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CS160

5 October 2020

1)

1. Computer Science:

Computer science exists at sort of an intersection between mathematics and science. The computer scientist is concerned with solving problems through algorithms and computation, requiring an understanding of both hardware and software.

1. Software Engineering:

A software engineer mostly deals with large-scale programming - this may involve planning/designing future code, and/or maintaining older code.

1. Computer Engineering:

Computer engineers are mostly concerned with hardware; they usually design and build internal computer components as well as external peripherals like keyboards and mice.

1. Information Technology:

Information Technology as a field generally deals with leveraging existing technologies rather than developing or designing new ones. An IT professional selects, integrates, and maintains hardware and software in order to best support a given organization’s needs.

1. Information Systems:

Information Systems is similar to Information Technology, but could be considered to be more business oriented. IS professionals tend to have a stronger background in business or communications related fields, and should be able to somewhat bridge the gap between technical people and business/management people.

2) Dijkstra meant to say that computer science isn’t about the hardware itself, it’s mostly about solving problems algorithmically. For example, a human could “run” a program in their head, just very slowly and with a high rate of errors, which is something we might passively do while debugging some code. Similarly, an astronomer could try to use their own eyes to try to see stellar objects, they’d just have less resolution - in other words, the science isn’t about the tools involved, it’s more about the processes you use to gather information and/or model future behavior.

3)

1. Job Requirements:

| DAT Solutions is seeking an **Information Security Engineer** to join our team in Beaverton, Oregon.  As an Information Security Engineer and Analyst for our Corporate IT Department. You will work as part of a team of experienced Engineers and Administrators reporting directly to the Director of Technology Operations. You will help drive development, implementation, and monitoring of security policies, procedures, and governance. This includes (but not limited to) monitoring of server and firewall logs, scrutinizing network traffic, working with our MDR vendor, and troubleshooting. You will also analyze and resolve security breaches and vulnerability issues in a timely and accurate fashion, and conduct user activity audits where required.  **The Skills you'll need**   * Highly self-motivated and directed * Strong organizational skills and excellent attention to detail * S. in Computer Science or related field, or equivalent experience * 5 years of information security work experience in deployment or governance * General hands-on knowledge of firewalls, intrusion detection systems, endpoint protection, anti-virus software, data encryption, DLP, NAC, SEIM and other industry-standard techniques and practices * Technical knowledge of network, server, and endpoint platform operating systems * Technical knowledge of identity management and security technologies including Active Directory, Group Policy, ADFS, and Authentication protocols including Kerberos * Prior experience managing and maintaining information related to PCI or SOX audits * Knowledge of applicable practices and laws relating to data privacy and protection including CCPA and GDPR * Ability to effectively prioritize and execute tasks in a fast-paced environment   **Recommended Skills**   * Knowledge security practices in cloud environments * Knowledge of Authentication best practices while using Oauth and SAML providers. * Knowledge of Checkpoint Firewalls * Experience with SD-WAN technologies * Knowledge of MDR/EDR Solutions * Strong knowledge of the TCP/IP suite of protocols including but not limited to ICMP, DHCP, DNS, HTTP(S), and FTP * CISSP - Certified Information Systems Security Professional   **Prefer any one of the following certifications**   * CEH - Certified Ethical Hacker (CEH) * CISM - Certified Information Security Manager (CISM) * ISSAP - Information Systems Security Architecture Professional (ISSAP) * ISSEP - Information Systems Security Engineering Professional (ISSEP) |
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1. I think the best program for this job would be the Computer Information Systems program, with an emphasis on cybersecurity. Chemeketa offers an AA in cybersecurity, but I’d like to pursue a Bachelor’s in Computer Science, probably from PSU. I would also need a series of technical certifications in addition to the degree.

4)

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5) The earliest computers weren’t exactly programmable - they had to be redesigned and rewired in order to get different behavior. Conversely, a stored-program computer contains a generic instruction set which can be used to build new programs without drastically modifying the physical structure of the machine itself.

6)

1. First: Vacuum tubes were used as switching devices.
2. Second: The transistor replaced vacuum tubes because they’re smaller, cheaper, and more reliable.
3. Third: Integrated circuits combined multiple transistors to create far more efficient components.
4. Fourth: The microprocessor is like a more advanced integrated circuit, containing most or all of the logic needed to run a computer on a single chip.

7)

1. student: 1-11 2-9
2. computer: 2-1 3-14
3. monitors: 1-6 2-2 2-12

8)

1. Page 3 would be best, because the word appears most frequently there.
2. Page 2 would be best, because both words appear there.
3. Page 1 contains “a” in the title, because there’s an entry for “a” between the title-start and title-end positions

9) If the index contained only page references, we wouldn’t be able to find where the words exist within the page. We also might not be able to find which pages are the best match, because there’s no information on the frequency that the word occurs within the page.