What are Variables in C#?

In C#, a **variable** is a storage location identified by a name that holds a value. Variables are used to store data that can be used and manipulated throughout the program. Each variable has a data type that determines the kind of data it can hold, such as integers, floating-point numbers, strings, or custom objects.

Declaring and Initializing Variables

- **Declaring a Variable**: This involves specifying the data type and the name of the variable. Declaring a variable tells the compiler what kind of data the variable will hold.
- **Initializing a Variable**: This involves assigning a value to the variable at the time of declaration or later in the code. Initialization sets the initial value of the variable.

Syntax

1. **Declaration**:

   csharp
   Copy code
   ```
   dataType variableName;
   ```

2. **Initialization**:

   csharp
   Copy code
   ```
   variableName = value;
   ```

3. **Declaration and Initialization Together**:

   csharp
   Copy code
   ```
   dataType variableName = value;
   ```

Example of Declaring and Initializing Variables in C#

Here's a simple example that demonstrates how to declare and initialize variables in C#:

```
using System;
class Program
{
    static void Main(string[] args)
    {
        // Declaring and initializing variables
        int age = 30;           // Integer variable
        double height = 5.9;        // Double-precision floating-point variable
        string name = "Alice";      // String variable
        bool isStudent = true;      // Boolean variable

        // Displaying the values of the variables
        Console.WriteLine($"Name: {name}");
        Console.WriteLine($"Age: {age}");
        Console.WriteLine($"Height: {height} meters");
        Console.WriteLine($"Is a student: {isStudent}");

        // Changing the value of a variable
        age = 31;  // Updating the value of the 'age' variable
        Console.WriteLine($"Updated Age: {age}");
    }
}
```

Explanation:

1. **Declaration and Initialization**:
   - int age = 30; declares an integer variable named age and initializes it with the value 30.
   - double height = 5.9; declares a double variable named height and initializes it with the value 5.9.
   - string name = "Alice"; declares a string variable named name and initializes it with the value "Alice".
   - bool isStudent = true; declares a boolean variable named isStudent and initializes it with the value true.

2. **Displaying Values**:
   - The Console.WriteLine method is used to print the values of the variables to the console.

3. **Updating a Variable**:
   - The value of `age