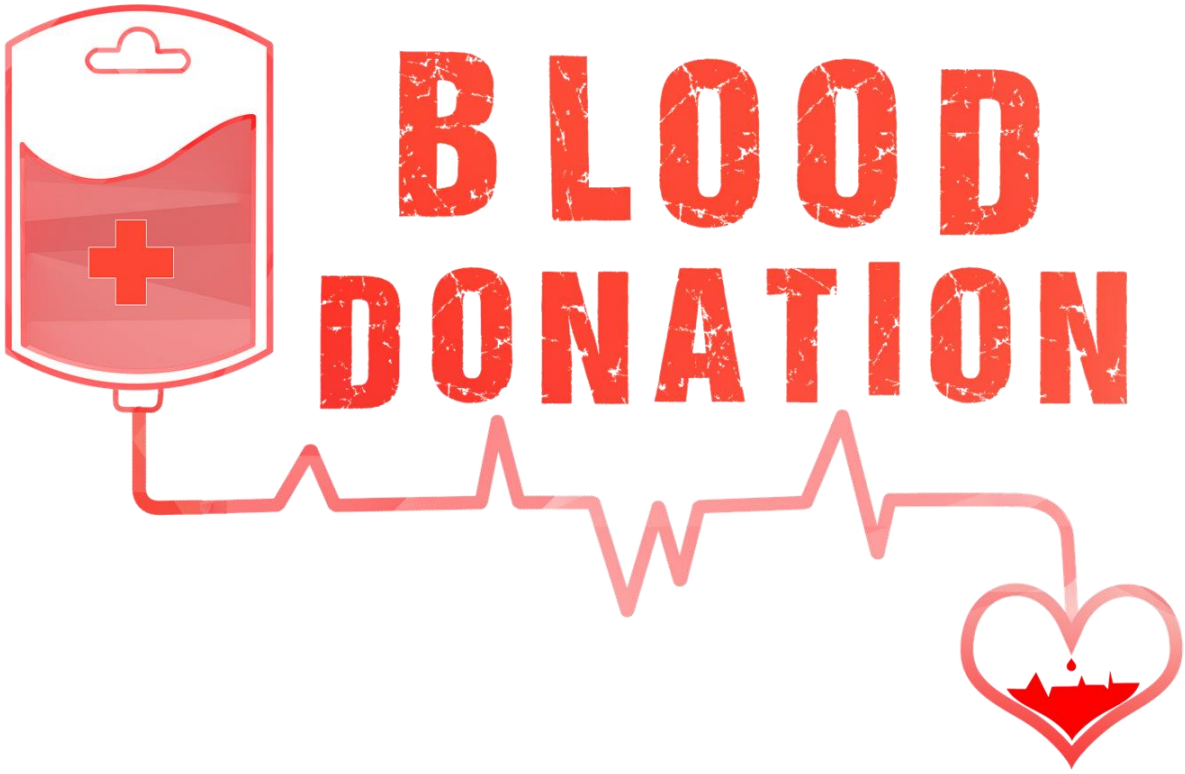
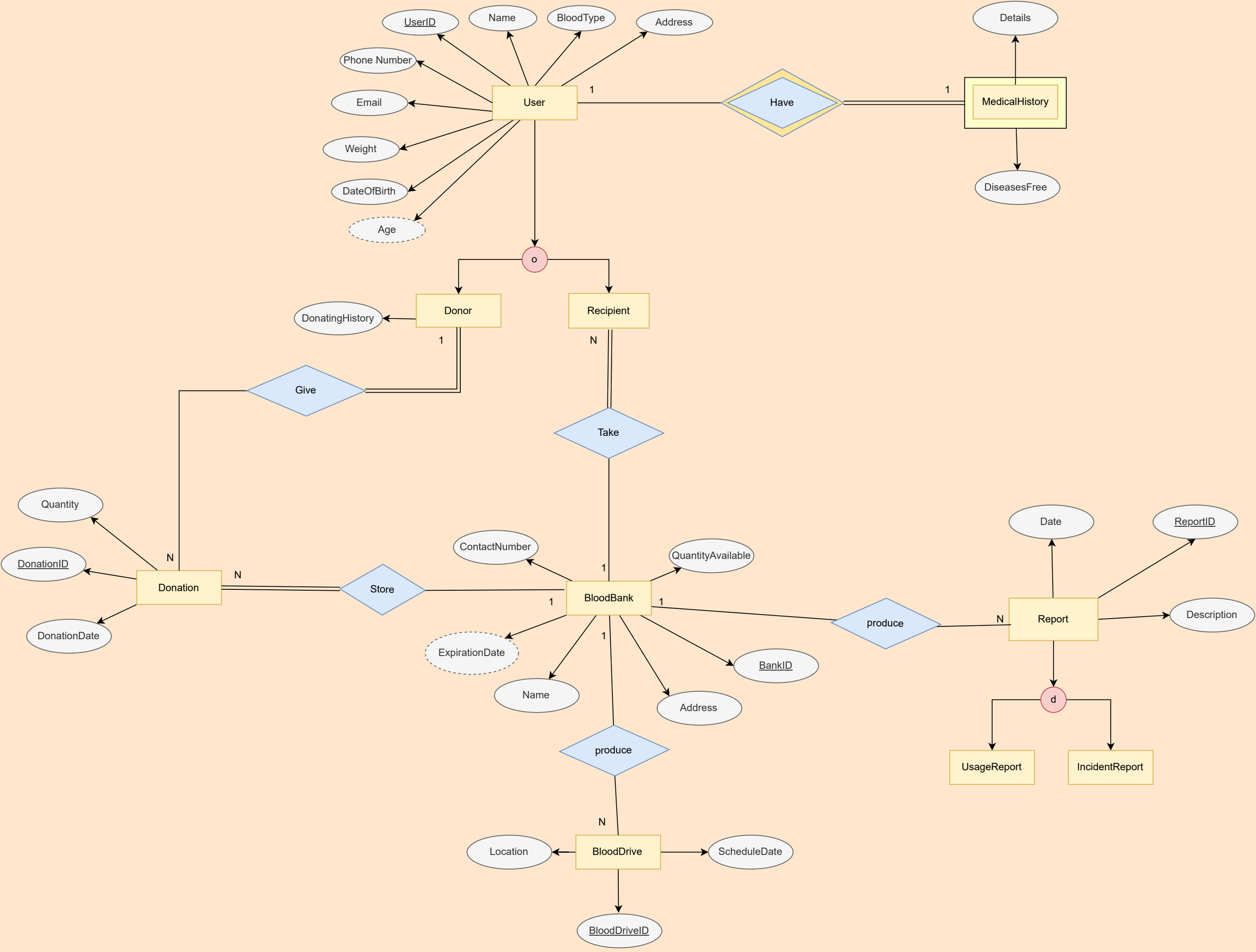
King Fahd University of Petroleum & Minerals
College of Computer Sciences and Engineering
Information and Computer Science Department

