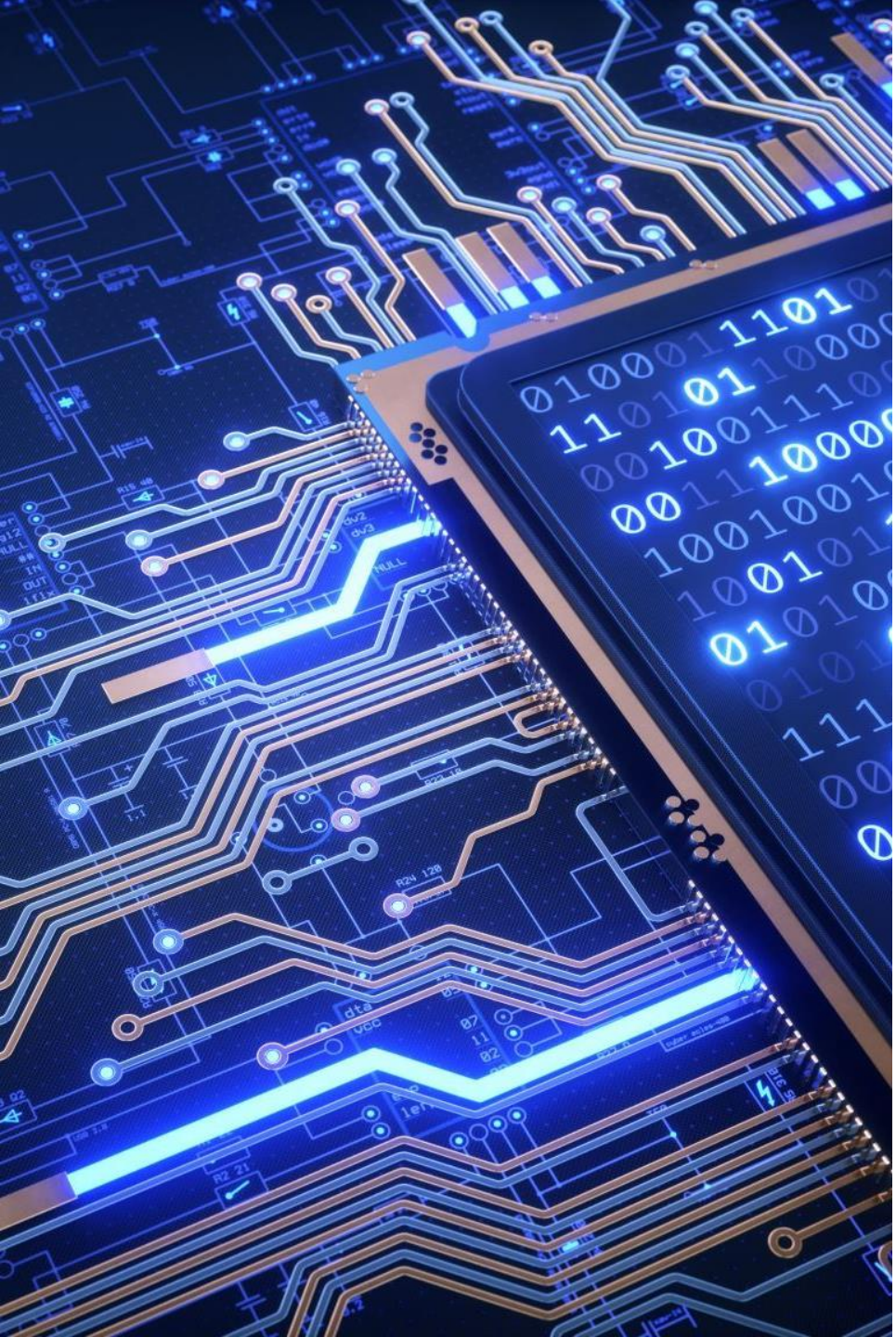
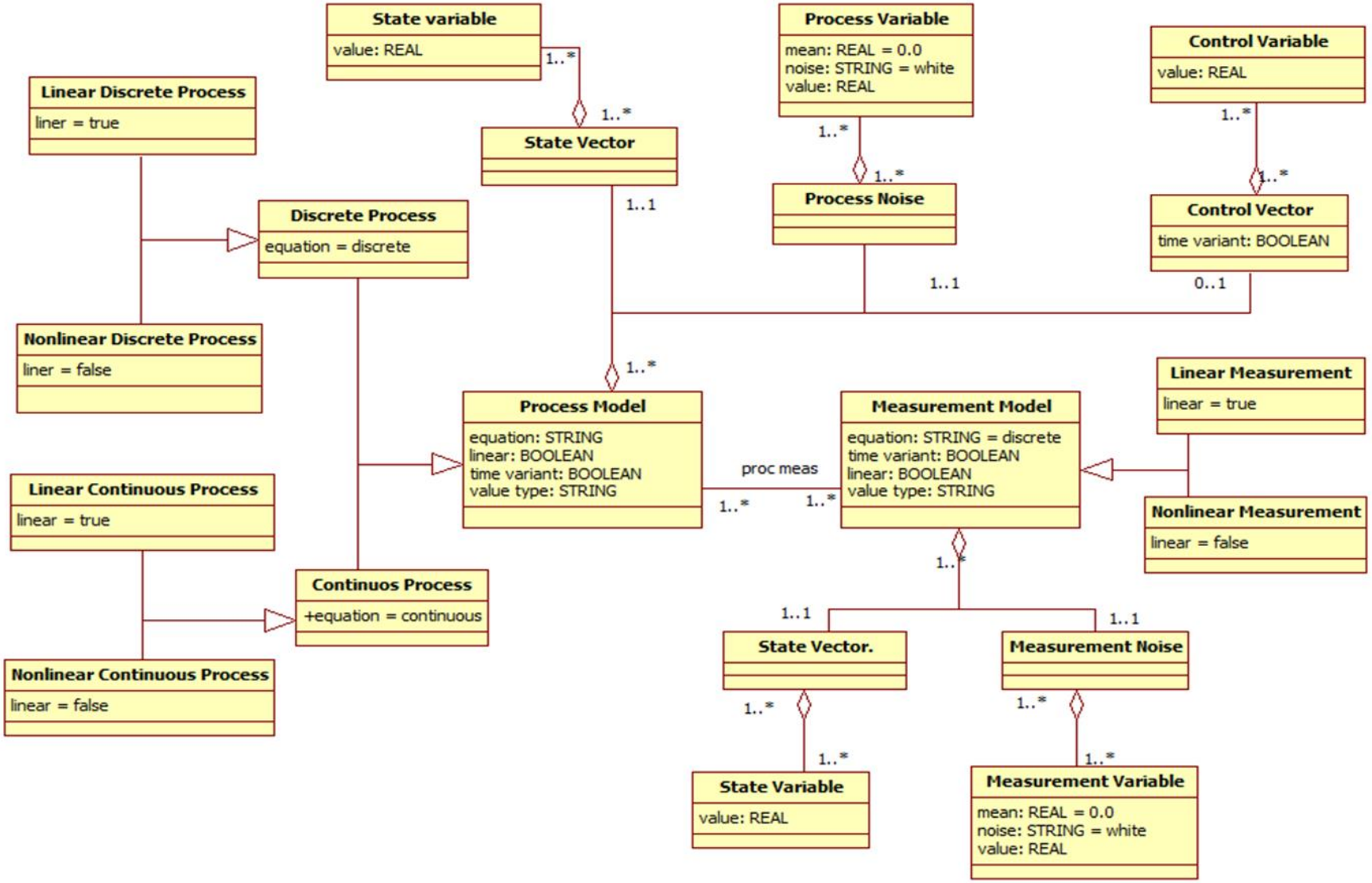


