CS-23: Programming with C#.

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Unit 1: .NET Framework and Visual Studio IDE, Language Basics

1. **What is .NET Framework?**
   ➤ A Microsoft platform to develop and run applications using a unified programming model.

2. **What is CLR?**
   ➤ Common Language Runtime executes .NET programs and handles memory, security, and exceptions.

3. **What is CTS?**
   ➤ Common Type System defines how types are declared and ensures type safety across .NET languages.

4. **What is CLS?**
   ➤ Common Language Specification is a set of rules for .NET languages to work together smoothly.

5. **What is JIT Compiler?**
   ➤ JIT compiles MSIL code to machine code at runtime for faster execution.

6. **What is Managed Code?**
   ➤ Code that runs under CLR supervision, allowing features like garbage collection and security.

7. **What is Boxing?**
   ➤ Converting a value type to an object type, allowing it to be treated as reference.

8. **What is UnBoxing?**
   ➤ Retrieving the value type from the object after boxing.

9. **What is Visual Studio IDE?**
   ➤ A development environment used to write, debug, and build .NET applications.

10. **What are Value Types?**
    ➤ Types that store actual values directly, like int, float, and bool.

Unit 2: Class and Inheritance, Property, Indexer, Pointers, Delegates, Events, Collections

1. **What is a Class?**
   ➤ A blueprint to create objects containing properties and methods.

2. **What is Inheritance?**
   ➤ A concept where one class gets properties and behaviors of another class.

3. **What is Encapsulation?**
   ➤ Wrapping data and methods into one unit and controlling access using access specifiers.

4. **What is a Constructor?**
   ➤ A special method that gets automatically called when an object is created.

5. **What is a Property?**
   ➤ A member used to read, write, or compute values of private fields safely.

6. **What is an Indexer?**
   ➤ A special property that lets objects be accessed like arrays.

7. **What is a Delegate?**
   ➤ A reference type that holds reference to methods with a specific signature.

8. **What is Multicast Delegate?**
   - ➤ A delegate that can call multiple methods in a single invocation.

9. **What is a Sealed Class?**
   - ➤ A class that cannot be inherited by other classes.

10. **What is a Collection?**
    - ➤ A data structure used to store multiple elements like ArrayList, Stack, or Queue.

Unit 3: Windows Programming

1. **What is Windows Forms?**
   - ➤ A GUI-based application model used to build desktop apps in C#.

2. **What is a MessageBox?**
   - ➤ A pop-up dialog used to display messages and take simple user input.

3. **What is a Button Control?**
   - ➤ A clickable control used to trigger events in a form.

4. **What is ComboBox?**
   - ➤ A control that combines a drop-down list with an editable textbox.

5. **What is Event Handling?**
   - ➤ The process of responding to user actions like clicks or key presses.

6. **What is TreeView?**
   - ➤ A control that displays items in a hierarchical or tree-like structure.

7. **What is a Panel Control?**
   - ➤ A container used to group and organize other controls on a form.

8. **What is MDI Form?**
   - ➤ A form that acts as a container for multiple child windows or documents.

9. **What is a Timer?**
   - ➤ A control used to run code repeatedly at defined intervals.

10. **What are Dialog Boxes?**
    - ➤ Predefined windows like SaveFileDialog and OpenFileDialog used for file selection.

Unit 4: Database Programming with ADO.NET

1. **What is ADO.NET?**
   - ➤ A set of classes for accessing and manipulating databases in .NET applications.

2. **What is DataSet?**
   - ➤ An in-memory representation of data from a database that can hold multiple tables.

3. **What is DataAdapter?**
   - ➤ A component that connects DataSet to the database and handles data operations.

4. **What is DataReader?**
   - ➤ A forward-only, fast way to read data from a database.

5. **What is a Command Object?**
   - ➤ Executes SQL commands like SELECT, INSERT, and UPDATE in a database.

6. **What is Connected Architecture?**
   - ➤ A method where the connection remains open during the entire data operation.

7. **What is Disconnected Architecture?**
   - ➤ A method where data is retrieved, then connection is closed and used offline.

8. **What is DataRelation?**
   ➤ Represents a parent-child relationship between two tables in a DataSet.

9. **What is GridView?**
   ➤ A control used to display and manage tabular data in applications.

10. **What is Data Binding?**
    ➤ Linking data source to UI elements so changes are reflected automatically.

Unit 5: User Controls, Crystal Reports, Setup Project

1. **What is a User Control?**
   ➤ A custom reusable control made by combining multiple controls and logic.

2. **What is a Component?**
   ➤ A reusable class that provides non-visual functionality, like Timer or FileSystemWatcher.

3. **What is Crystal Report?**
   ➤ A reporting tool used for designing, generating, and displaying reports in .NET.

4. **What is a Report Section?**
   ➤ Different parts of a report like header, footer, and details to organize data.

5. **What is a Setup Project?**
   ➤ A project to package your application into an installer for easy deployment.

6. **What is FontDialog?**
   ➤ A dialog box that allows the user to select font styles and sizes.

7. **What is OpenFileDialog?**
   ➤ A dialog box that allows users to open files from their system.

8. **What is SaveFileDialog?**
   ➤ A dialog box that lets users save a file by choosing the path and name.

9. **What is an Event in User Controls?**
   ➤ A mechanism for controls to notify forms when something happens (like a click).

10. **What is a Method in User Control?**
    ➤ A block of code in a control that performs a specific task or function.

