Language Map for C#

Variable Declaration
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.
	C# is strongly typed. Declarations can be written as follows:
	int z = 5;
	float y;
	int x = z + 6;

Data Types *List all of the data types (and ranges) supported by this language.*	byte, 0 to 2^8 -1 short, -2^15 to 2^15 -1 int, -2^31 to 2^31 -1 long, -2^63 to 2^63 -1 float, -3.402…e38 to 3.402…e38 double, -1.797…e308 to 1.797…e308 decimal, $\pm 1.0 \times 10^{-28}$ to $\pm 7.9228 \times 10^{28}$ char, Unicode characters from U +0000 to U +ffff bool, True or False string, a sequence of Unicode characters. object, the base class for all user-made object types

Selection Structures
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.***
	-If statements:
	`if (x<5)`
	`{`
	`  Console.WriteLine(truestring);`
	`}`
	
	-Else-if statements:
	`if (x<5)`
	`{`
	`  Console.WriteLine(smallString);`
	`}`
	`else if (x>10)`
	`{`
	`  Console.WriteLine(largeString);`
	`}`
	
	-Switch statements:

	switch(x) { case < 1: Console.WriteLine(“less than 1”); break; case = 1: Console.WriteLine(“equal to 1”); break; case < 1: Console.WriteLine(“greater than 1”); break;

Repetition Structures
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.***
	-For:
	for (int i=0; i<5; i++)
	{
	Console.WriteLine(i);
	}
	
	-Foreach:
	foreach (int element in numList)
	{
	Console.WriteLine(element);
	}
	
	-Do and while loops (both operate the same, but check the condition at different times. Do checks after the loop is complete, whereas while checks before running the loop. This means while loops can run zero times, but do loops must run at least once.)
	
	do
	{
	count++;
	}
	while (count < 5);
	
	while (count < 5);
	{
	count++;
	}

Arrays	Yes, C# supports arrays.

*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.*	int[] nums = {1, 2, 3, 5, 6, 9, 406, 4}; string[] stringArray = new string[3];
Data Structures *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).*	C# has the following standard Data Structures: Dictionaries – O(1) for adding, removing, and searching. Lists – O(1) for adding, O(n) for searching. Queues – O(1) for indexing, adding, and removing elements. Stacks – O(1) for indexing, adding, and removing elements. LinkedLists – O(n) for indexing and searching, O(1) for insertion and deletion.

Objects
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.
	C# is an object oriented language.
	Lets consider a class ObjectB:
	
	Constructor:
	
	private int uInt;
	private string n;
	public ObjectB(int usefulInt, string name)
	{
	uInt = usefulInt;
	n = name;
	}
	
	To instantiate:
	
	ObjectB b = new ObjectB(6,”Bob”);

Runtime Environment *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?*	C# compiles to .NET CORE runtime environment. F# and Visual Basic also compile to .NET CORE. .NET CORE is designed by Microsoft, which is why all three of these languages use it, as they are all created and maintained by Microsoft.
Libraries/Frameworks *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.*	Dapper is a simple object mapper that is useful for database management - utilizing SQL queries, for example. Polly is a general exception handling library. It handles most common error types and provides various other policies.

	Newtonsoft.Json is a library to help work with JSON files, which are notorious for being difficult to handle.
Domains *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.***	Of course, as C# is a Microsoft creation, so Microsoft uses C# for many of its day to day operations. Stack Overflow, a website designed to be a question and answer forum for all things tech and more, also uses C# for its backend. City National Bank also uses C# but for cloud based services, rather than their general applications.