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### **Functional Requirements:**

1. Donor Management System: The system ought to facilitate the registration and administration of blood donors, encompassing their personal data, medical background, and qualifying standards. This prerequisite guarantees that the blood bank can effectively handle donation campaigns and keep up a database of possible donors.
2. Inventory management: The blood unit inventory needs to be tracked by type (A+, B-, O-, etc.) and quantity in the system. It ought to have features for deleting or expired blood units, changing quantities following donations, and adding new blood units. By doing this, the blood bank is guaranteed to always have a precise count of the blood units that are available for prompt retrieval in an emergency.
3. Blood Screening and Testing: A module for checking and testing given blood for blood compatibility (such as ABO/Rh typing) and infectious illnesses (such as HIV, hepatitis) should be included. Ensuring the safety of recipients and adherence to health standards is contingent upon this criterion.
4. Handling Blood Requests: The system need to make it easier to receive and handle blood requests from clinics or hospitals. This include keeping track of demand, determining the availability of supplies, and arranging blood deliveries. This guarantees prompt attention to critical medical requirements.
5. Analytics and Reporting: The system ought to produce information on donor numbers, stock levels, trends in the use of blood, and adherence to legal requirements. Analytics tools can aid in demand forecasting, operational optimization, and general blood bank efficiency improvement.

### **Non-Functional Requirements:**

1. Performance: During periods of high donation or request volume, the system should be able to manage a large number of transactions with efficiency. In order to guarantee short wait times, this includes quick response times for blood request processing, inventory updates, and donor registrations.
2. Security: Confidentiality and data security are essential. To safeguard donor and patient data from illegal access or breaches, the system should include

safeguards such access controls, encryption of sensitive data, and frequent security audits.

3. Reliability: There should be very little downtime in the system. The blood bank can continuously and uninterruptedly meet the needs of hospitals and patients thanks to its reliable functioning. It is important to have redundancy and backup procedures in place to guard against data loss and guarantee business continuity.