Jacob Butfiloski
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In the modern digital era, Universities must implement digital database solutions in a careful and stable approach. Systems operated in large scale businesses such as Universities must make sure that they are modern, responsive, and secure. Our team has been tasked to develop a software-tracking database for the University's IT department. This database should allow the institution to track: available types of software, the developer of said software, the versions of the software, the licensing agreements for the software, the departments which will use the software, the computers in which the software is installed, the installation dates of the software, and more. This project will follow the six-step project management process as outlined in the Project Management Handbook (Baars, 2006). By following this approach, we will be able to create a piece of software that University can truly rely on.

The initiation phase is the basis and potentially most important part of the project. Our primary goal throughout this phase is to determine how viable the project is to create while considering the technical, financial, and organizational constraints. Our stakeholders in this project are: the IT department, university administration, and university employees. In this phase, we must create a project proposal that will outline the many goals, the scope, and the expected benefits. The assessment on feasibility should consider a number of different variables, such as: the existing system, security requirements, and integration to existing university systems. Once this assessment and project proposal is reviewed and approved, we can move on to the definition phase.

The definition phase is the next step of the plan, where we need to define the technical requirements of the project. Defining this early helps keep everyone on the same page as to what is expected upon the project's completion and to make sure this is the case, it is important that "all parties that are involved in the project are able to collaborate" (Baars, 2006). Another benefit

is that we can make sure our technical debt and scope creep is kept to a minimum and the project can continue as efficiently as possible. For this project, we must focus on the inclusion of a couple different systems. For one, we need to deliver a project secured by database roles so that only authorized individuals can access or view the database. Additionally, we need to make sure that we have a proper search and filter system to make sure that navigating through this database is as efficient as possible. This filter system is also important to make sure data is within the scope we want it, as “filtering and segmenting the data to ensure your results are a true reflection of your environment” (Data Collection Best Practices for Higher Ed, 2022). An automated system that will notify authorized users of software license renewals should also be integrated, as this will help reduce the potential of human error impacting business operations. This software should also be web-based in some form, but the details in this regard can be ironed out at a later time. During this phase, we also need to make a proper risk assessment. This database will hold onto secure information, so we need to make sure that any security risks are identified and mitigated properly. Through regular data backups, security audits, and training, we can hopefully mitigate any risks that may arise.

Now, we need to iron out the design phase of the database. During this phase, we need to determine how our database will be stored and how our users will interact with it. At this point, we need to start considering the user interface of the database software, which will be handled by the top level of our web-stack. The front-end of this stack should be written in a common web-framework such as React in order to make sure the integration of the database is as frictionless as possible. In terms of the backend we should go with MySQL, a common backend solution for database platforms. We should also determine how we will integrate this stack fully to make sure that the design is achievable.

Once our design is fully ironed out, we can move into the development phase of our database. In this phase, we need to build, test, and review to make sure that our platform not only works, but does so without bugs or glitches that will hurt our user base. We should approach this project with a bottom-up approach by starting with our back-end and ending with our front-end (Singh, 2023). By approaching the project in this way, we can make sure that the part of the program that interacts with secure data has enough time to iterate before we work on the just as important but less of a concern in terms of security front-end. Testing the database is very important during this phase of development, as we need to make sure that upon release the software is reliable and secure. We can perform this testing through integration testing and user acceptance testing to make sure it integrates smoothly with the platform and is learnable by our user-base. After we are confident with the project in this phase we can move on to implementation.

The implementation phase should go rather smoothly as long as the development phase was tested properly. During this phase, we can roll it out department by department to make sure that it works in isolated contexts before releasing it completely. During this time, we also will want to conduct training sessions for the individuals who will be operating the system to make sure that they are properly prepared for when the software is rolled out to them. It's also important that data is migrated from the original database to the new one, while also making sure that no data is lost in the process. Once this is complete, the database can be rolled out to the entire university.

The last step of this process is the follow-up phase, where we can make sure that there is long-term successful use of the database. We need to ensure that there is regular monitoring and updates made to the system so that it properly fits the security and usability needs of the

university. From here, we can incorporate requested changes to make sure that the database is refined and has long standing support.

The implementation of this database to the universities systems is a big step in bringing the internal systems closer to the modern standard for technology. Through following the six-step project management framework, the development of the database can be created with little friction and great efficiency. Each phase of this process is necessary to make sure that the project outcome is as great as possible and can properly foster a more organized and structured environment for the IT department.

References

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