



UNIT-I

## Introduction To UML

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AP/CSE

SSNCE



# What is UML?

- Unified Modelling Language (UML) is a **visual language** for
  - Specifying
  - Constructing and
  - Documenting the artifacts of system.
- UML is the **defacto standard diagramming notation** for **drawing or presenting pictures** related to software – **primarily OO software**



# Three Ways to apply UML

- UML as Sketch
  - **Informal** and **incomplete diagrams** created to explore difficult part of the problem or solution space, exploiting the power of visual languages
- UML as blueprint
  - Relatively detailed design diagrams used either for
    1. **Reverse Engineering** to visualize and better understanding **existing code** in UML diagrams  
or for
    2. **Code generation (forward Engineering)**

# Three Ways to apply UML

- **If reverse Engineering**

- A UML tool reads the source or binaries and generates UML package , class, and sequence diagrams.
- These “blueprints” can help the reader to understand the big picture elements, structure and collaborations.

## **Forward Engineering**

- Before programming, some detailed diagrams can provide guidance for code generation (e.g., in Java), either manually or automatically with a tool.
- diagrams used for some code , and the other code is filled by the developer while coding



# Three Ways to apply UML

- UML as Programming Language
  - Complete executable specification of a software system in UML.
  - Executable code will be automatically generated but it is normally not seen or modified the developer.
  - still under development in terms of theory, tools robustness, and usability.

**Note:** Agile modeling emphasizes UML as sketch



# Three Perspectives to apply UML

1. Conceptual perspective
2. Specification (software) perspective
3. Implementation (software ) perspective

# Three Perspectives to apply UML

## 1. Conceptual perspective

- diagrams are interpreted as describing things in a situation of the real world or domain of interest

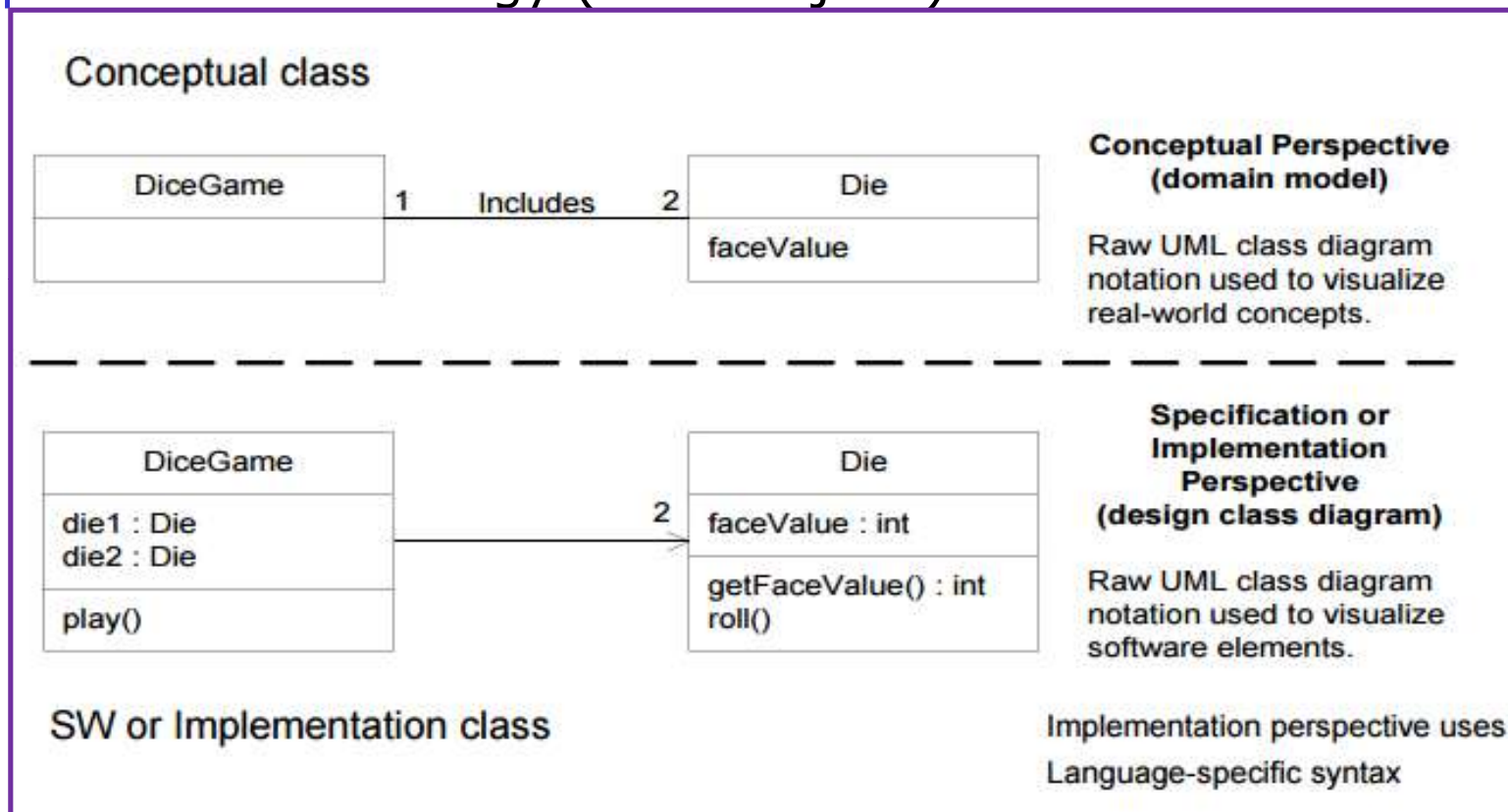
## 2. Specification (software) perspective

