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CS304 Assignment 1 Solution

Fall 2026

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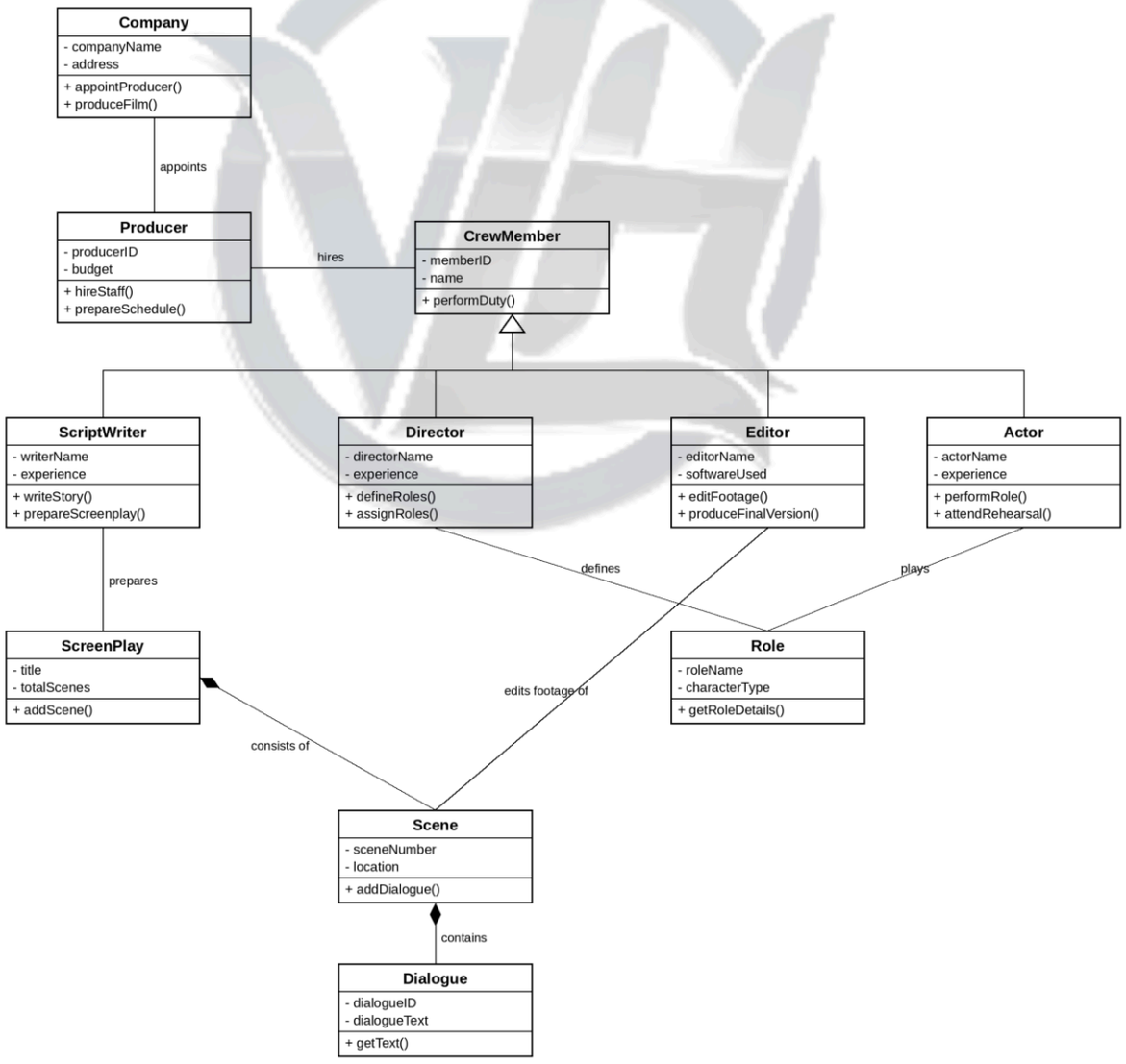
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Object Oriented Programming — Fall 2026

Case Study in Brief

A film production company plans to produce a new showbiz film titled “The AI & Challenges.” The company appoints a producer who manages the overall film production process, including hiring staff, arranging equipment, allocating resources, and preparing the shooting schedule. The producer hires a scriptwriter and other crew members, including a director, an editor, and actors. The scriptwriter develops the film's story and prepares a screenplay consisting of multiple scenes, each containing dialogues relevant to the storyline. The director defines the roles required for the film and assigns these roles to suitable actors, and guides the actors during rehearsals and filming according to the shooting schedule. After filming, the editor works on the recorded footage to produce the final version of the film.

UML Class Diagram — Showbiz Film Production System



Classes in the Diagram

Class	Attributes	Functions
Company	- companyName, - address	+ appointProducer(), + produceFilm()
Producer	- producerID, - budget	+ hireStaff(), + prepareSchedule()
CrewMember	- memberID, - name	+ performDuty()
ScriptWriter	- writerName, - experience	+ writeStory(), + prepareScreenplay()
Director	- directorName, - experience	+ defineRoles(), + assignRoles()
Editor	- editorName, - softwareUsed	+ editFootage(), + produceFinalVersion()
Actor	- actorName, - experience	+ performRole(), + attendRehearsal()
ScreenPlay	- title, - totalScenes	+ addScene()
Scene	- sceneNumber, - location	+ addDialogue()
Dialogue	- dialogueID, - dialogueText	+ getText()
Role	- roleName, - characterType	+ getRoleDetails()

Relationships and Object-Oriented Concepts

• Inheritance: Director, Editor, Actor, and ScriptWriter inherit from CrewMember, so every crew member has a memberID and a name and can performDuty().

• Composition: A ScreenPlay consists of Scenes, and a Scene contains Dialogues. Scenes cannot exist without their screenplay, and dialogues cannot exist without their scene.

• Association: The Company appoints the Producer; the Producer hires the crew members; the ScriptWriter prepares the ScreenPlay; the Director defines Roles and assigns them to Actors; Actors play Roles; the Editor edits the footage of Scenes.

• Encapsulation: Attributes are private (marked -) and accessed only through public functions (marked +). Producer, Director, and Actor each carry 2 attributes and 2 functions, as required by the assignment.