ICS 321 – Database System (3-0-3)
First Semester 2023-2024 (231)
Term Project – Phase One
Sunday 05-Nov-2023

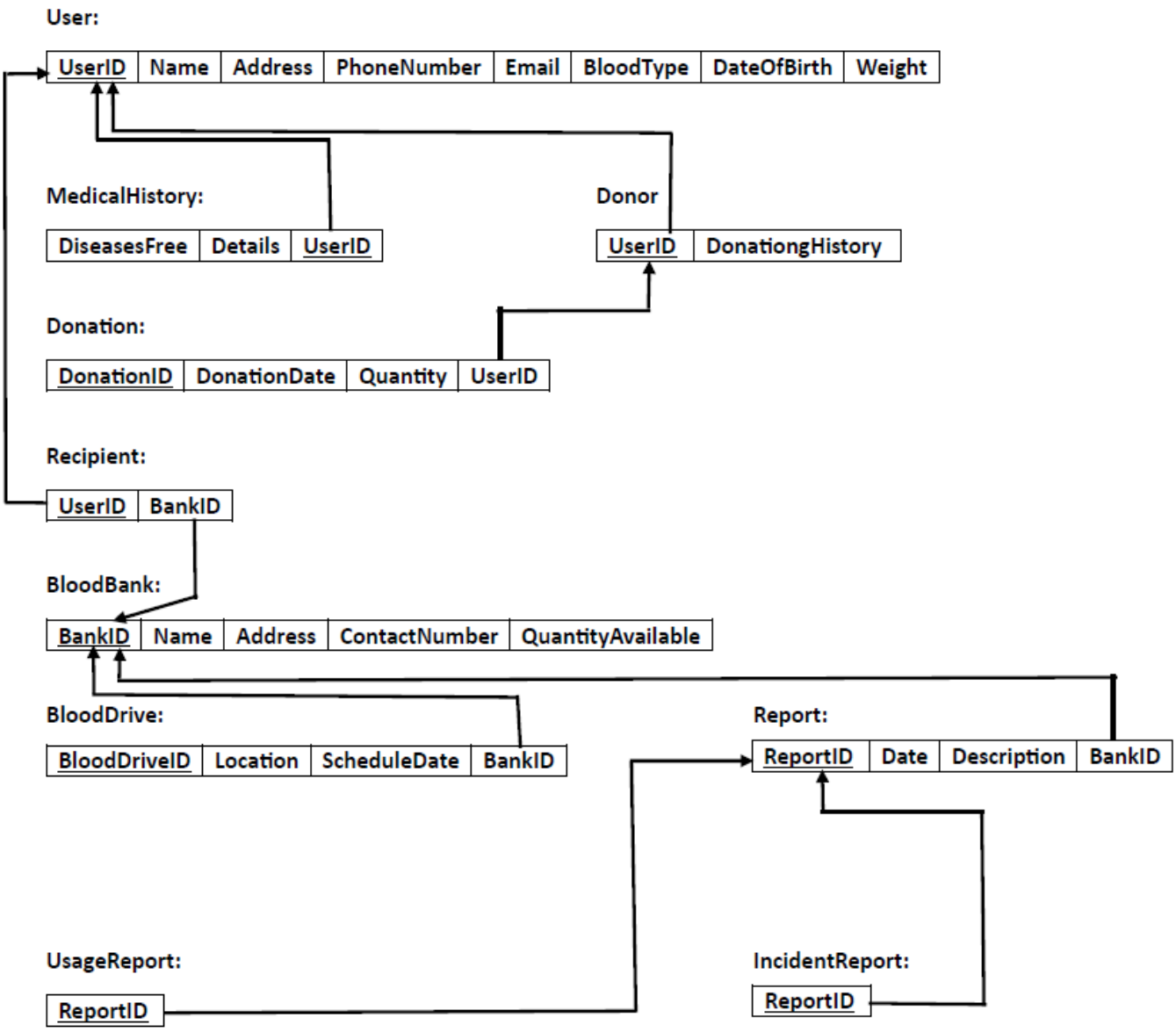
Group 11		
Abdullah Al Matawah	**Hassan AlSharyufi**	**Nawaf Al-Dowayan**
202034960	**202036180**	**202065300**