- diagrams describe software abstractions (or)
- Components with specifications and interfaces
- But, no commitment to a particular implementation(C# or Java)

# Three Perspectives to apply UML

## 3. Implementation (software ) perspective

the diagrams describe **software** implementations in a **particular** technology (such as java)





# The meaning of class in different perspective

- **Conceptual class**
  - real world **concept or thing**
  - A conceptual or essential perspective
  - **Domain model** contains conceptual classes
- **Software class**
  - a class representing a **specification or implementation perspective** of a software component, regardless of the process or method.
- **Implementation class**
  - **class implemented** in a **specific OO language** such as java.

# Test Your Knowledge

**Do prestigious software companies regularly use UML?**

Companies like Google, Yahoo, Facebook, Dropbox, Amazon, Palantir, Microsoft, Apple, etc.

**Do Internet companies like Google, Facebook and Dropbox use UML**

**Is it necessary to learn UML to find a job?**

**Answer**

you won't need to learn UML to find a job. You might need it in a senior position at Amazon or Google Android



# Test Your Knowledge

## 1. Companies that uses UML and expects UML skill from developer

Capgemini

Job Title: Java Developer\_ 4.5 6.5 Years\_ Gurgaon

**Job Description:** Work with multi-vendor, multi-location development team as well as business users, Participate in technical documentation, design, development and testing, Work with business analysts and technical experts to deliver work on time and within budget

### **Job Specification:**

Excellent communication and analytical skills  
Should have experience of full project lifecycle (waterfall / agile)  
Excellent understanding of OOAD, Design Patterns and **UML**



# Test Your Knowledge

## 1. Companies that uses UML and expects UML skill from developer

Xebia IT Architects India Pvt Ltd, United states

Technical Architect (java) - 7 - 12 yrs

### Job Description

- Explain overall solutions to the technical architect and development team
- Create technical architecture documentation, using appropriate standards, e.g. **UML**
- Guide and govern development teams
- Lead DevOps to define and implement CI / CD pipelines,
- Knowledge of architectural frameworks and best practices
- Define, refine and ensure implementations meet Non-Functional Requirements



# Test Your Knowledge

## 1. Companies that uses UML and expects UML skill from developer

### Software Architect

- Amdocs Development Center India Pvt. Ltd. 6 - 10 yrs

ICREON

- **Position:** - **Business Analyst** - **Experience:** - 7 + years

- **Job Responsibilities:**

Interacting with Various Stakeholders for requirement gathering and doing requirement analysis.

- Scoping and defining business requirement.
- Creating BRD, GAP Analysis.
- Creating and maintaining the Functional Spec Document (Use Case + Interactive Wireframes).
- Explaining the Functional Solution and Wireframes to the Technical Team.
- Review Test Cases.
- Expected to prioritize work load and meet project deadlines



# Test Your Knowledge

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- **Technical Skill Set:**
- Exp with Data flow Diagrams, Use Cases, Prototype using MS-Visio or equivalent skills.
- SDLC, UML and OOAD. DB Design, Estimated & Scheduling.
- Gathering req & documentation.
- Risk Analysis & Process Adherence.
- Should have worked with 2 big size web based projects.

