisions before integrating all components into the central system. We believe it's important to ensure that the class codes work correctly with the Google database. |

**Validation**

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| The final phase involves thorough testing of the software to ensure all components work together correctly. Any issues with the outsourced components can be addressed to the user for a solution and if necessary, can go back to the requirement modification step.   * We would conduct tests for individual components, integration tests for combined components, and end-to-end tests to simulate real user interaction as well as monitor tools to continuously track system performance and address any emerging issues quickly. |