



# Module 7: Review

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# Acknowledgement

## ❖ Slides

- Course CS202: Programming Systems  
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- Course CS202: Programming Systems  
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- Course DEV275: Essentials of Visual Modeling with  
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# Outline

- ❖ Main concepts of OOP
- ❖ Principles of OOP
- ❖ Class declaration, visibility of member attributes/functions
- ❖ Types of member functions
- ❖ Operators
- ❖ Constructor, destructor, copy assignment
- ❖ Inheritance, types of inheritance
- ❖ Polymorphism
- ❖ Relationships between classes

# Main concepts of OOP

- ❖ Class
- ❖ Object
- ❖ State → Attribute
- ❖ Behavior → (Member) function



# Principles of OOP

- ❖ Abstraction
- ❖ Encapsulation
- ❖ Modularity
- ❖ Hierarchy

# Class declaration, visibility of member attributes/functions

- ❖ Class declaration and definition (implementation)
- ❖ Visibility:
  - Public
  - Protected
  - Private



# Types of member functions

- ❖ Constructor/Initialization
- ❖ Observer
- ❖ Mutator
- ❖ Iterator



# Operators

❖ Operator overloading





# Constructor, destructor, copy assignment



- ❖ When a constructor is invoked?
- ❖ When a destructor is invoked?
- ❖ Sequence of invoked constructors when creating an object of a derived class
- ❖ Sequence of invoked destructors when destroying an object of a derived class
- ❖ Copy constructor
- ❖ Copy assignment

# Inheritance, types of inheritance

- ❖ Inheritance, the semantic of generalization relationship
- ❖ Type of inheritance:
  - Public
  - Protected
  - Private

# Inheritance, types of inheritance

- ❖ Initializing a pointer to an object of a base class
- ❖ Typecasting a pointer to an object of a base class
- ❖ Actual type and formal type of a pointer to an object

# Polymorphism

- ❖ Which function will be invoked?
  - Formal type of a pointer
  - Actual type of a pointer
- ❖ Applications



# Relationships between classes

- ❖ Generalization
- ❖ Association
  - Aggregation
  - Composite
- ❖ Dependency