

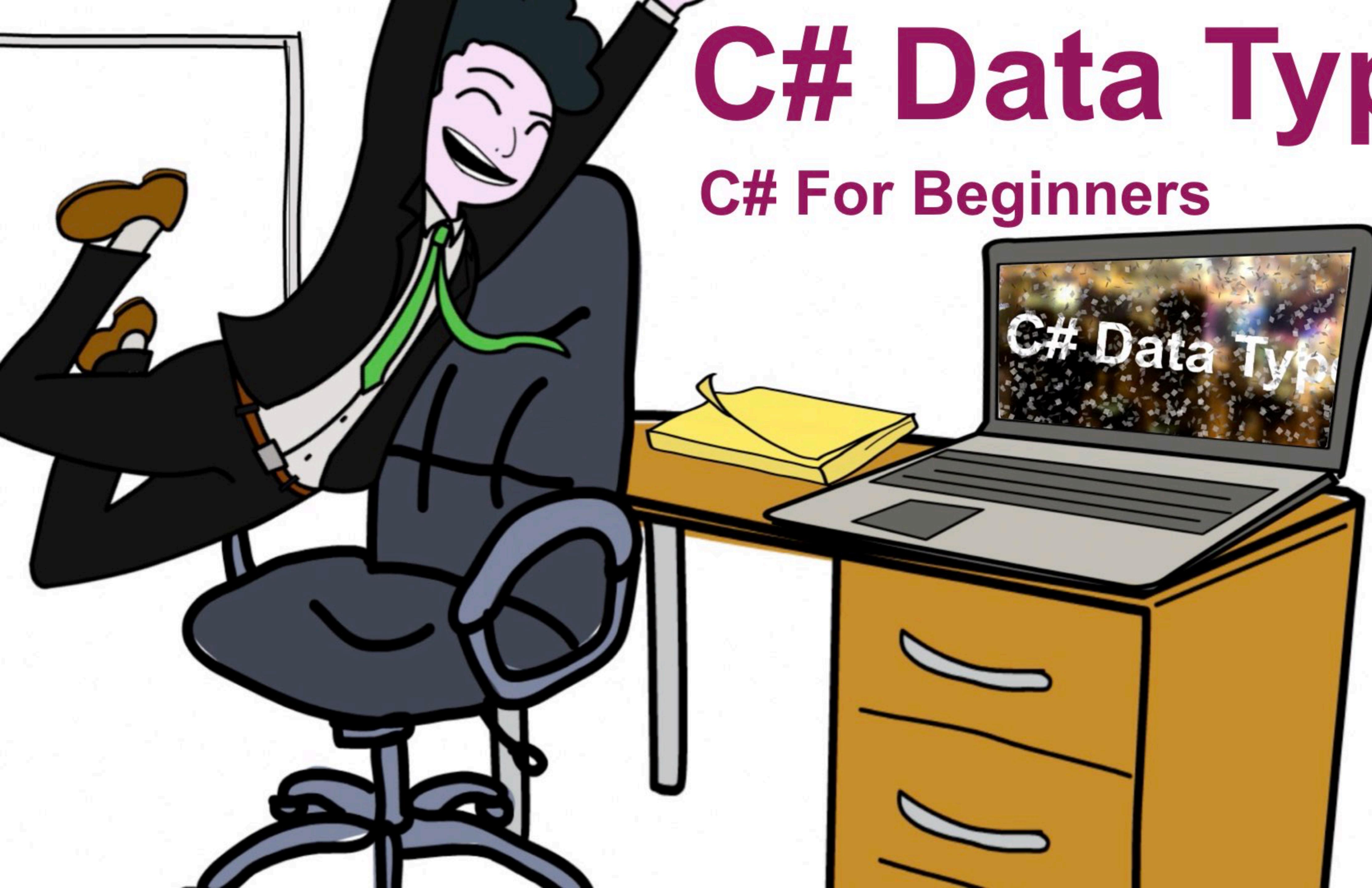


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C# Data Types Documentation

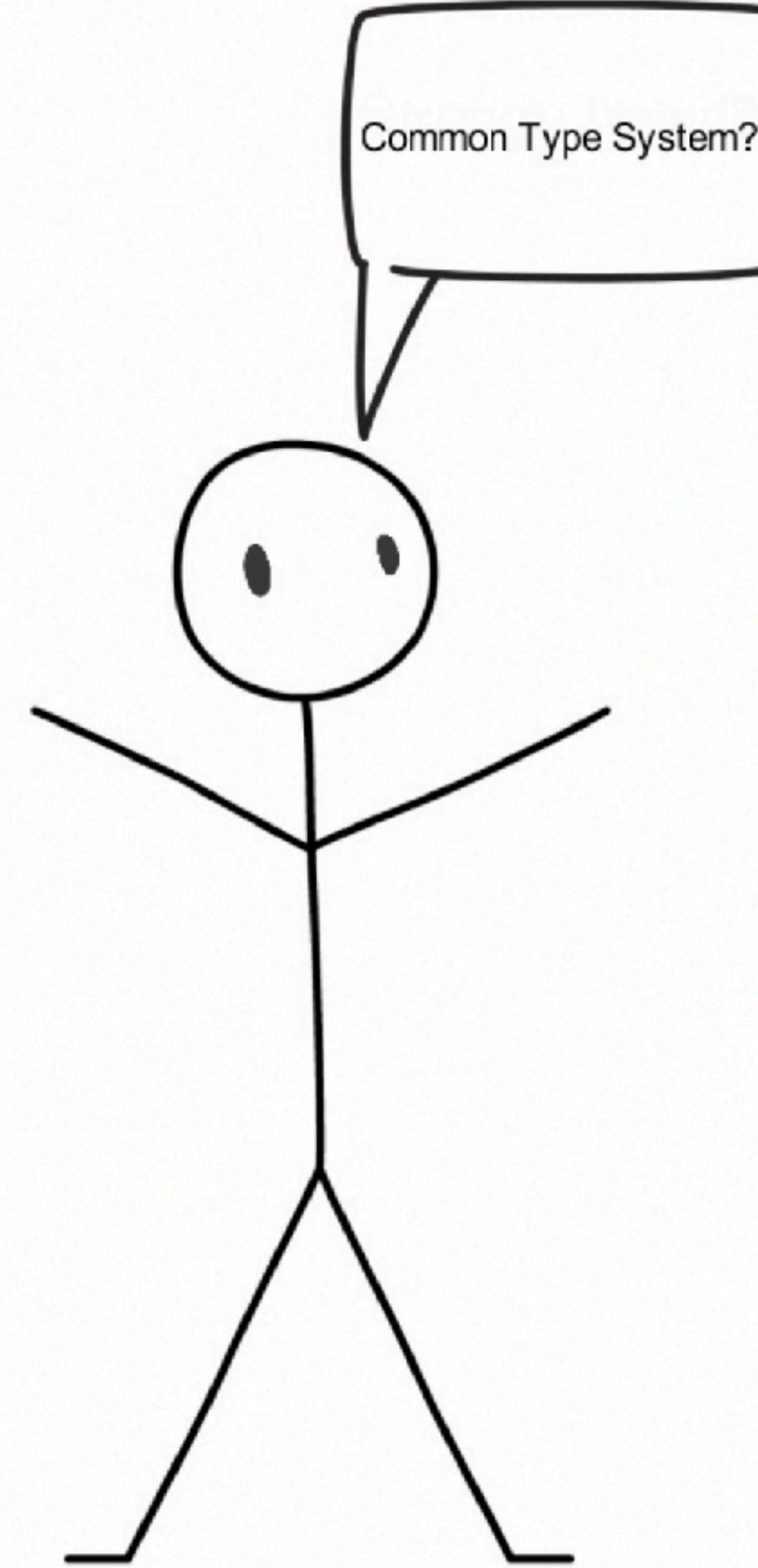
C# Data Types

C# For Beginners



Data types define the rules associated with the operations that can be done on the data.

Data types define the meaning of the data, the way values of data types can be stored in computer memory.



C# is a strongly typed programming language and C# data types run within a type system known as the "Common Type System".