Blood Donation System




UserID
Name
BloodType
Address
Phone Number
Email
Weight
DateOfBirth
Age
User
1
Have
1
MedicalHistory
Details
DiseasesFree
o
Donor
Recipient
DonatingHistory
1
N
Give
Take
Quantity
DonationID
DonationDate
N
Donation
N
Store
ContactNumber
1
QuantityAvailable
1
BloodBank
1
ExpirationDate
1
Name
Address
BankID
produce
N
Report
Date
ReportID
Description
d
UsageReport
IncidentReport
produce
N
Location
BloodDrive
ScheduleDate
BloodDriveID

♦ **Relational Schema:**



- **Assumptions:**
  - **User Dual Role: An individual may act both as a donor and a recipient, provided they qualify for each capacity.**
  - **Donor Age and Weight Verification: It is presumed that the donor's age and weight information are accurately reported and verified during each donation, with no system feature to independently validate this information.**
  - **Disease-Free Verification: The system assumes 'major disease' status is identified by the medical history record attached to a donor or recipient, without specifying the criteria for such diseases within the system.**
  - **Medical History Records: The 'MedicalHistory entity is expected to maintain multiple entries for each individual.**
  - **Incident Tracking: The system is designed to record any incidents that may occur within the donation process, relying on manual entry rather than automatic detection.**

- **Semantic Requirements:**
  - **Blood Type Compatibility Logic: While pivotal to the system's functionality, the EER model does not encompass the rules for matching blood types. These crucial checks are performed by application-level logic.**
  - **Age Constraint: The requirement that a donor must be over 17 years old to participate in the donation process is a business rule that cannot be directly captured in the static structure of an EER diagram.**
  - **Medical State: Assessing whether a donor is exempt from major diseases is a complex task involving detailed medical evaluations, exceeding the capabilities of simple database constraints.**
  - **Donor Frequency Control: To manage how often a donor gives blood, it is essential to monitor previous donations and compute upcoming eligible dates (once every 6 months from the last donation), tasks that extend beyond the EER model's static representation.**
  - **Temporal Constraints: Regularly scheduling blood drives and tracking the shelf-life of blood involve time-sensitive operations, such as date computations and routine verifications, which are handled by the application's logic rather than the EER diagram.**
  - **Historical Data: The evolution of a donor's eligibility or changes to a recipient's health condition involves dynamic data tracking, which a static EER diagram cannot depict.**
  - **Incident Handling Procedures: The specific steps undertaken when an incident transpires—covering investigation, documentation, and remediation—are not detailed within the EER model and must be managed by the application processes.**

- **Blood Collection Drives:** **The database is assumed to store the dates of blood collection drives, which are set by the system administrator or a scheduling function, but it does not have the capability to autonomously schedule these drives.**

Group Contributions:

Our project team conducted a comprehensive three-day session, spanning two hours each day, utilizing Microsoft TEAMS to collaborate on the design and planning of our Blood Donation Management System.

Contribution Details:

- **Abdullah Al Matawah: Leveraging the collective insights from our discussions, Abdullah took the initiative to conceptualize and craft the Enhanced Entity-Relationship (EER) Model. His design serves as the blueprint for our database application, laying out the intricate relationships between entities and their respective attributes.**

- **Hassan AlSharyufi: With a keen eye for detail and structure, Hassan translated the EER Model into a Logical Relational Schema. His work meticulously outlines the framework of database tables, establishing a robust foundation for the system's backend architecture.**

- **Nawaf Al-Dowayan: Nawaf played the pivotal role of orchestrator and documentarian for the project. He was responsible for coordinating the project meetings and ensuring a seamless flow of ideas among team members. Additionally, Nawaf took charge of articulating the project assumptions and semantic requirements, which are crucial for understanding the scope and constraints of our database application.**