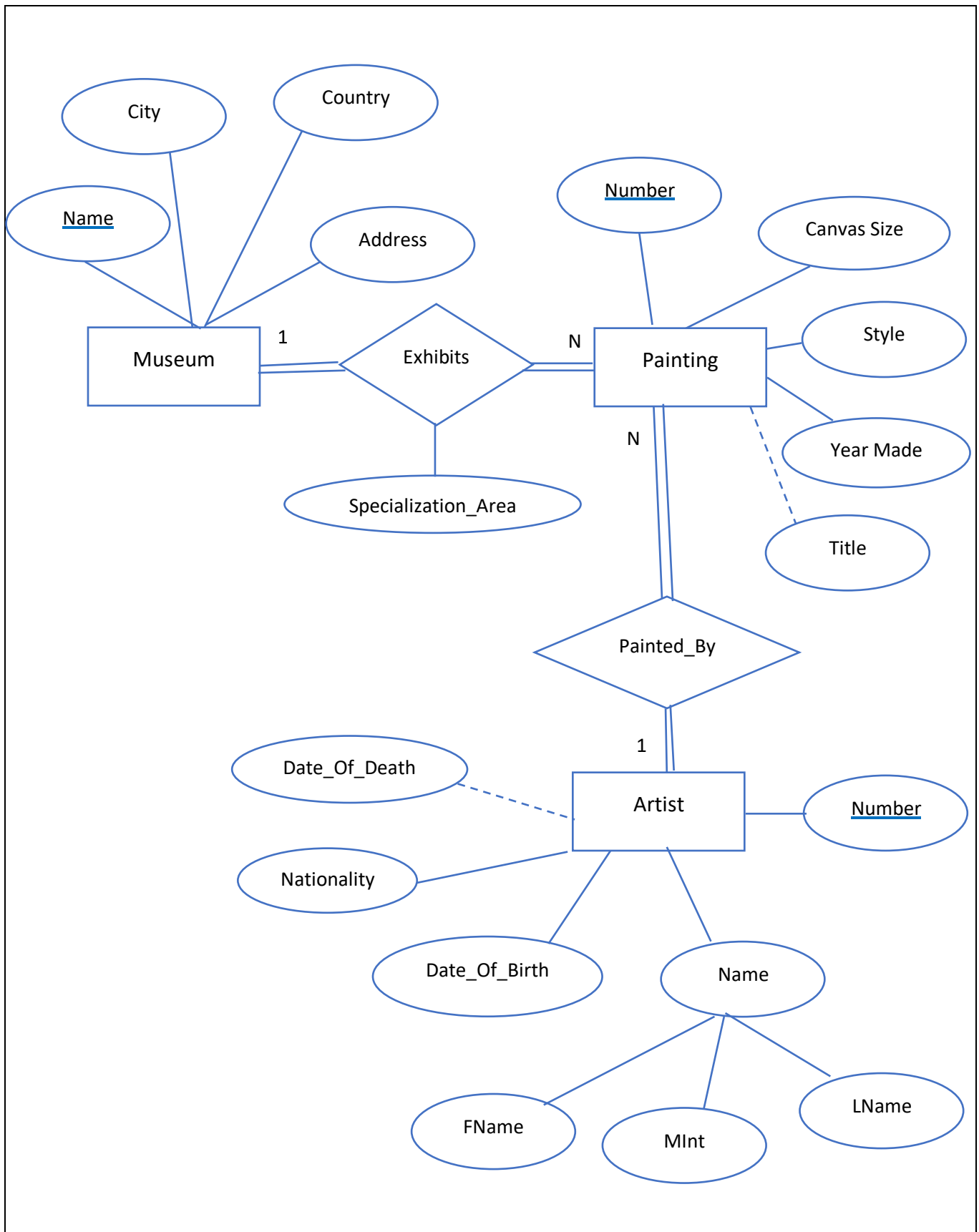


**Database Management Systems – MCIS 5133****Dr. Cheng Hong****Homework 1 – Spring 2022***Name: Saranya Balasubramaniyan**Student ID: 999901316**Section: 001*

1. Draw an ER diagram to represent a museum database. Each museum has a unique name. The city and country where the museum is located are known, as well as the address. Each museum exhibits paintings, but specializes in one or more specific areas, which should be stored. For each painting, there is a unique number, and also information about the canvas size, style, year made and its title (optional) is known. Each painting was done by a single artist. Information about artists include his/her name, number (unique), the date of birth and (when applicable) the date of death and nationality.