✅ Unit 1:

1. **CLR** – Common Language Runtime

2. **CLS** – Common Language Specification

3. **CTS** – Common Type System

4. **JIT** – Just-In-Time (Compiler)

5. **IDE** – Integrated Development Environment

6. **BCL** – Base Class Library

7. **FCL** – Framework Class Library

8. **MSIL** – Microsoft Intermediate Language

9. **IL** – Intermediate Language

10. **OOP** – Object Oriented Programming

✅ Unit 2:

1. **OOP** – Object Oriented Programming

2. **UI** – User Interface

3. **DLL** – Dynamic Link Library

4. **CPU** – Central Processing Unit

5. **RAM** – Random Access Memory

6. **IDE** – Integrated Development Environment

7. **CLR** – Common Language Runtime

8. **MVC** – Model View Controller

9. **API** – Application Programming Interface

10. **GUI** – Graphical User Interface

✅ Unit 3:

1. **UI** – User Interface

2. **MDI** – Multiple Document Interface

3. **SDI** – Single Document Interface

4. **IDE** – Integrated Development Environment

5. **DLL** – Dynamic Link Library

6. **RGB** – Red Green Blue (Color model)

7. **XAML** – Extensible Application Markup Language

8. **API** – Application Programming Interface

9. **OOP** – Object Oriented Programming

10. **GDI** – Graphics Device Interface

✅ Unit 4:

1. **ADO** – ActiveX Data Objects

2. **SQL** – Structured Query Language

3. **RDBMS** – Relational Database Management System

4. **DBMS** – Database Management System

5. **XML** – eXtensible Markup Language

6. **ODBC** – Open Database Connectivity

7. **OLEDB** – Object Linking and Embedding Database

8. **UI** – User Interface

9. **API** – Application Programming Interface

10. **CRUD** – Create, Read, Update, Delete

✅ Unit 5:

1. **UI** – User Interface

2. **UX** – User Experience

3. **DLL** – Dynamic Link Library

4. **CR** – Crystal Reports

5. **MSI** – Microsoft Installer

6. **MDI** – Multiple Document Interface

7. **EXE** – Executable File

8. **PDF** – Portable Document Format

9. **HTML** – HyperText Markup Language

10. **CSV** – Comma Separated Values

Fill-in-the-blank

✅ Unit 1:

1. The full form of CLR is _____.
   Common Language Runtime

2. The IDE commonly used in C# development is _____.
   Visual Studio

3. In C#, the execution of code is managed by the _____.
   CLR (Common Language Runtime)

4. The process of converting IL to machine code at runtime is called _____.
   Just-In-Time compilation

5. The _____ library contains predefined .NET classes.
   Framework Class Library (FCL)

6. The control structure used for decision making is _____.
   if-else

7. Boxing is converting a value type to _____ type.
   reference

8. CLS stands for _____.
   Common Language Specification

9. Arrays in C# can be one-dimensional, rectangular, or _____.
   jagged

10. _____ is used to hold metadata about code and components.
    Assembly

✅ Unit 2:

1. The concept of wrapping data and methods together is called _____.
   Encapsulation

2. Inheritance supports code _____ from one class to another.
   reusability

3. _____ are special methods used to initialize objects.
   Constructors

4. The process of having the same method name but different parameters is called _____.
   Method Overloading

5. A method with the same signature in the base and derived class is called _____.
   Overriding

6. Indexers are defined using the keyword _____.
   this

7. Sealed classes cannot be _____.
   inherited

8. Delegates are used to hold reference of a _____.
   method

9. Events use delegates to implement _____ programming.
   event-driven

10. _____ allows treating multiple methods as a single unit.
    Multicasting delegate

✅ Unit 3:

1. The class used to display pop-up messages is _____.
   MessageBox

2. A graphical interface is also called a _____ interface.
   User

3. To create a graphical interface, C# uses _____ Forms.
   Windows

4. Controls like Button, TextBox, etc., are also known as _____ controls.
   Windows

5. To group UI elements visually, we use _____ or GroupBox.
   Panel

6. A _____ control is used for vertical or horizontal navigation.
   Scrollbar

7. The _____ control allows selection of multiple items.
   ListBox

8. The _____ menu displays options when you right-click.
   ContextMenuStrip

9. The _____ dialog box is used to choose files for opening.
   OpenFileDialog

10. MDI stands for _____.
    Multiple Document Interface

✅ Unit 4:

1. ADO.NET stands for _____.
   ActiveX Data Objects .NET

2. A _____ provides connection between application and database.
   Connection object

3. _____ architecture maintains a continuous link with the database.
   Connected

4. _____ is used to fetch data in connected architecture.
   DataReader

5. A dataset in disconnected architecture holds _____.
   multiple tables

6. The class used for binding data is called _____.
   DataAdapter

7. CRUD stands for Create, Read, Update, and _____.
   Delete

8. SQL is used for managing _____ databases.
   relational

9. The _____ control is used to view database records in a grid.
   GridView

10. In ADO.NET, _____ helps map columns in memory.
    DataColumn

✅ Unit 5:

1. A reusable UI component in C# is called a _____.
   User Control

2. A special type of report used in .NET is _____.
   Crystal Report

3. The property section of a report includes _____ and summary.
   formula

4. A _____ file is generated to install your application.
   Setup Project

5. Reports are divided into sections like Header, Detail, and _____.
   Footer

6. The user control includes methods, events, and _____.
   properties

7. To display formatted data in reports, we use _____ sections.
   Report

8. A component is added to the toolbox from _____ menu.
   Project

9. The final output of a setup project is an _____ file.
   EXE

10. Crystal Reports allow you to pull data from a _____ source.
    database