

Suggestive List of Programs for C# programming

LEVEL 1: C# Basics & Core Programming (1–50)

(Syntax, logic building, console apps)

1. Hello World using C#
2. Program to display user details
3. Program to add two numbers
4. Program to find maximum of two numbers
5. Program to check even or odd number
6. Program to check positive or negative number
7. Program to calculate simple interest
8. Program to calculate compound interest
9. Program to find largest of three numbers
10. Program to swap two numbers
11. Program to find factorial of a number
12. Program to generate Fibonacci series
13. Program to reverse a number
14. Program to check palindrome number
15. Program to check Armstrong number
16. Program to find sum of digits
17. Program to count digits in a number
18. Program to print multiplication table
19. Program to print prime numbers in a range
20. Program to check prime number
21. Program to find GCD and LCM
22. Program to convert Celsius to Fahrenheit
23. Program to calculate area of circle
24. Program to calculate area of rectangle
25. Program to print ASCII value of a character
26. Program to demonstrate type casting
27. Program to demonstrate constants and readonly
28. Program to demonstrate operators
29. Program to demonstrate conditional statements
30. Program to demonstrate switch-case
31. Program to demonstrate for loop
32. Program to demonstrate while loop
33. Program to demonstrate do-while loop
34. Program to demonstrate break and continue
35. Program to print pattern (stars)
36. Program to generate random numbers
37. Program to find power of a number
38. Program to calculate grade of student
39. Program to calculate salary with allowances
40. Program to find sum of natural numbers

41. Program to check leap year
 42. Program to convert days into years, months, days
 43. Program to demonstrate nullable types
 44. Program to demonstrate var and dynamic
 45. Program to demonstrate enum
 46. Program to demonstrate struct
 47. Program to demonstrate tuples
 48. Program to demonstrate string interpolation
 49. Program to demonstrate Math class
 50. Program to demonstrate DateTime class
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LEVEL 2: Arrays, Strings & Methods **(51–100)**

(Problem solving, reusability)

51. Program to read and display array elements
52. Program to find sum and average of array
53. Program to find largest and smallest element in array
54. Program to sort array elements
55. Program to reverse an array
56. Program to merge two arrays
57. Program to remove duplicate elements from array
58. Program to search an element in array
59. Program to perform matrix addition
60. Program to perform matrix multiplication
61. Program to find transpose of matrix
62. Program to count vowels in a string
63. Program to reverse a string
64. Program to check palindrome string
65. Program to count words in a string
66. Program to find frequency of characters
67. Program to remove white spaces from string
68. Program to replace substring in string
69. Program to demonstrate StringBuilder
70. Program to compare strings
71. Program to demonstrate methods with parameters
72. Program to demonstrate method overloading
73. Program to demonstrate recursion
74. Program to generate Fibonacci using recursion
75. Program to calculate factorial using recursion
76. Program to demonstrate out and ref keywords
77. Program to demonstrate params keyword
78. Program to demonstrate optional parameters
79. Program to demonstrate named arguments
80. Program to demonstrate static methods

81. Program to demonstrate passing array to method
 82. Program to find second largest element in array
 83. Program to split string into words
 84. Program to check anagram strings
 85. Program to remove special characters from string
 86. Program to convert string to uppercase/lowercase
 87. Program to validate email format
 88. Program to validate password strength
 89. Program to demonstrate regular expressions
 90. Program to demonstrate indexers
 91. Program to demonstrate jagged arrays
 92. Program to demonstrate multidimensional arrays
 93. Program to demonstrate string formatting
 94. Program to find common elements in two arrays
 95. Program to find missing number in array
 96. Program to find duplicate elements in array
 97. Program to demonstrate Span and ReadOnlySpan
 98. Program to demonstrate value vs reference types
 99. Program to demonstrate immutability of strings
 100. Program to demonstrate memory management basics
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LEVEL 3: OOPs & Advanced C# (101–150)

(Industry-critical concepts)