<b>Entities Identified</b>	Museum, Painting, Artist
<b>Attributes Identified</b>	Museum -> Name, City, Country, Address Painting-> Number, Canvas size, Style, Year Made, Title Artist ->Name, Number, Date of Birth, Date of Death, Nationality
<b>Optional Attribute</b>	Painting->Title Artist->Date of Death
<b>Key Attributes Identified</b>	Museum – Name Painting – Number Artist – Number
<b>Complex attributes identified</b>	Artist – Name (FName, MInit, LName)
<b>Multivalued attributes</b>	None
<b>Derived Attributes</b>	None
<b>Relationships Identified</b>	Exhibits (Museum-Painting) Painted_by (Painting-Artist)
<b>Total Participation Identified</b>	Exhibits - Museum Exhibits–Painting Painted_By- Painting Painted_By- Artist
<b>Relationship attribute Identified</b>	Specialization_Area(Exhibits)
<b>Weak entity type</b>	None
<b>Partial Key Attribute</b>	None
<b>Cardinality</b>	Museum: Painting – 1:N Painting: Artist – N:1

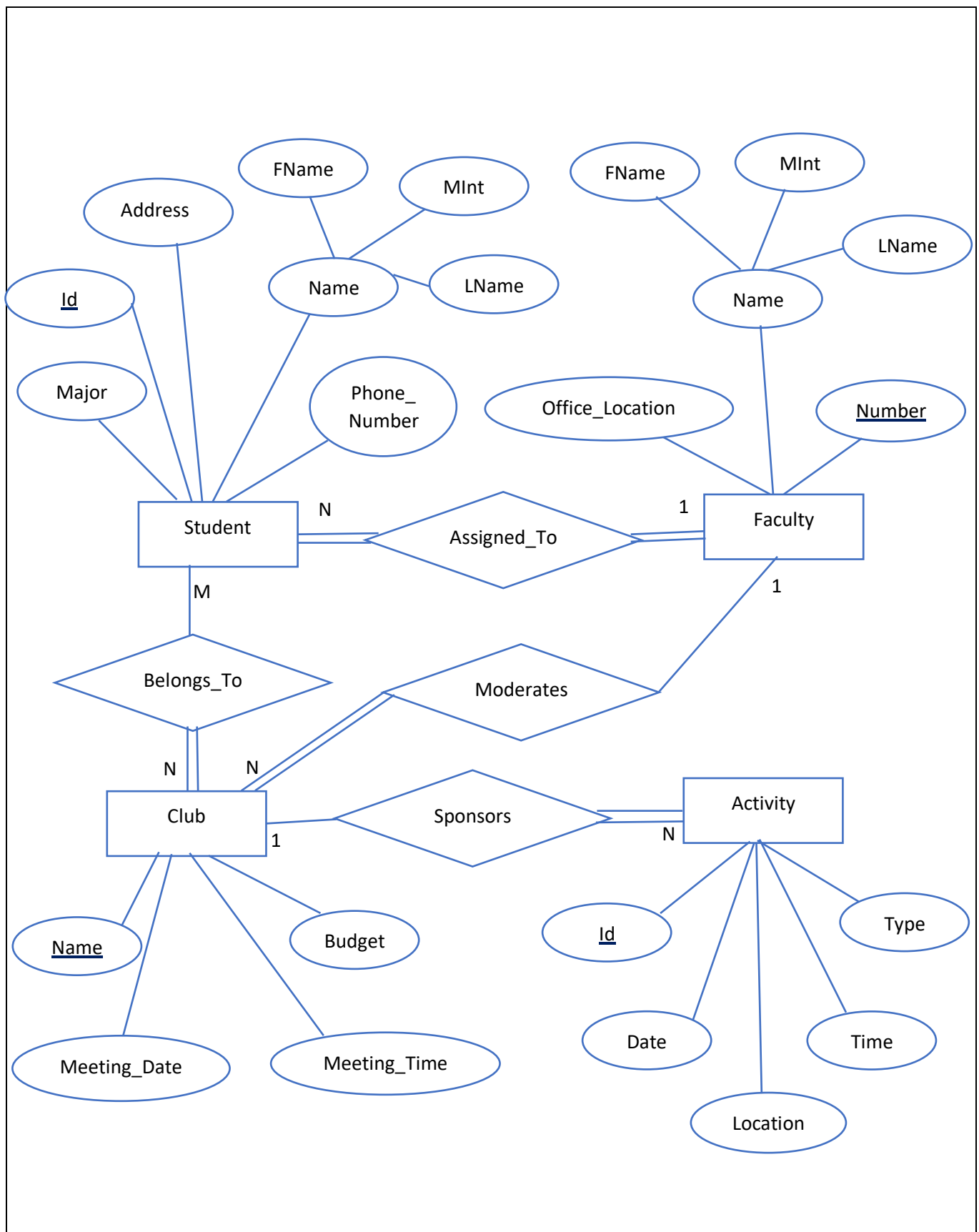


2. Draw an ER diagram to keep track data about college students, their academic advisors, the clubs they belong to. Each student has a name, unique id, and a major, phone number, and address. Assume each student is assigned to one faculty academic advisor and one advisor counsels many students. Each faculty has a unique number, name, and office location. Student can belong to any number of clubs. A club has a unique name, budget, meeting day and meeting time. The club must have some student members in order to exist, and clubs can sponsor any number of activities. Each activity has a unique id, type, date, time, and location. Each activity is sponsored by exactly one club. Each club is assigned a faculty as the moderator. A faculty may sponsor more than one clubs



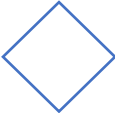





