ST. XAVIER’S COLLEGE

**(Affiliated to Tribhuvan University)**

**Maitighar, Kathmandu**

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**Database Management System**

**Theory Lab Assignment #5**

**SUBMITTED BY:**

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**SUBMITTED TO**

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Entity Relationship model

1. **What do you mean by Entity- Relationship Diagram? Explain**

* shows the relationships of entity sets stored in a database.
* component of data
* illustrate the logical structure of databases.
* graphical representation of an information system that shows the relationship between people, objects, places, concepts or events within that system.
* there are 3 ingredients in a standard entity-relationship diagram:
  + **Entities**, which represent people, places, items, events, or concepts.
  + **Attributes**, which represent properties or descriptive qualities of an entity. These are also known as data elements.
  + **Relationships**, which represent the link between different entities.

1. **Define entity and give an example.**

* an existing or real thing
* any singular, identifiable and separate object.
* refers to individuals, organizations, systems, bits of data or even distinct system components that are considered significant in and of themselves.
* The following are examples of the use of an entity in different contexts:
  + General computing: Refers to users, components and organizations
  + System: Refers to a discrete or separate component
  + Database system: Refers to individual things, including people, concepts or objects with data that is first stored in a database management system (DBMS) and has attributes and relationships to other entities
  + Open Systems Interconnection model (OSI model): Refers to discrete system components that use different protocols to communicate with each other
  + Object-oriented programming (OOP): Synonymous with objects.

1. **Explain the different between an entity class and an entity instance.**
2. **Define attribute and its types.**

Entities are represented by means of their properties, called attributes. All attributes have values. For example, a student entity may have name, class, and age as attributes.

There exists a domain or range of values that can be assigned to attributes. For example, a student's name cannot be a numeric value. It has to be alphabetic. A student's age cannot be negative, etc.

Types of Attributes

•Simple attribute − Simple attributes are atomic values, which cannot be divided further. For example, a student's phone number is an atomic value of 10 digits.

•Composite attribute − Composite attributes are made of more than one simple attribute. For example, a student's complete name may have first\_name and last\_name.

•Derived attribute − Derived attributes are the attributes that do not exist in the physical database, but their values are derived from other attributes present in the database. For example, average\_salary in a department should not be saved directly in the database, instead it can be derived. For another example, age can be derived from data\_of\_birth.

•Single-value attribute − Single-value attributes contain single value. For example − Social\_Security\_Number.

•Multi-value attribute − Multi-value attributes may contain more than one values. For example, a person can have more than one phone number, email\_address, etc.