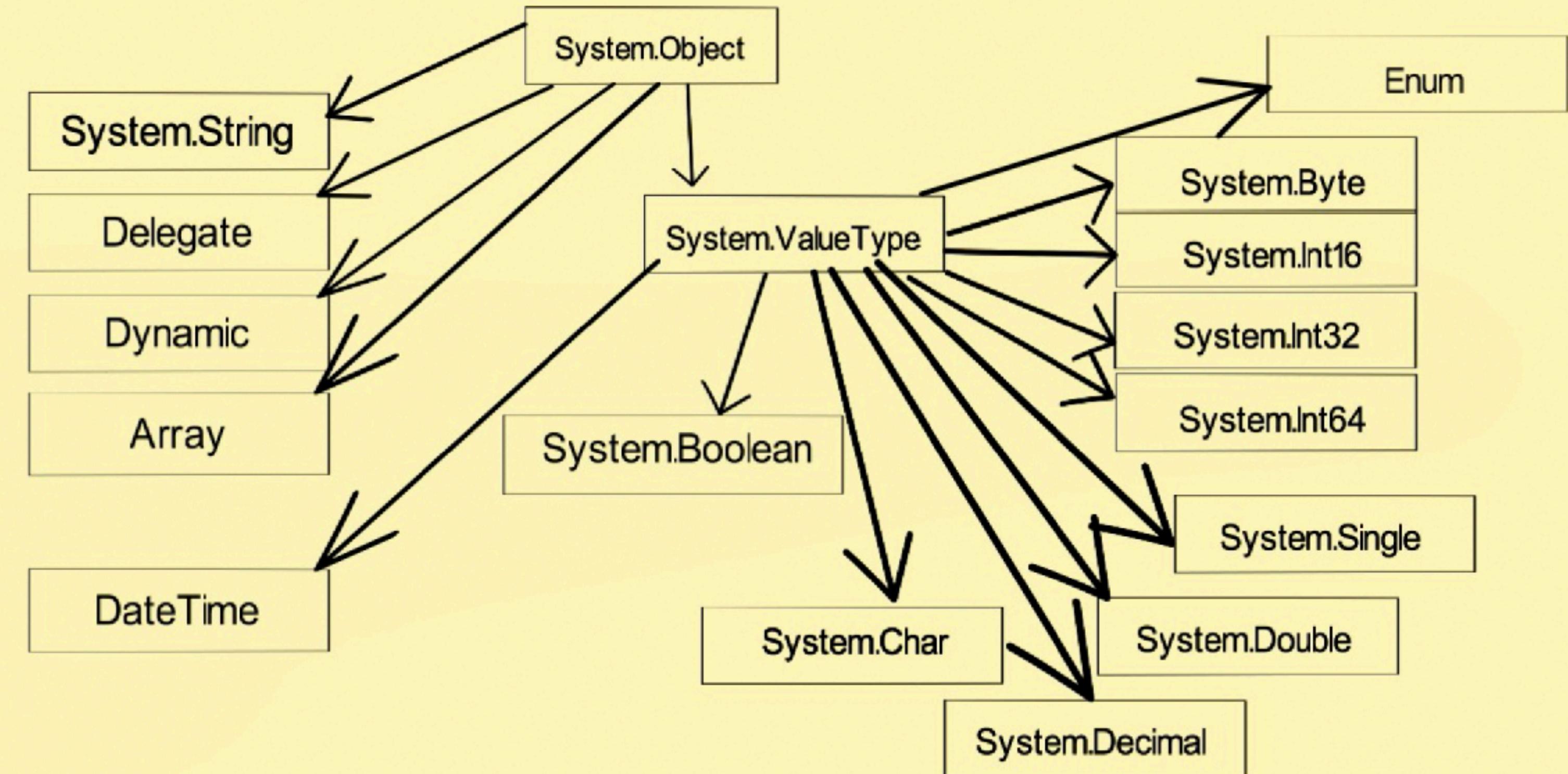
A strongly typed programming language like C# is one in which each type of data (such as integer, character, decimal, string, boolean and so forth) is predefined.

All constants or variables defined for a given program must be described with one of the data types.

In this strongly typed programming language type related errors can be pre-empted at compile time if data type related code is deemed as not compliant with the rules defined in the "Common Type System".

The "Common Type System" provides a standard that specifies type definitions and how specific values of types are represented in computer memory.

Type	C# Keyword	.Net Type	Range	Size	Precision
Value Types					
Byte	byte	System.Byte	0 to 255	Unsigned 8 bit integer	
sByte	sbyte	System.SByte	-128 to 127	Signed 8 bit Integer	
Short Integer	short	System.Int16	-32,768 to 32,767	Singed 16 bit Integer	
uShort	ushort	System.UInt16	0 to 65,535	Unsigned 16 bit Integer	
Integer	int	System.Int32	-2,147,483,648 to 2,147,483,647	Signed 32 bit Integer	
uInt		System.UInt32	0 to 4,294,967,295	Unsigned 32 bit Integer	
Long Integer	long	System.Int64	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807	Signed 64 bit Integer	
uLong		System.UInt64	0 to 18,446,744,073,709,551,615	Unsigned 64 bit Integer	
Float	float	System.Single	$\pm 1.5 \times 10^{-45}$ to $\pm 3.4 \times 10^{38}$	32 bit floating point value	~6-9 digits
Double	double	System.Double	$\pm 5.0 \times 10^{-324}$ to $\pm 1.7 \times 10^{308}$	64 bit floating point value	~15-17 digits
Decimal	decimal	System.Decimal	$\pm 1.0 \times 10^{-28}$ to $\pm 7.9228 \times 10^{28}$	128 floating point value	28-29 significant digits
Boolean	bool	System.Boolean	true/false	8 bits	
Character	char	System.Char		16 bit unicode value	
Enum	enum				
Struct	struct				
Datetime	datetime	System.DateTime		64 bit Integer	
Reference Types					
String	string	System.String			
Object	object	System.Object			
Dynamic	dynamic				
Delegate	delegate				
Class	class				
Array	Array				