101. Program to demonstrate class and object
102. Program to demonstrate constructor
103. Program to demonstrate destructor
104. Program to demonstrate inheritance
105. Program to demonstrate method overriding
106. Program to demonstrate polymorphism
107. Program to demonstrate abstraction
108. Program to demonstrate interfaces
109. Program to demonstrate multiple inheritance using interface
110. Program to demonstrate encapsulation
111. Program to demonstrate access specifiers
112. Program to demonstrate readonly vs const
113. Program to demonstrate static class
114. Program to demonstrate sealed class
115. Program to demonstrate partial class
116. Program to demonstrate virtual and override
117. Program to demonstrate abstract class vs interface
118. Program to demonstrate dependency injection (basic)
119. Program to demonstrate SOLID principles (examples)
120. Program to demonstrate exception handling

- 121. Program to create custom exception
- 122. Program to demonstrate try-catch-finally
- 123. Program to demonstrate throwing exceptions
- 124. Program to demonstrate collections (ArrayList)
- 125. Program to demonstrate collections (List)
- 126. Program to demonstrate Dictionary
- 127. Program to demonstrate Stack and Queue
- 128. Program to demonstrate HashSet
- 129. Program to demonstrate LINQ (Where, Select)
- 130. Program to demonstrate LINQ (GroupBy)
- 131. Program to demonstrate LINQ (Join)
- 132. Program to demonstrate LINQ (Aggregate)
- 133. Program to demonstrate lambda expressions
- 134. Program to demonstrate delegates
- 135. Program to demonstrate multicast delegates
- 136. Program to demonstrate events
- 137. Program to demonstrate Func, Action, Predicate
- 138. Program to demonstrate anonymous methods
- 139. Program to demonstrate extension methods
- 140. Program to demonstrate generics
- 141. Program to demonstrate generic constraints
- 142. Program to demonstrate async and await
- 143. Program to demonstrate multithreading
- 144. Program to demonstrate Task Parallel Library (TPL)
- 145. Program to demonstrate locking and synchronization
- 146. Program to demonstrate file handling
- 147. Program to demonstrate serialization (JSON)
- 148. Program to demonstrate reflection
- 149. Program to demonstrate attributes
- 150. Program to demonstrate performance optimization basics

LEVEL 4: Enterprise, .NET & Real-World Programs (151–200)

(Job-ready skills)

- 151. Console-based Student Management System
- 152. Console-based Library Management System
- 153. Console-based Banking System
- 154. Console-based Employee Payroll System
- 155. Console-based Inventory Management System
- 156. File-based CRUD application
- 157. Database CRUD using ADO.NET
- 158. CRUD using Entity Framework Core
- 159. Console-based Mini ERP System
- 160. Role-based Authentication System

161. Logging system using Serilog
162. Configuration management using appsettings.json
163. Dependency Injection in Console App
164. Unit Testing using xUnit
165. Unit Testing using NUnit
166. Mocking using Moq
167. API Consumption using HttpClient
168. REST API using ASP.NET Core (Basic)
169. REST API with JWT Authentication
170. REST API with Role-based Authorization
171. Exception Handling Middleware
172. REST API with Swagger Documentation
173. REST API with Entity Framework Core
174. REST API with Caching (Redis)
175. REST API with Rate Limiting
176. REST API with Pagination and Filtering
177. REST API with File Upload/Download
178. Background Worker using Hosted Services
179. Message Queue using RabbitMQ (Basic)
180. Real-time Communication using SignalR
181. Microservices Communication (Basic)
182. Dockerize .NET Application
183. CI/CD Pipeline for .NET using GitHub Actions
184. Cloud Deployment on Azure App Service
185. Azure SQL Integration with .NET
186. Azure Blob Storage Integration
187. Azure Key Vault Integration
188. Application Performance Monitoring
189. Secure Password Hashing
190. OAuth Integration (Google/Microsoft)
191. Identity Server Implementation
192. Multi-tenant Application (Basic)
193. Clean Architecture Implementation
194. CQRS Pattern Implementation
195. Event-driven Architecture (Basic)
196. High-performance API Design
197. Secure Coding Practices in C#
198. Production-grade Logging & Monitoring
199. Enterprise Exception Handling Strategy
200. End-to-End .NET Application Deployment

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