

Language Map for C#

Variable Declaration <i>Is this language strongly typed or dynamically typed? Provide at least three examples (with different data types or keywords) of how variables are declared in this language.</i>	C# is strongly typed. string example = "Words"; int num = 131; bool aBool = true;
Data Types <i>List all of the data types (and ranges) supported by this language.</i>	int : -2,147,483,648 to 2,147,483,647 long : -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 float : 6 to 7 decimal digits double : 15 decimal digits bool : true or false char : single character/letter string : sequence of characters
Selection Structures <i>Provide examples of all selection structures supported by this language (if, if else, etc.) Don't just list them, show code samples of how each would look in a real program.</i>	Selection: if, else, switch, case if (totalCholesterol >= 240) { Console.WriteLine("Dangerous"); } else { Console.WriteLine("Okay"); } { case 90: Console.WriteLine("90."); break; case 60: Console.WriteLine("60."); break; default: Console.WriteLine("Please try again."); break; }

Iteration:

do, for, foreach, while

```
do
{
    Console.WriteLine("Roll again.");
} while (variable <= 100);

for (int number = 1; number <= 10; number++)
{
    Console.WriteLine("Another Try!");
}
foreach (int number in anArray)
{
    Console.WriteLine(number);
}

while (number < 200)
{
    Console.WriteLine("Great job.");
}
```

Jump:

break, continue, return, goto

continue:

```
int i =0;
while (i < 5)
{
    if (i == 3)
    {
        i++;
        continue; }
    Console.WriteLine(i);
    i++; }
result: 0 1 2 4
```

	<pre> goto/break: int number = 20; switch (number) { case 30: Console.WriteLine("30"); break; case 20: Console.WriteLine("case 20"); break; case 50: Console.WriteLine("50"); goto case 30; default: Console.WriteLine("Try Again."); } result: 20 30 return: public static int returnNumber(int a) { int x = a; return x; } </pre>
<p>Repetition Structures</p> <p><i>Provide examples of all repetition structures supported by this language (loops, etc.) Don't just list them, show code samples of how each would look in a real program.</i></p>	<pre> For Loop: for (int i = 0; i <= 10; i++) { Console.WriteLine(i); } While Loop: int i = 0; while (i <= 10) { Console.WriteLine(i); i++; } </pre>

	<pre>} Do While Loop int i = 0; do { Console.WriteLine(i); i++; } while (i <= 10;) For Each int [] nums = {0, 1, 2, ,3, 4, ,5, 6, 7, 8, 9, 10} for each (int number in nums) { System.Console.WriteLine(number); }</pre>												
Arrays <i>If this language supports arrays, provide at least two examples of creating an array with a primitive or String data types (e.g. float, int, String, etc.) If the language supports declaring arrays in multiple ways, provide an example of way.</i>	<pre>string[] names = {"David", "Brenda", "Christian", "Daniela"}; int[] nums =new string[4] {84, 17, 63, 47}; int[] nums =new string[] {84, 17, 63, 47};</pre>												
Data Structures <i>If this language provides a standard set of data structures, provide a list of the data structures and their Big-Oh complexity (identify what the complexity represents).</i>	<div>Stack</div> <table><tr><td></td><td>Linked List</td><td>Array</td></tr><tr><td>push</td><td>O(1)</td><td>O(n)</td></tr><tr><td>pop</td><td>O(1)</td><td>O(n)</td></tr><tr><td>peek</td><td>O(1)</td><td>O(1)</td></tr></table> <div>Queue</div>		Linked List	Array	push	O(1)	O(n)	pop	O(1)	O(n)	peek	O(1)	O(1)
	Linked List	Array											
push	O(1)	O(n)											
pop	O(1)	O(n)											
peek	O(1)	O(1)											

		Linked List	Deque	
	enqueue	O(1)	O(1)	
	front (front/tail)	O(1)	O(1)	
	dequeue	O(1)	O(1)	
	Sets			
		Hash Table	Unordered LL	Ordered LL
	Insert	O(1)	O(1)	O(n)
	Delete	O(1)	O(1)	O(1)
	Search	O(1)	O(n)	O(log n)

Objects <i>If this language support object-orientation, provide an example of how you would write a simple object with a default constructor and then how you would instantiate it.</i>	<pre>class Example { public string name; public int number; } class Application { static void Main() { Example example = new Example(); } }</pre>
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Runtime Environment <i>What runtime environment does this language compile to? For example, Java compiles to the Java Virtual Machine. Do other languages also compile to this runtime? If so, what these other languages?</i>	<p>. NET Core runtime environment Yes C#, F#, and Visual Basic</p>
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<p>Libraries/Frameworks</p> <p><i>What are the popular libraries or frameworks used by programmers for this language? List at least three (3) and describe what they are used for.</i></p>	<p>Azure Cloud Development - allows you to use azures cloud services PsDotNet - allows you to automate tasks inside of Adobe Photoshop ASP - utilized for making web pages</p>
<p>Domains</p> <p><i>What industries or domains use this programming language? Provide at least three specific examples of companies that use this language and what they use it for. E.g. Company X uses C# for its line of business applications.</i></p>	<p>Ubisoft utilize C# in Unity, which is one of the two popular game engines. Windows applications are created utilizing C# (C# was made by Windows). Boeing utilizes C# in some of their flight applications</p>