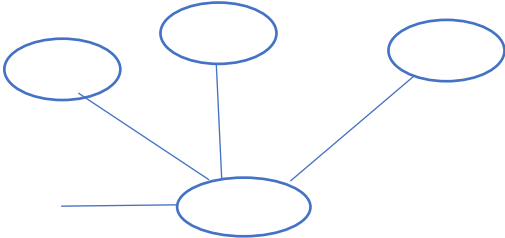

<b>Entities Identified</b>	Student, Faculty, Club, Activity
<b>Attributes Identified</b>	Student->Name, Id, Address, Major, Phone_Number Faculty->Number, Name, Office_Location Club-> Name, budget, Meeting_Day, Meeting_Time Activity->Id, Type, Date, Time, Location
<b>Key Attributes Identified</b>	Student->Id Faculty->Number Club->Name Activity->Id
<b>Complex attributes identified</b>	Student – Name (FName, MInit, LName) Faculty-Name (FName, MInit, LName)
<b>Multivalued attributes</b>	None
<b>Derived Attributes</b>	None
<b>Relationships Identified</b>	Assigned_To(Student:Faculty) Belongs_To(Student:Club) Sponsors (Club:Activity) Moderates (Faculty:Club)
<b>Total Participation Identified</b>	Assigned_To(Student) Assigned_To(Faculty) Belongs_To(Club) Sponsors (Activity) Moderates(Club)
<b>Relationship attribute Identified</b>	None
<b>Weak entity type</b>	None
<b>Partial Key Attribute</b>	None
<b>Cardinality</b>	Student: Faculty – N:1 Student: Club – M:N Faculty: Club – 1: N Club : Activity – 1:N

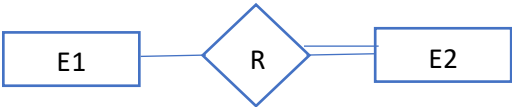
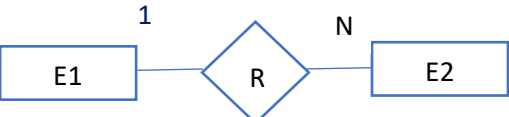
Assumptions:

1. Relation - Faculty moderates Club: It is explicitly mentioned that each faculty may sponsor more than one club. However, it does not suggest if a faculty must moderate atleast one club. So, assuming that there can be a faculty who do not moderate a club.



ER diagram notations used in the homework solution,

Symbol	Meaning
	Entity
	Weak Entity
	Relationship
	Identifying Relationship
	Attribute
	Optional attribute
	Key Attribute
	Multi valued attribute
	Composite attribute
	Derived attribute

	Total Participation
	Cardinality 1:N for E1:E2 in R

**Reference:**

Ramez Elmasri, Fundamentals of Database Systems, 7th edition, Addison-Wesley