Part_1. Using appropriate diagramming software, create DFD context and level-0 diagrams for the Red Cross blood donor app, providing the 4 listed functions. (8 points):

  
  - Find local blood drives and donation centers quickly and easily.
  - Convenient, easy appointment scheduling and rescheduling.
  - Receive appointment reminders.
  - Keep track of total blood donations.
Part 2. Referring to Hardware Basics powerpoint (and/or related websites), develop a Flow_Chart describing the Turing Machine processing cycle. Note that a Flow_Chart describing the machine instruction cycle for a VonNeumann machine is included in the powerpoint.

I redraw a new flow chart of turing machine.
Part 3. Referring to Enterprise_Architecture reading assignment, Closing Case_1, page B4.15, answer Questions 1,3,4,5. (1 point each)

Questions
1. Review the five characteristics of infrastructure architecture and rank them in order of their potential impact on the Tribune Co.’s business.
2. What is the disaster recovery cost curve? Where should the Tribune Co. operate on the curve?
3. Define backups and recovery. What are the risks to the Tribune Co.’s business if it fails to implement an adequate backup plan?
4. Why is a scalable and highly available enterprise architecture critical to current operations and future growth?
5. Identify the need for information security at the Tribune Co.
6. How could the Tribune Co. use a classified ad web service across its different businesses?

1. Availability > Reliability > Scalability > Performance > Flexibility
For Tribune Co.’s business, availability is most important because the timeliness of newspaper requires that the system can be accessed by employees and partners at any time so that they can update news and reports, ensuring that the newspaper can be released and delivered with adequate information and without delay. Reliability, or accuracy, ensures the system is functioning correctly and providing accurate information, which is very important for mass media.
Sometimes there are occasions that lead to increasing demands of the newspaper, so scalability is also necessary to concern. Performance (efficiency IT metrics of both speed and throughput) is important for any contemporary enterprises to operate efficiently. In this information era, for example, the type of newspaper may also undergo some changes, so systems should be flexibility to meet some possible business changes.

3. A backup is an exact copy of a system’s information. Recovery is the ability to get a system up and running and restore the information backup when a system crash or failure happens. If the Tribune Co.’s business backs up on a daily basis but does not implement an adequate backup plan, then it is taking the risk that, if a total system crash occurs, it could lose a day’s worth of work.

4. A scalable and highly available enterprise architecture is critical to companies’ current operations and future growth because it can improve customer satisfaction and build companies’ reputation, generate new revenue streams and speed development, optimize the supply chain, and help create competitive advantages. So companies will be reaping huge rewards in savings, flexibility, and business alignment, and thus become more competitive in the market.

5. Information security at the Tribune Co. need to be concerned because of the characteristics of news and its operating modes. For example, if the system is hacked and tampered, the timeliness of news would not be proved; if some news resources were deleted or even stolen by hackers, the newspaper might lose its exclusive impact. So if the security of information could not be guaranteed, Tribune Co. would in the long run lose its advantages and reputations, which will be fetal to their development.

Part_4:

1. Write a brief pro/con assessment of public sector adoption of cloud computing services. (5 points).
2. Provide a technical description of IUanyWare as an implementation of virtualization. (3 point)
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)

1.
Pro:
- Outsource local complex data to the cloud can save local system memory, which is cost-efficient.
- Users can download data to edit or upload new data to same files in cloud when using different devices, which gives them flexibility and convenience.
- Individuals can conveniently access various useful resources published by others.
- The structure of cloud computing platforms is typically more uniform than that of most traditional computing centers. Greater uniformity and homogeneity facilitate platform hardening and enable better automation of security management for users’ files.
- The multitenancy of cloud computing increases use of the underlying hardware resources and, with virtualization, eases the management burden for CSPs, simplifies operation and optimizes resource provisioning and reallocation without the need for any upfront hardware purchase or setup.
• The cloud serves as a backup and will help recover the data and resources when local data center encounters some problems.

Con:
• The data confidentiality and auditability will be a problem, as cloud users face security threats both from outside and inside the cloud. The primary security mechanism in today’s clouds is virtualization, however, not all resources are virtualized and not all virtualization environments are bug-free.
• Because of the flexibility for individuals to download resources, some software licenses or some patent cannot be protected, and it would be hard for the proof of ownership.
• The cloud's operational details aren't transparent enough to users. Consequently, various motivations can cause the cloud to behave unfaithfully and return incorrect results.
• If an organization relies on a cloud service for data storage and processing, it would be problematic for them to carry on critical operations when the cloud service is not available or experiences a serious outage or breakdown.
• The normal processes and procedures an organization uses to acquire computational resources as capital expenditures may be easily bypassed by a department or an individual, so the organization may lose control over employees engaging cloud services arbitrary, and its policies and procedures for privacy, security, and oversight could be overlooked and the organization put at risk.
• If applications are “pulled apart” across the boundaries of clouds, the data transfer bottlenecks may complicate data placement and transport, making transfer costs an important issue for cloud users and providers.

2. IUanyWare (iuanyware.iu.edu) is a client virtualization service that provides the Indiana University community with on-demand access to over 200 software apps. Virtualization means to create a virtual or simulated version of a computer resource. IUanyWare is a type of Client virtualization, which leverages an organization's (IU technology center) client-server network architecture to reduce the number of physical desktop computers required to accommodate all of the campus’ users. Client virtualization simulates a user's desktop experience, but separates the desktop from the hardware, OS, and applications. Many virtual clients can run on one physical host server with each client having different user properties, data, applications, and even OSs. This allows IU users to seamlessly access their regular desktops from inexpensive low-end, thin-client, or shared machines.

With IUanyware, Indiana University students, faculty, and staff can connect to critical software, cloud storage and printing tools, anytime, anywhere and on any device (Windows and Mac OS X, iphone, ipad and ipod touch, Android devices, Blackberry devices, Chrome OS devices, etc.). Before using IUanyWare on private devices, users should install the Citric Receiver, which is a universal software client that provides secure, high-performance delivery of virtual desktops and applications available for many different types of clients. After logging in IUanyWare with IU Network ID, the users can run certain IU-licensed software applications on a web browser or mobile app, without having to install them.

3.
• A standard that can provide clear, robust and proven guidelines for machine intelligence researchers to utilize on beneficial efforts, meeting both the “beneficial” and “safe” criteria and also, not against humanity. The machine intelligence can serve under specific guidelines and under the control of implementers.
• Regulations on how machine intelligence and human can co-exist safely and productively, balancing and defining the work type for machine intelligence and human, also have sound social insurance system for the people that may lose job from machine intelligence.
• Robust system and firewall for machine intelligence to resist viruses or other forms of malware attacks from criminals and adversaries.
• Governments have comprehensive and useful public emergency response mechanisms to deal with incidents when machine intelligences have programming errors, lose control, break down or even endanger public safety.