PART 1.

DFD CONTEXT DIAGRAM
LEVEL-0 DIAGRAM

1.0 Determine Distance to blood center/drive locations

2.0 Select 5 centers/drivers nearest to user

3.0 Format center/drive location data for mapping device

4.0 Receive driving directions from User to chosen drive/center location

Red Cross Source

Google Map Service
PART 2.

TURING MACHINE PROCESSING CYCLE

Start

Load Program

Read character from program (symbol for input/output tape)

Look up rule matching current state and read character

Rule found.

Modify internal state

Write a symbol on the tape

No rule found.

Stop

Move its R/W head left or right
Part 3.

1. Review the five characteristics of infrastructure architecture and rank them in order of their potential impact on the Tribune Co.’s business.

Infrastructure architecture includes the hardware, software, and telecommunications equipment that, when combined, provide the underlying foundation to support the organization’s goals. The five characteristics of infrastructure architecture (in order from highest importance on the Tribune Co.’s business to lowest importance) are:

1. **Reliability.** Reliability ensures that all systems are functioning correctly and providing accurate information. Reliability is the most important element of the Tribune Co.’s architecture, because if the system is not reliable, then the Tribune could be forced to delay delivery of its services, ultimately costing themselves important advertising revenue (as was the case when they transferred to a new architecture).
2. **Performance.** Performance measures how quickly a system performs a certain process or transaction. This is another characteristic which could have a huge impact on the Tribune Co.’s business: as the article discusses, people are impatient and likely to move to another site quickly if it is taking a while to load. There are many other newspapers which cover national and international news, so the Tribune could lose readership if it goes too slow.
3. **Availability.** Availability addresses when systems can be accessed by employees, customers, and partners. This is important for the Tribune Co. because they are in the news business, and it is important for people to have the most up-to-date news in order to stay informed. If the Tribune fails to provide updates on important news events because their system is down, they could lose many readers.
4. **Scalability.** Scalability refers to how well a system can adapt to increased demand. This could have an impact on the Tribune Co. if a big news story breaks in one of the principle cities in which one of its newspapers operates, and people from all over the country and the world are looking at their site to provide the most up-to-date coverage.
5. **Flexibility.** Flexibility is the ability of the system to meet all types of business changes. Although I do believe that flexibility is important for any business’ infrastructure architecture, I think that this would have the lowest impact on the Tribune Co.’s business once they have made the transition they have to a new system.

3. Define backups and recovery. What are the risks to the Tribune Co.’s business if it fails to implement an adequate backup plan?

A backup is an exact copy of a system’s information. Recovery is the ability to get a system up and running in the event of a system crash or failure and includes restoring the information backup. If the Tribune Co.’s business fails to implement an adequate backup plan, it may cost it a ton of information and technology, in addition to delaying the time it takes for the system to recover. This is a big problem for a business like the Tribune, where speed in reporting the most up-to-date news is very important. The longer it takes for the Tribune Co. to implement a backup plan and recover, the greater the cost to the company will be. Because the Tribune is reporting important news information and likely has large volumes of critical information, it should conduct at least daily backups to storage servers in order to minimize its risk.
4. Why is a scalable and highly available enterprise architecture critical to current operations and future growth?

Scalable and highly available enterprise architecture are critical to current operations and future growth of the Tribune because the organization must be able to adapt to increased demands and make sure that its system is continuously operational for a desirably long length of time. News is a 24/7 business, and the Tribune’s value will go down significantly both in the eyes of its readership and, consequently, its advertisers if its system consistently breaks down. In addition, the Tribune must always be prepared for a big news story to hit, and the subsequent increased demand that this would place on its system. It is when there is increased demand that the functionality of the system will be the most important. Obviously, the Tribune will not be able to grow as an organization if it cannot handle higher demands with a system that is readily available.

5. Identify the need for information security at the Tribune Co.

Tribune Co. has a high need for information security due to the sensitive nature of the information they are handling, including subscriber names and addresses, as well as confidential email exchanges with news sources. In addition, the Tribune Co. may be concerned if information concerning its internal operations leaks and its competitors are thus able to take advantage of this information: the media business is a competitive one. The Tribune Co. needs to invest in information security in order to maintain its business; this includes a strong information security plan, along with managing user access and up-to-date antivirus software and patches. Specifically, hackers and spammers would have a great desire to hack a news system, as they could promote whatever agenda they wanted using the Tribune’s media power sources.
PART 4.

1. **Write a brief pro/con assessment of public sector adoption of cloud computing services.** (5 points)

There are an overwhelming number of pros for the public sector adoption of cloud computing services, most of which center around increased utility and large cost savings. Cloud computing services would greatly increase the efficiency of public sector organizations, by granting consumers instant access to applications or data which are accessible through multiple standards of medium and serving multiple consumers and dynamically shifting resource to meet varying demand with rapid elasticity. Cloud computing services would greatly improve IT systems in the public sector, while dramatically cutting costs. The service delivery through these systems is said to be “more advanced, more reliable, and cheaper to maintain”.

The major con of public sector adoption of cloud computing services is potential breaches of data security in the cloud. This is an especially important concern in the public sector, as government agencies often deal with incredibly sensitive information, including Social Security numbers, banking information, and other personal information. Another potential challenge of public sector adoption of these services would be getting management and employees to fully embrace the transition to a cloud environment, especially considering government agencies tend to be more resistant to change than their private sector counterparts. However, there is no doubt that both of these challenges could be overcome. In order to make this transition, the public sector would need to invest both in training for employees so that they can fully utilize and appreciate the cloud services, as well as in increased data security in order to protect the confidential and sensitive information of their customers. By making these investments, the public sector could reap all of the benefits of cloud computing services, while minimizing the risks.

2. **Provide a technical description of IUanyWare as an implementation of virtualization.** (3 points)

IUanyWare describes itself as “a client virtualization service available to Indiana University students, faculty, and staff”, allowing these populations to “use a web browser or mobile app to run certain IU-licensed software applications without having to install them on your computer or mobile device”.\(^1\) IUanyWare uses a single server to provide many “virtual” servers to students, faculty, and staff, which are used to create desktops for users. Users interact with virtual servers which are hosted from a solitary piece of hardware.

\(^1\) https://kb.iu.edu/d/bbbr
3. What circumstances would be required for machine intelligence to be employed as part of public administration? For example, an information system that issues administrative orders in the field of environmental law, or a system that is responsible for sanctions in relation to speeding or financial fraud. (2 points)

In order for machine intelligence to be employed, machines would need to be able to effectively address the issues of public administration, including gathering and managing huge data stores, identifying alternatives, and stimulating outcomes. Because the public generally views government and other public organizations as ineffective and bureaucratic, I think people would be more welcome to the idea of machine intelligence in this field. However, before this change could take place, a lot of government decision-making would need to be codified into a coherent process, eliminating the discretion element of decision-making as much as possible. Machine intelligence would allow for more transparency in government; in this sense, there is no doubt that it would be much more feasible in a democratic system which favors this type of openness.