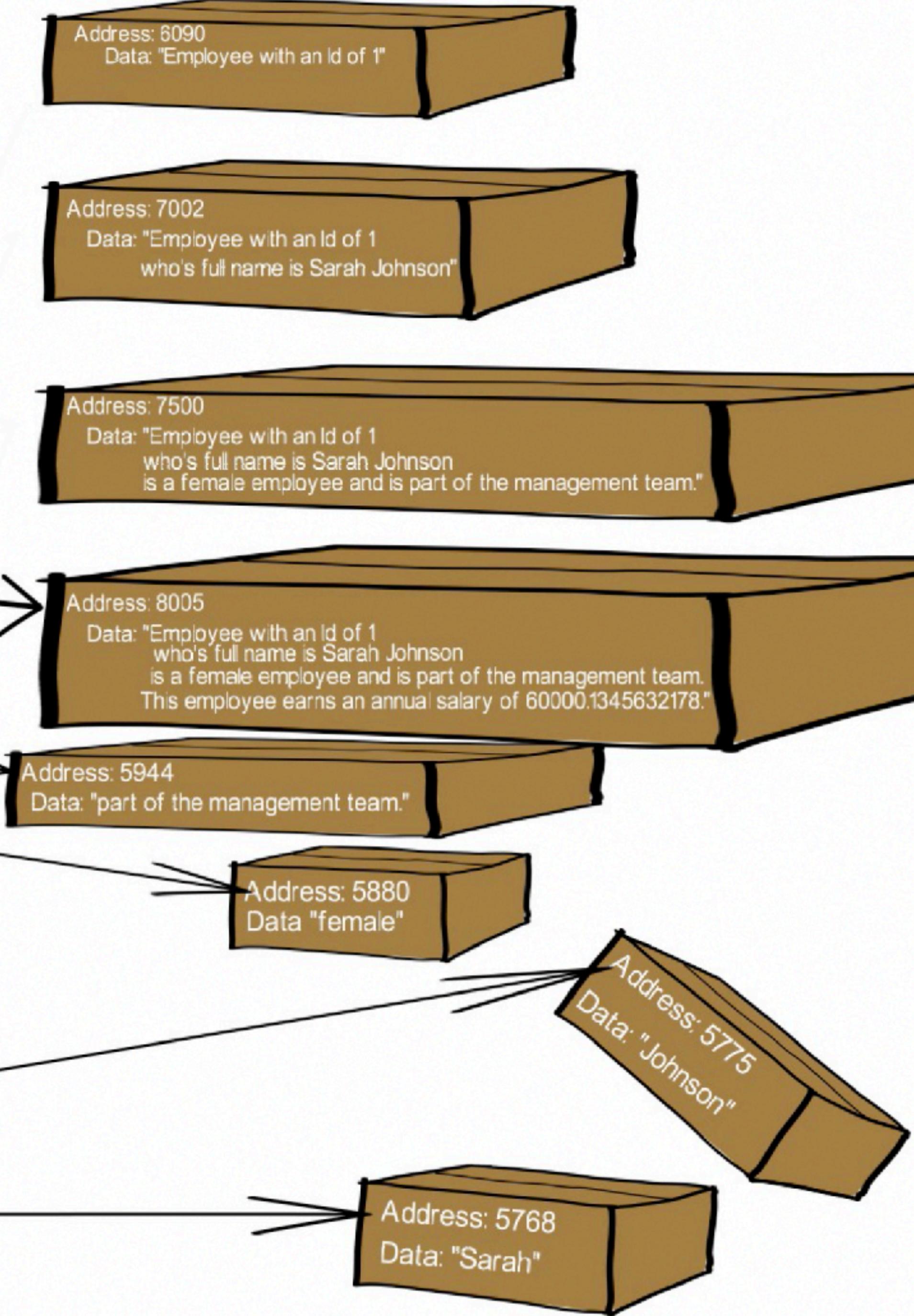


String

- Internally a string object stores a read-only sequence of char objects.
- The data stored for a string object is immutable.

Enum
Delegate
Dynamic
Array
DateTime

Stack



Heap

Summary

- We have covered the common inbuilt data types in C# and used some of these data types while building a basic C# application.
- We discussed the difference between value types and reference types.
- At appropriate points in this tutorial we have updated a depiction representing a hierarchy of C# data types.
- The stack and heap memory locations were briefly discussed in terms of how data types are stored in memory.
- We briefly looked at some of the data types that were not included in the 'EmployeeApplication' namely, 'enum', 'delegate', 'dynamic', 'array' and 'datetime'.

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