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INTENDED AUDIENCE

The class is ideal for developers who are new to the HOOPS 3D Application Framework and want to learn how to use and understand the full power of the framework.

PRE-REQUISITES

A good knowledge of the C/C++ programming language is required. Students will participate in hands-on programming examples. A basic understanding of computer graphics principles is recommended but not required.

OBJECTIVES

Upon completion students will be able to:

- Build a HOOPS scene graph containing geometry and attributes.
- Select and manipulate objects, cameras, and lights.
- Use and extend the HOOPS 3D Application Framework (HOOPS/3dAF) to build a customized application prototype.

Section A : HOOPS PRODUCT SUITE

I. Overview

1. Technical review of the various HOOPS components
2. Using the Documentation and Support

Section B : HOOPS 3D APPLICATION FRAMEWORK

Unit I. HOOPS/3dGS: Introduction

1. Complete technical overview of HOOPS/3dGS
2. Review of 3dGS Documentation
3. Discussion of HDI Interface

Unit II. HOOPS/3dGS: Scene Graph Objects

1. Segments
 - i. Organization of hierarchy
 - ii. Naming conventions
 - iii. Segment Operations
 - iv. Inclusions and Styling
2. Geometry
 - i. Geometry Insertion
 - ii. Geometry Manipulation
 - iii. Surface primitives
 - iv. Special Primitives
3. Attributes
 - i. Color & Visibility
 - ii. Shell & Mesh Attributes
 - iii. Rendering Attributes
 - iv. User Options

Unit III. HOOPS/3dGS: Scene Graph Control

1. Default scene graph (segment structure)
2. Manipulating the hierarchy
3. Searching the database
4. Tying your scene graph to your application data

Unit IV. HOOPS/3dGS: Viewing, Motion and Modeling

1. Cameras
2. Lights
3. Coordinate Systems
4. Animation

Unit V. HOOPS/3dGS: Large Model Visualization

1. Large Modelling Visualisation Overview
2. Review of various LMV functionality available and the situations in which you should use it

Unit VI. HOOPS/3dGS: User Interaction

1. Event Loop
2. Selection Events
3. Highlighting Objects

Unit VII. HOOPS/3dGS: System Control

1. Rendering Options
2. Heuristics
3. Driver options
4. System options
5. Memory usage
6. Error and exit handling

Unit VIII. HOOPS/3dGS: HOOPS I.M.

1. When should you use IM
2. Example

Unit IX. HOOPS/MVO

1. The MVO Paradigm
2. The MVO Classes
3. Deriving custom MVO classes

Unit X. HOOPS/GUI

1. GUI Toolkits and the Event Loop
2. Using the HOOPS/GUI Components
3. Creating your own HOOPS/GUI Component\

Unit XI. HOOPS/GM

1. How a graphics database and an assembly structure relate
2. What was involved in the integration
3. Reviewing the HOOPS/GM interface

Section C : HOOPS STREAM TOOLKIT

Unit XII. HOOPS/Stream

1. Architectural review
2. Reading and writing HSFs
3. Setting flags on the Stream toolkit
4. Creating custom HSFs
5. 3dGS-specific classes

Section D : HOOPS NET SERVER

Unit XII. HOOPS/Net

1. Architectural review
2. Running a server and creating a session
3. Passing control
4. HOOPS/Net, and HOOPS/Stream and HOOPS/3dAF