CSci363 User Interface Design

Friday, September 13, 2024

- **Today's session**:
- Software Engineering Models

UML Class Diagrams



UML Class Diagrams

Based on mathematical set theory and set relationship.

- A set is:
  - A collection of "things" (objects or numbers, etc.) of interest.
  - Each member is called an element of the set.
  - There should be only one of each member (all members are unique).

ØA relation is:

- a collection of ordered pairs between two sets, such that objects from one set relates to objects from the other set. If the object x is from the first set and the object y is from the second set, then the objects are said to be related if the ordered pair (x, y) is in the relation.

Process for Creating Requirements Level CD

Extract noun/noun phrases from specification,

Identify candidate classes,

Is this entity relevant?

Can I uniquely identify this entity?

Is this entity within the scope of the system

From the remaining entities, identify candidate attributes,

Is this entity relevant?

Is this candidate a property of a candidate class?

Draw the classes,

Identify relationships between the candidate classes,

Obtain from specification and customer.

Draw the relationships.

University Library Book Rental System (LibSys)

Borrow a book Description:

A **user** of the library may log into the system to **borrow** a **book** from the **collection**. The user will **enter** his **user-name** and **password**. User-names must be at least **eight characters,** start with an **alpha character,** must contain at least **one digit,** and only the **special characters, underscore,** and **hyphen** are allowed. The **system** will **verify** the **user's login** and **access policy**. If the login is valid the user will be able to **select** a **book** to be **borrowed** from the **library**. If the login is invalid an **error message** is **reported** and the **system returns** to the **login state**.

The **user** will be **prompte**d to enter **identification information** for the requested **book**. The **system** will **verify** the presence of the **identified book** in the library's **collection**, the users authorization to borrow the **identified book**, and the availability of a **copy of the book** for lending for the user's associated **policy borrowing period**. If the **verification** fails at any point the **system** will **report** the failure and return to the state of awaiting input of a book's **identification data**.

Upon **passing** lending verification the **system** will **generate** a **lending receipt** and **record** all **information** associated with this **transaction** then **return** to the state awaiting another **transaction request**.