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Teaching and Research with
Rhapsody C++

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Wei-Kuo Liao

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Teaching with Rhapsody



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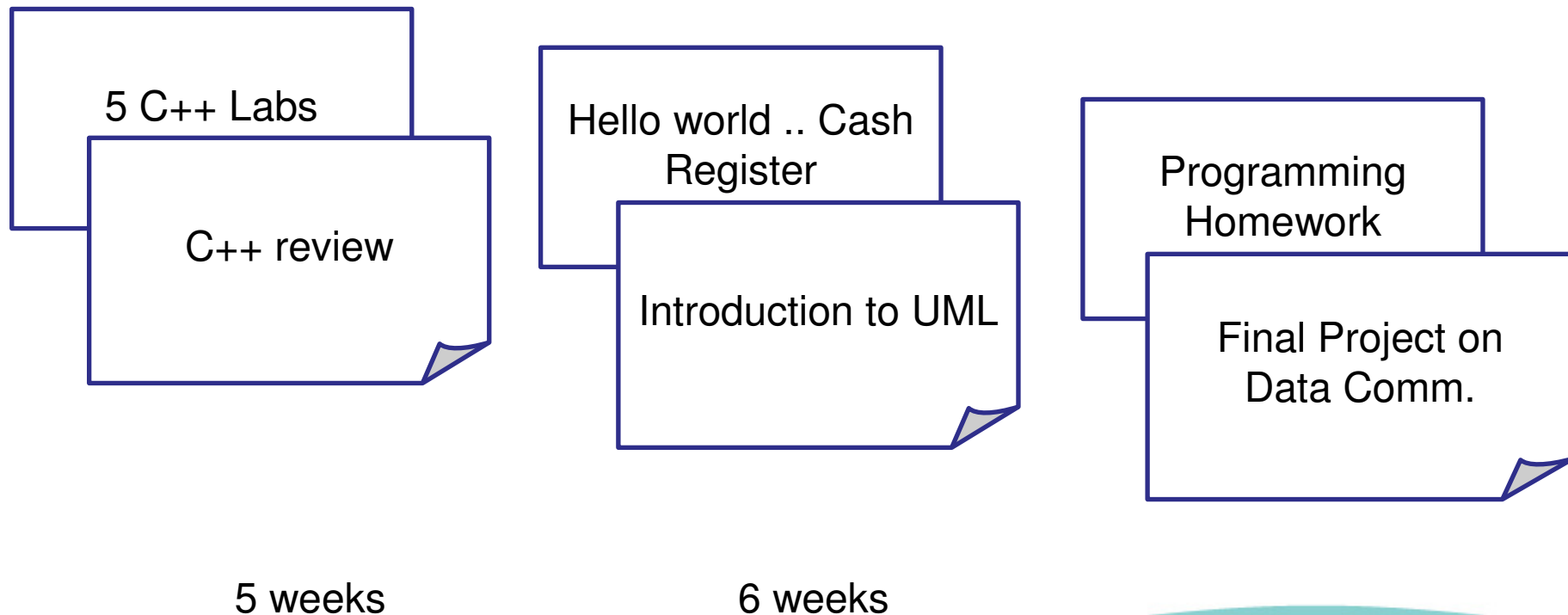
Course information

- Undergrad course title:
 - ***Software Creative project***
- Purpose:
 - *observe, think, plan, organize, communicate*
- Background:
 - Took two courses on C++, taking the *data communication* simultaneously, some students already took *data structure*
 - know little about object-oriented programming

Course Objective

- Good C++ programming style
 - Writing functions, using array, linked list, tree
 - Template, inheritance, operator override, object handler, message
- Know how to model program
- Good to tell the story of program flow
- Practice rapid prototyping

Course Design



FAQ

- Why do we learn UML?
 - Why do we start with writing use cases, rather than just finding the data structure first?
 - Is UML an another language?
 - Why do we need object handler?
 - What is the meaning of time event?
- Is learning to use Rhapsody just practicing yet another tool or learning to write programs?

Difficulties

- Confused about terminology, e.g.,
 - member function vs. method
 - pointer vs. object handler
- Need 3 wks to write solid use cases
- Need another 3 wks to write solid sequence diagrams
- Many students still don't believe that state charts can be directly derived from walking the sequence diagrams
- Not familiar with the usage of iter

After taking the course

- Most of the students know how to tell the story of program flow and are familiar with the procedure to derive the corresponding C++ program
- Most of them think Rhapsody is cool
- Some students still don't know why we need programming models, but other told me that they think programming model is important
- Improved programming style
- Know the concept, but little about the implementation of data structure

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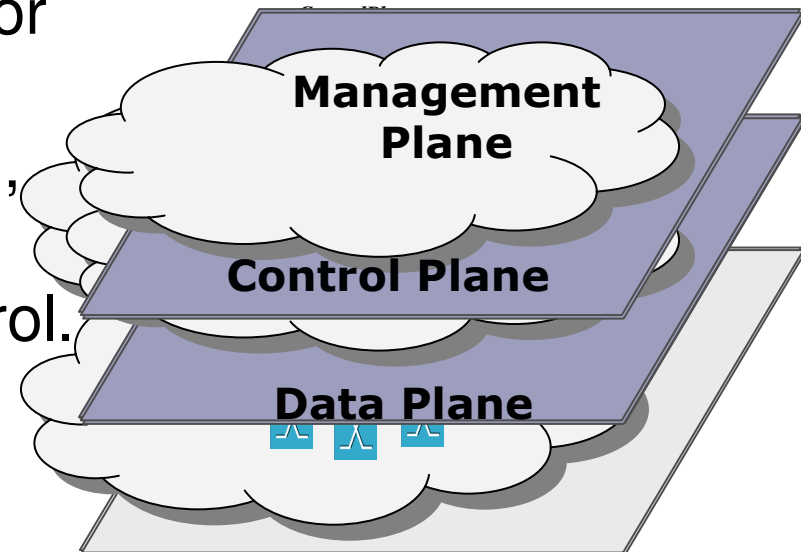
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Two major lines

- Writing discrete-event simulators for communication systems
- Implementing communication protocols and software

Simulator

- A model-based unified control for communication networks
 - wireless scheduling and error control for interactive video services, congestion control, cellular system admission control, routing, power control.
 - Still in analysis stage
- Using Rhapsody
 - developing a simulator takes two weeks to two months



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**Thank you for
your attention**



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