Part One

**DFD Context: Red Cross Blood Donor App**

**Blood Donor**

- Request for blood drive and donation center data within 15 miles of user's current location
- Blood drive and donation center location and appointment availability data.
- Donor chooses nearest donation center and schedules appointment based on availability.
- Appointment confirmation and reminder sent to donor
- Donor's total blood donations and visits stored

**Red Cross Blood Donor App 1.0**

- Confirmed appointment of donor appointment
- Appt date, time, and location of donor's appt.
- Donor's GPS location
- Map of donation centers within 15 mi of donor

**Map Service (Google maps or Mapquest)**

- Appointment availability of blood drives and donation centers within 15 mi of donors.

**Calendar Service (Google Calendar or iCal)**

- Directions and distance from donation centers and blood drives 15 mi from donor

**Nearby Blood drives and donation centers data**
1.0 Establishes distance to the matching blood drive/donation center within 15 mi

2.0 Donation centers/drives are ranked from closest to farthest from donor (w/in 15 mi).

3.0 Matching centers and drive's hours of operation and location are listed

4.0 Appointment date, time, and center location chosen by user is put into calendar service

5.0 Appointment confirmation sent after appointment is chosen by donor, reminder sent 3 days before appointment

6.0 Record of donor's total blood donations kept

Blood Donor

Donor GPS location

Blood drive/donation center within 15 mi request.

Donor selects center and schedules appointment based on availability.

Calendar Service

Confirmation of appointment

Availability of appointments at centers/drives 15 mi from donor.

Location and availability information for Donation centers/drives within 15 mi of donor.

Map service

Donor's GPS location

GPS location of donation centers/drives within 15 mi of donor.

Directions and distance of each center/drive within 15 mi from donor.

Nearby Blood drives and Donation center data

Map of donation centers/drives close to donor.
Head starts in reading position

Read leftmost symbol cell on tape, either input or output

Use algorithm/rule list to locate the state that matches the state of the current cell.

Bring the state and position up to date, then step

Evaluate the cell. Rule present?

If no rule present
Insert Stop code.

If rule is present
Move cell to the erase position—then erase
Part Three:

1. Reliability: software malfunction led to a significant loss of money lost and a delay in distributing the newspaper to its subscribers.

2. Scalability: the dark fiber load architecture evens out the processing load between 2 servers and improves the options for disaster recovery in the future should it be an issue. Architects are anticipating the newspaper's future growth.

3. Flexibility: System needs to be flexible enough to anticipate changes, such as the need to consolidate their servers. Consolidation led to significant cost savings. The future partial CPU projects discussed also represent the necessary flexibility in infrastructure architecture.

4. Performance: More and more people are using the Internet for their news source, the Chicago Tribune needs to have a high-performing website to insure that it remains at the top of city newspapers.

5. Availability: East coast (early morning) vs. West coast (late day and evening) call center responsibilities for different newspapers.

3. **Backup:** “an exact copy of a system’s information”

**Recovery:** “the ability to get a system up and running in the event of a system crash or failure and includes restoring the information backup.”

Failure to institute an adequate backup plan would result in the Tribune risking lost work (content for the newspaper), delays in delivery of the newspaper, advertising revenue, and a loss in credibility for its customers.

4. A highly scalable and available enterprise architecture is critical for current operations and future growth because it is crucial that the newspaper be able to support increased demand in the future, and the around the clock availability is important because it increases customers' access to the newspaper regardless of where in the US they live.

5. Information security is necessary for the tribune because there are likely many employees at the Tribune, including many who deal with sensitive information. A good information security system protects this sensitive information and allows the IT staff to focus on dealing with more pressing matters than password services.
Part Four

1. **Pro:**
   Time to market is quick
   Has a low cost
   High level of convenience
   Scalability is good (pay as you go/investment is lower)
   Maintenance is lower
   Easier for public sector (governments) to budget for cloud computing

   **Con:**
   Reliant on the provider for service
   Less personalization available
   Potential risk for security
   Requires internet connection for service
   Public sector reliant on the speed of internet connection for service.

2. IUAnyware is an implementation of virtualization because it provides IU students, faculty, and staff with virtualizations of applications such as STATA, Photoshop, SAS, etc without having to install the programs on their computers. It also increases the users access to IT services. IUAnyware encompasses the five characteristics necessary for cloud computing as outlined in our reading: on-demand self-service, broad network access, resource pooling, elasticity, and measured service.

3. The parameters for administrative orders or sanctions would have to be extremely concrete and black and white in nature. “rules must be formalized into algorithms that conclusively state what kinds of antecedents result in specific legal (or financial) consequences” (p. 28). In the circumstance of speeding or running a red light, police could automatically sanction violators with no human interactions since the violations are clear/simple.