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Project: Final Project – Self Assessment and Narratives

Class: CS 499

Southern New Hemisphere University

### Professional Self-Assessment

I have been part of the computer science program for 10 years now. Since the beginning, I was very interested and inclined towards the field of software development. Throughout my coursework, I tried learning about different aspects of development like the life cycle, design, implementation, databases, algorithms, data structures, and testing. The most important skills that I learned from this program are Java, Python, Database Management using SQL, NoSQL Mongo Database, and Web Development using web assign. I worked hard for these skills and learned them through repetitive practice and practical implementations of the assignments.

I work well as an individual as well as in a team environment. If the project involves other stakeholders, I prefer to maintain clear and effective communication between the stakeholders and myself so that the work is seamless and interesting. I like to maintain the quality of the deliverables to a high standard and therefore take timely feedback from the team members.

Throughout the coursework, I have worked on various artifacts to design, code, and implement them. I have uploaded three of them to the e-portfolio as well. The first one is a medical application written in Java. It is designed and implemented to work with a patient’s medical records. This artifact was tested using JUnit tests. The second artifact is a Jukebox application written in Java. Its basic functionality is to play different playlists which can have songs from multiple artists. The third artifact is a NoSQL Mongo database.

I currently work at GE in the field of Software Testing. Part of my job is to develop and test software using Java and C#. In the future, after completing my Masters in Computer Science, I am looking towards pursuing a Job in the field of IoT, AI, Robotics or cloud computing.

**Narratives – Algorithm**

* Briefly describe the artifact. What is it? When was it created?

The artifact chosen is a Jukebox application. It is an application written in java language and was created as part of another course curriculum. The application prompts a user to enter the name of the playlist they want to checkout. The application then processes the request and prepares the playlist by adding the songs in it and provides it back to the user. The artifact consists of the source code along with some JUnit tests.

* Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?

I selected this artifact to showcase skills in the category of Algorithms and Data structure. I felt two important algorithmic and data structure related code changes were required in this artifact. The first one was that the code base was using a LinkedList where we can definitely use a simple ArrayList. Use of proper data structure improves the performance of the code. Therefore, I felt that this would be a good artifact to showcase the importance of data structure.

Another change was related to a piece of code which was never being executed. The condition in which the code was kept was never true and hence this needed refactoring. Therefore I felt that this is an apt example of algorithmic changes.

The specific skills that are used to perform above changes are algorithm development using data structure, coding in java, and debugging.

The artifact was improved by making small code changes in the specific classes. The performance will be better and also the code is much cleaner due to removal of unnecessary code.

* Did you meet the course objectives you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

Yes, the course objectives are being met. These enhancements are part of algorithm and data structure changes. The initial enhancements have been completed and submitted along with.

* Reflect on the process of enhancing and/or modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?

While improving this artifact, I learned more about the process of debugging. The use of JUnit was highlighted during modifying the application. It helped to verify that the changes are correct and are fulfilling the requirements.

**Narratives Software Engineering Design**

* Briefly describe the artifact. What is it? When was it created?

The artifact is named medical application. It is an application written in java language and was created as part of another course curriculum. The application deals with medical records for patients and provides the functionality to add treatments, medications, and Allergies. The artifact consists of the source code along with some JUnit tests.

* Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?

I selected this artifact to showcase skills in the category of software engineering and design. I felt two important design and code changes were required in this artifact. The first one was that one of the requirements was not meeting. The second one was that an exception was occurring in a particular scenario. Both these scenarios were resulting in the failure of two JUnit tests as well. Therefore I felt this would be a good artifact to showcase skills in category of software engineering and design.

The specific skills that are used in this are design enhancements, java coding, and debugging.

The artifact was improved by making small code changes in the specific classes. The design logic was improved a bit to incorporate the conditions of enhancement.

* Did you meet the course objectives you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

Yes, the course objectives are being met. These enhancements are part of software engineering design changes. The initial enhancements have been completed and submitted along with.

* Reflect on the process of enhancing and/or modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?

While improving this artifact, I learned more about the process of debugging. The use of JUnit was highlighted during modifying the application. It helped to verify that the changes are correct and are fulfilling the requirements.

Also, the second enhancement was related to changes done in a stream of data. This gave me an insight into the usage of streams. I learned about why and how java streams are used.

**Narratives Databases**

* Briefly describe the artifact. What is it? When was it created?

The artifact chosen is a MongoDB database named “city”. It is a collection namely “inspections” which does not have any indexes in it. This database can be used by users to search for some data or web services can be written to fetch data from this NoSQL database. Since this does not have any indexes in it, the search operation is time-consuming and not very efficient.

* Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?

I selected this artifact to showcase skills in the category of Databases. Since this NoSQL Mongo database does not have any single or compound indexes, the search operation using different fields is not very efficient. Therefore I felt that this artifact is a good opportunity to showcase the importance of indexes in a database.

The specific skills that are used to perform the above changes are NoSQL database skills for handling MongoDB version 2. The changes in the artifact schema will definitely enhance the efficiency of the search operations on the database.

* Did you meet the course objectives you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

Yes, the course objectives are being met. These enhancements are part of database category changes. The initial enhancements have been completed and submitted along with.

* Reflect on the process of enhancing and/or modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?

While improving this artifact, I learned more about creating single and compound indexes in the MongoDB database. Fetching what all indexes have been created and are already part of the database schema.

Challenge was that MongoDB is version sensitive so the queries need to be specific to the version you are using.

**Attachments**

**GITHUB LINK**

**Algorithm:** [**https://github.com/fayazbm/Algorithm.Jukebox/releases/latest**](https://github.com/fayazbm/Algorithm.Jukebox/releases/latest)

**W**

**Software:** [**https://github.com/fayazbm/Software.MedicalApplication/releases/latest**](https://github.com/fayazbm/Software.MedicalApplication/releases/latest)

**Database:** [**https://github.com/fayazbm/Database.CityInspections/releases/latest**](https://github.com/fayazbm/Database.CityInspections/releases/latest)