Object Oriented Programming

Logistics

BCS II
Spring 2011

Dr. Sheikh Ziauddin

Lecture Outline

- The Instructor
- The Course
- Attendance and Grading Policy

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The Instructor

- Dr. Sheikh Ziauddin
- Education
  - Bachelors in Engineering
  - Masters in Computer Science
  - Ph.D. in Computer Science
- Research Interests
  - Cryptography
  - Biometrics

The Instructor

- Office
  - Room 3, Faculty Block 1
- Open office hours
  - Tuesday 1:00 to 3:00 pm
- Email Address
  - sh.ziauddin@gmail.com
- Teaching Assistant
  - TBD

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Course Objective & Outcomes

- Pre-requisites
  - Introduction to Computers and Programming (CSC103)
- Objectives
  - To introduce the student with Object-oriented programming principles
  - To make the students comfortable in writing C++ programs using object-oriented programming techniques

Course Objective & Outcomes

- Expected Outcomes
  - By the end of this course, the students should be able to
    - Understand what, why, and how of object oriented programming
    - Write C++ code using object-oriented design techniques

Books

- Text Book
  - Object Oriented Programming in C++ by Robert Lafore
- Reference Books
  - C++ How to Program by Dietel & Dietel
  - Beginning Visual C++ 6 by Ivor Horton

Course Outline

- Basics of C++ (A quick revision)
  - Basic program construction
  - Data types & variables
  - Basic input and output
  - Arithmetic, relational & logical operators
  - Decision and repetition constructs
  - Break, continue, and goto statements
  - Structures and enumerations
  - Functions

Course Outline

- Encapsulation and Data Hiding
  - Classes and objects
  - Constructors and destructors
  - Overloaded constructors
  - The default copy constructor
  - Returning objects from functions
  - Structures vs classes

Course Outline

- Encapsulation and Data Hiding (Cont.)
  - Classes, objects and memory
  - Static class data
  - Constant member functions
  - Constant objects

Course Outline

- Inheritance and Reusability
  - Base classes and derived classes
  - Derived class constructors
  - Overloaded member functions
  - Scope resolution
  - Public and private inheritance
  - Levels of inheritance
  - Multiple inheritance
  - Aggregation and composition

Course Outline

- Operator Overloading
  - Overloading unary operators
  - Overloading binary operators
  - Data conversion

Course Outline

- Polymorphism
  - Pointers
  - New and delete operators
  - Pointers to objects
  - Early vs late binding
  - Virtual functions
  - Abstract classes and pure virtual functions
  - Virtual destructors

Course Outline

- Polymorphism (Cont.)
  - Friend functions
  - Friend classes
  - Static functions
  - The *this* pointer
  - Dynamic type information

Course Outline

- Templates
  - Function Templates
  - Class Templates

Course Outline

- Exception Handling
  - Motivation for exception handling
  - Throwing and catching an exception
  - Catching multiple exceptions
  - Exceptions with arguments

Course Outline

- Miscellaneous Topics
  - Streams and files
  - Introduction to UML
  - The standard template library

Lecture Plan (Tentative)

Week Number	Topics
1	Logistics and Basics of C++
2-4	Encapsulation and Data Hiding
5-6	Inheritance and Reusability
7-8	Operator Overloading
9-11	Polymorphism and Virtual Functions
12	Templates
13-14	Exception Handling
15	Miscellaneous Topics

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Attendance Policy

- Attendance will be marked within the first 5 minutes of the class
- It is your responsibility to regularly check the attendance record on COMSIS
- No adjustments will be made if you fail to reach 80% threshold

Grading Policy

- Sessional 1 (10)
- Sessional 2 (15)
- Final (50)
- Internals (25)
  - Quizzes (7)
  - Lab Assignments (7)
  - Project (6)
  - Class Participation and Attitude (5)

Quizzes

- A quiz may be taken announced or unannounced.
- Tentatively, there will be 5 quizzes in total, out of which best 4 will be considered.
- No quiz will be re-taken under any circumstances.

Lab Assignments

- In every lab, a few tasks will be assigned to you
- You have to perform these tasks individually
- The tasks will be evaluated and graded on spot
- Your points for lab assignments will entirely depend on your performance in these tasks

Projects

- Projects are to be done in groups
- Evaluation will be done on individual basis
  - If the project is poor, everyone will get poor marks
  - If the project is excellent, at least someone will get excellent marks

Projects

- Maximum group size is 4 (preferably 3)
- You are expected to find your project topics yourself (No database projects)
- There will be 2 presentations for the project

Class Participation and Attitude

- To get good marks here, consider the following points (in descending order of importance)
  - Class decorum is never disturbed by you
    - If I ever ask you to leave the class, most likely you will get a zero here
  - Come and leave on time
  - Participate in class discussion (and discussions on internet group) in a positive way

Academic Dishonesty

- Academic dishonesty is different from poor class attitude
- It's a much bigger offence
- Academic dishonesty will not be tolerated
- Showing such behavior in one exam/quiz/assignment/project may result in an 'F' in the overall course's evaluation

How to Get an 'A' Grade

- Attend all the classes and labs from start to end
- Try to grab as much as possible while the instructor is delivering the lecture

How to Get an 'A' Grade

- For each 1.5 hour lecture, spend 3 hours to read the corresponding section from the text book
  - Do this on the same day the lecture is delivered
- For each 3 hours lab, spend 3 hours at home to practice the problems
  - Do this on the same day the lab is conducted

How to Get an 'F' Grade

- You know that already
- Non-seriousness is the most likely culprit
  - You have to show seriousness during the whole semester not during one week before (or after) the terminal exam

How to Get an 'F' Grade

- I do give 'F' grades (generously)
- I do give 'F' grades to students on probation
- I do give 0 out of 25 in internals, if you deserve
- I follow a nondiscrimination policy in grading
- Ask your seniors

Course Group

- I have created a Google group to disseminate the course-related news and notifications
- The group is "CIIT.OOP.Sp11" (ciitoopsp11@googlegroups.com).
- The group is public
- Please join the group at your earliest to keep in touch with the course proceedings

Final Comments

- For CS students, programming is perhaps the most valuable skill
- Programming is interesting
- Object-Oriented Programming is even more interesting
- Fasten your seat belts
- I hope this is going to be an exciting journey

Questions/Comments/Feedback

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