# C# and ADO.Net Contents

## I. .Net Framework Fundamentals

1. Introduction to .Net Framework
2. Main Components of .Net Framework
3. Understanding Common Type System
4. Common Language Runtime (CLR)
5. Components of CLR and Roles
6. Garbage Collection
7. Managed VS Unmanaged code
8. Understanding Just-in time Compilation
9. Difference between .NET Exe File and Other Exe, DLL Description
10. Overview of the .NET-Based Languages
11. .Net Program Execution
12. ILDASM and ILASM
13. Strong Naming Assembly
14. What is GAC
15. How and When to install assembly into GAC
16. How .Net finds assemblies during program execution
17. DLL hell
18. DLL hell Solved

## II Using Microsoft Visual Studio 2015

1. Overview of Visual Studio-2015 IDE features
2. Property windows
3. Tool box
4. Solution Explorer
5. Server Explorer
6. Object Browser
7. Edit Browser
8. Different Application templates available in Visual studio-2015

## III. C# Programming Language

1. Introduction to C#
2. Structure of a C# Program
3. Basic Input/Output Operations
4. Commenting a program
5. Recommended Practices
6. Reading and Writing to a Console
7. Built-in Data Types
8. implicitly typed local variables
9. Naming Variables

10. Best Practices for Naming Conventions
11. String type in C#
12. Common Operators in C#
13. Nullable Types
14. Data type conversions
15. User Defined Data types
16. value types VS reference types
17. Type Casting
18. Implementing Implicit and Explicit Operator for Type Conversion
19. Boxing and Unboxing Data types
20. Arrays in C#
21. Statements in C#
22. if Statements
23. switch Statements
24. while loop
25. do-while loop
26. for loop
27. foreach loop
28. Jump statements
29. Methods in C#
30. Method Parameters
31. param keyword
32. ref parameters
33. out parameters
34. Namespaces in C#
35. Object Orientation using C#
36. Introduction to classes
37. static and instance class members
38. inheritance in C#
39. Method hiding in C#
40. Polymorphism in C#
41. Difference between method overriding and method overloading
42. Method overloading in C#
43. Virtual methods and abtract methods
44. Properties in C#
45. Data fields
46. Encapsulation via properties
47. Auto implemented properties
48. Creating objects in C#
49. creating objects using constructors
50. creating objects using initializer list
51. Objects and Memory
52. using Destructors
53. Destroying objects

54. programming for Garbage collector
55. implementing IDisposible interface
56. structs in C#
57. Difference between structs and classes
58. interfaces
59. Explicit interface implementation
60. Abstract classes
61. Differences between abstract classes and interfaces
62. Problems multiple class inheritance
63. Multiple inheritance using interfaces
64. const and readonly key words
65. Operator overloading in C#
66. static classes
67. using base keyword
68. sealed class and sealed methods
69. Delegates in C#
70. delegate usage
71. Multicast delegates
72. Exception handling
73. inner exceptions
74. Custom exceptions
75. Exception handling abuse
76. Preventing exception handling abuse
77. Enums and why enums
78. Difference between types and type members
79. Access modifiers in C#
80. internal and protected internal access modifiers
81. Access modifiers for types
82. Attributes
83. Reflection
84. Late binding using reflection
85. Anonymous types
86. Extension methods
87. Generics
88. Why should we override ToString() method
89. Why should we override Equals() method
90. Difference between Convert.ToString() and ToString()
91. String vs StringBuilder
92. Partial classes
93. Partial methods
94. Indexers
95. Overloading Indexers
96. Optional parameters in C#
97. Making method parameters optional by specifying defaults

98. Making method parameters optional by using OptionalAttribute
99. Code snippets in VS
100. Collections in C#
101. Dictionary
102. List
103. working with Generic List class and ranges in C#
104. Sort a list of Simple type
105. Sort a list of complex type
106. Sort a list of Complex type using Comparision delegate
107. Some useful methods of List collection class
108. When to use Dictionary over List
109. Generic Queue collection class
110. Generic Stack collection class
111. Real time examples of Queue collection and stack collection classes
112. Multithreading in C#
113. Advantages and Disadvantages of multithreading
114. ThreadStart Delegate
115. ParameterizedThreadStart delegate
116. Passing data to the thread function in a type safe manner
117. Retrieving data from Thread function using callback method
118. Significance of Thread Join and Thread IsAlive functions
119. Protecting Shared resources from concurrent access in multithreading
120. Difference between Monitor and lock in C#
121. Deadlock in a multithreaded program
122. How to resolve deadlock in a multithreaded program
123. anonymous methods in C#
124. Lambda expressions in C#
125. Func delegate in C#
126. Async and await in C#
127. wait for thread to finish without blocking
128. File Handling
129. FileSystemInfo base class
130. FileInfo class and members
131. Streams
132. Reader/Writer
133. basic file IO
134. Serialization and Deserialization
135. Introduction to LINQ
136. The Role and Scope of LINQ
137. Core LINQ Assemblies/namespaces/Project types
138. Examining LINQ Query operators
139. The Query Operator-LINQ type relationship
140. Building LINQ Query expressions
141. LINQ to Objects

142. LINQ to DataSet
143. LINQ to XML
144. LINQ to SQL
145. Inter process communication using C#
146. Implementing Socket programming in C#
147. Implementing Pipes in C#

---

## I. ADO.Net

1. What is ADO.Net
2. SqlConnection
3. Connection String
4. SqlCommand
5. Sql Injection
6. Sql injection prevention
7. Calling Strored procedure with output Parameters
8. SqlReader
9. SqlReader object's NextResult() method
10. SqlAdapter in ADO.Net
11. DataSet in Ado.Net
12. SqlCommandBuilder
13. Disconnected Data access
14. DataSet RejectChanges() and AcceptChanges()
15. Strongly typed DataSet
16. Load XML Data into SqlServer table using SqlBulkCopy
17. Copying data from one table to another table using SqlBulkCopy
18. Transaction in Ado.Net