5-1 Journal: Computer Science Trends and Artifact Update

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Part One:

1. **What is the significance of each trend?**

Two of the major trends in computer science today can be seen as clashing technologies. Cybersecurity is one of the fastest growing sectors in the technology industry. As cyber-attacks on our utilities, businesses, and governments become increasingly common, it becomes imperative to develop equally sophisticated countermeasures. No longer is hacking the realm of lone geniuses. Today, hackers are government sponsored, and almost immune to the legal ramifications of yesterday. The second trend makes cybersecurity increasingly difficult. Quantum computing has provided great promise since the first quantum computer went online in 2011. While quantum computing offers the hope of new and innovative medicines and optimized supply chains, it also threats making current cryptography and cyber security measures obsolete.

1. **How will each trend change the field of computer science?**

Cybersecurity – cybersecurity is one of the hottest trends today. As government sponsored cyber attacks become more and more prevalent, counter measures become increasingly important. Cyber security will provide the security we need in the digital age

Quantum computing – quantum computing provides much promise to the computer science field. Quantum computers provide us with the capabilities to compute complex models at incredible speeds. As mentioned before quantum computing will provide unheard of advances in medicine, engineering, physics and economics.

1. **How will each trend change the experience of consumers, workers, or citizens?**

Cyber security – Cyber security will provide the average user with the confidence to leverage the digital and online convenience of today, ensuring personal data is protected to the highest level. This security does come at a cost, as access for the average user will become increasingly complicated, as measures such as, complex passwords, and multifactor authentication become a standard.

Quantum computing - quantum computing will provide advancements in technologies for the average joe, that will increase lifespans, reduce costs, and improve infrastructures.

1. **How will each trend fit in with your career interests or aspirations?**

My future goal is to continue my career in telecommunications and IT into the higher levels of network and system engineering. Cyber security is an important part of networking. Making connections from one system to the other is only part of the challenge. Cyber security ensures that only authorized traffic uses the network and systems created by engineers. Quantum computing is not as integrated into the network engineering discipline as cyber security is, however, it does have a role. Networks need to be created that are robust enough to handle the extraneous workload created by these systems.

1. **Which course outcomes have you achieved so far, and which ones remain?**

All three artifacts will be complete by the end of this week. Cod review has been provided on most artifacts, and the ePortfolio will soon be brought together. The artifacts have displayed competencies in software engineering, algorithm and data structure skills, and finally the third artifact will display security and database skills.

Part Two:

Provide an update to your instructor on your progress with each category of artifacts for the ePortfolio:

* Software design and engineering
* Algorithms and data structures
* Databases

Use the following Status Checkpoints table to document your progress in each of your three category enhancements. Complete the table with a report on each category, including its status and some details. For instance, if you are working on the initial enhancement for your work in the databases category, you would briefly note which enhancements you have completed and which are still to come in that cell of the table. Also, note any trouble spots or places where you may need help. An exemplar can be found in the Readings and Resources section of the course.

**Status Checkpoints for All Categories**

|  |  |  |  |
| --- | --- | --- | --- |
| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | CS260 Data Structure and Algorithm LinkedList (C++ version) | CS260 Data Structure and Algorithm  LinkedList (Python version) | CS260 Data Structure and Algorithm  Linked List (enhanced version) |
| **Status of Initial Enhancement** | Enhancement completed. Ported to python | Enhancement completed | Enhancement in progress |
| **Submission Status** | Submitted waiting for review and feedback | Submitted waiting for review and feedback | submitting |
| **Status of Final Enhancement** | Waiting for feedback | Waiting for feedback | Waiting for feedback |
| **Uploaded to ePortfolio** | Not implemented yet | Not implemented yet | Not implemented yet |
| **Status of Finalized ePortfolio** | Not implemented yet | Not implemented yet | Not implemented yet |