Object Oriented Programming

CEN 221
Course Description

• Classes, objects, inheritance, polymorphism, graphical user interfaces, event handling, exception handling, files and streams, multithreading.
Course Objectives

• Upon completion of the course, the student will be able to: Define and describe object, class, method, inheritance, polymorphism, and encapsulation, describe the use of object oriented analysis. This class focuses on object-oriented design of applications. We will be using the C# programming language as a tool for implementation and for building graphical user interfaces.
Course Outcomes

• An understanding of creating, designing, and implementing of classes.
• Mastering objects with methods and constructions
• Having knowledge of inheritance, static and abstract classes and interfaces
• The ability of exception handling
• Competence of implementing database in object oriented programming
Course Content

1. Course Introduction, an introduction to .NET development, Visual Studio IDE
2. Designing a form, introduction to coding, methods, events and properties.
3. Introduction to classes, methods, constructors, creating objects
4. Inheritance and overloading
5. Abstract classes, overriding
6. Methods and event handlers in C#
7. Exception Handling
8. Mid-term Examination
9. Arrays and Collections
10. ADO.NET
11. Datasources and Datasets
12. Bound controls and parameterized queries
13. ADO.NET data access code
14. Evaluation of Students Project
# Course Assessment

<table>
<thead>
<tr>
<th>Method</th>
<th>Quantity</th>
<th>Percentage (%)</th>
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<tbody>
<tr>
<td>Quiz</td>
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<td>15</td>
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<tr>
<td>Homework</td>
<td>4</td>
<td>10</td>
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<tr>
<td>Project</td>
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<td>20</td>
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<tr>
<td>Midterm Exam(s)</td>
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<td>15</td>
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<td>Final Exam</td>
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<td>40</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100</strong></td>
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Teaching Methods and TextBook

Teaching Methods
• Lectures,
• Practical Sessions,
• Presentation,
• Project,
• Assignments

Textbook
Fundamental of DBMS, 5th Edition, Elmastri/Navathe
What is OOP?

- **OOP** is a design philosophy
- It stands for Object Oriented Programming
- **Object-Oriented Programming (OOP)** uses a different set of programming languages than old procedural programming languages (C, Pascal, etc.).
- Everything in OOP is grouped as self sustainable "objects".
Windows Form Application

• WinForm app is a typical Windows application that runs on the user’s PC
• Each form in the application provides a user interface that lets the user interact with the application.
A Windows Form app running on the Windows desktop

![Calculate Investment](image)

- **Radio button**: Future value/Monthly investment
- **Label**: Monthly investment: 100
- **Label**: Yearly interest rate: 8
- **Label**: Number of years: 10
- **Label**: Future value: $18,416.57
- **Text box**
- **Button**: Calculate
- **Button**: Exit
Web Form Application

• Another type of app that you can develop with C#

• Web app consist of one or more web forms that can contain controls

• Web forms are accessed by and displayed in web browser
A Web Forms app running in a Web browser
Visual Studio IDE

• Regardless of the language that’s used, Visual Studio 2010 provides an Integrated Development Environment (IDE) that can be used for application development.

• Visual Studio also include .NET ("dot net") Framework that defines environment that executes Visual C# applications.
# Visual Studio 2010 Editions

<table>
<thead>
<tr>
<th>Edition</th>
<th>Description</th>
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<tbody>
<tr>
<td>Express Edition</td>
<td>A free, downloadable edition that supports just one of the Visual Studio programming languages shown below. It is appropriate for students and hobbyists. There is also an Express Edition of SQL Server called SQL Server 2008 Express.</td>
</tr>
<tr>
<td>Professional Edition</td>
<td>Designed for individual developers who want to build a wide variety of Windows, web, mobile and Office-based solutions.</td>
</tr>
<tr>
<td>Premium Edition</td>
<td>Designed for individuals and teams who want to build scalable applications and includes standard testing tools, database deployment and change-management tools, and basic lifecycle management tools.</td>
</tr>
<tr>
<td>Ultimate Edition</td>
<td>Designed for teams and includes full testing, modeling, database, and lifecycle management tools.</td>
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Visual Studio IDE