

Glossary

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The Glossary contains principles.

_ / A B C D E F G H I M O P R S T V W

Term	Definition
__C# built-in methods	Console.ReadLine() - read input from the keyboard including a new line, returns a string
	Console.ReadKey() - used to keep Console window open
	Console.Write(<value>) - output to screen (no new line)
	Console.WriteLine(<value>) - output to screen (including a new line)
	int.Parse(string) - parses a string to an integer value
__C# Operators	double.Parse(string) - parses a string to a double value
	+ addition
	- subtraction
	* multiplication
	/ integer division
__C# Operators	% modulus (remainder after division)
	< less than?
	<= less than or equal to?
	> greater than?
	>= greater than or equal to?

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`==` is equal to?
`!=` is not equal to?

`&&` and
`||` or
`!` not

<div>/</div>	
Term	Definition
//	Single line / end of line / inline comment
///	XML style comment
/* ... */	Block (multi-line) comment
<div>A</div>	
Term	Definition
abstract class	a class marked as abstract may not be instantiated (make objects from)
abstract method	a method marked as abstract must be implemented by the subclass
	Keywords used to specify the declared accessibility of a member or a type (https://msdn.microsoft.com/en-us/library/wxh6fsc7.aspx).
access modifier	There are four access modifiers in C#: <div>publicprotectedinternalprivate</div>
argument	The actual value that has been passed to a method and stored as a parameter eg: in the following method call to do_something : <div>do_something(7, my_name);</div> the first argument is the numeric value of 7 and the second argument is the value of a variable called my_var . These two values are passed to the do_something method and are

	referred to in that method by whatever the parameters are named.
array	Data structure that can store multiple values of the same type. A sequence.
attributes	characteristics. In terms of OOP, each class defines common attributes for objects created from the class which describe that object. Implemented as variables.

B	
Term	Definition
behaviours	actions. In terms of OOP, each class defines common behaviours (called methods) for objects created from the class which define what operations the object can perform.
black-box testing	test cases created without knowledge of the code.
BOMDAS	Mnemonic for remembering the order of precedencs: Brackets, Orders (powers, exponents, roots etc), Multiplication and Division, Addition and Subtraction (https://msdn.microsoft.com/en-us/library/2bxt6kc4.aspx)
brace	Otherwise known as a 'curly bracket'. { or }. Blocks of code in C# are delineated with braces.

The most commonly used data types in this unit are in red:

Data Type	Range
byte	0 .. 255
sbyte	-128 .. 127
short	-32,768 .. 32,767
ushort	0 .. 65,535
int	-2,147,483,648 .. 2,147,483,647
uint	0 .. 4,294,967,295
long	-9,223,372,036,854,775,808 ..

Built-in C# data types

	9,223,372,036,854,775,807
ulong	0 .. 18,446,744,073,709,551,615
float	-3.402823e38 .. 3.402823e38
double	-1.79769313486232e308 .. 1.79769313486232e308
decimal	-79228162514264337593543950335 .. 79228162514264337593543950335
char	A Unicode character.
string	A string of Unicode characters.
bool	True or False.
object	An object.



[https://msdn.microsoft.com/en-us/library/cs7y5x0x\(v=vs.90\).aspx](https://msdn.microsoft.com/en-us/library/cs7y5x0x(v=vs.90).aspx)

C



Term	Definition
C#	Pronounced "See sharp". First available 2000. Paradigms used for: multi-paradigm : structured,imperative, object-oriented,event-driven, task-driven,functional, generic, reflective,concurrent (https://en.wikipedia.org/wiki/C_Sharp_(programming_language))
cast	Explicit change of the type of a value. Used when a conversion cannot be made without risk of losing information (eg from double to int). Syntax: <i>(type to cast to)value</i> eg: <code>double x = 1234.7</code> <code>int a;</code> <code>a = (int)x; // cast double to int</code>
class	A description of a set of objects with same attributes and behaviours. A template from which objects are created.


comment	<p>There are several types of comments available in C#:</p> <p>// single / end of line</p> <p>/* ... */ multi-line / block</p> <p>/// XML (use this style for METHODS and CLASSES)</p>
compile	<p>Build a solution. Converts source code into machine instructions. In VS, produces an executable file (amongst other things). Syntax errors are detected by the compiler.</p>
constant	<p>Constants are declared with <code>const</code> before the data type eg:</p> <p>const int DAYS_IN_WEEK = 7;</p> <p>They are initialised much like a variable, but they may not be modified. Constants can be numbers, Boolean values, strings, or a null reference.</p> <p>The naming convention in this unit for constants is to use ALL CAPS, with words separated by underscore "<code>_</code>", as in the previous example.</p>
constructor	<p>responsible for making sure that the instance variables of the object are correctly initialised. Sets the object into a consistent state. The constructor is a method invoked by the new operator to initialise a new instance of the class. Constructor name is the same as the class name.</p>
D	
Term	Definition
do while	Post-tested, conditional controlled, indefinite, looping structure
E	
Term	Definition
encapsulate	Enclose. In programming, encapsulation refers to enclosing code in a method or class. OOP: hiding some details from other classes.
	<p>A way of defining a set of named constants. Value (not reference) type, where a name is used rather than an actual value.</p>

enum	eg: <pre>enum DayOfWeek { Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday }</pre>
	Each named value is associated with an <code>int</code> starting from 0. Unless assigned, values are consecutive. In the above example, <code>Sunday</code> has an underlying value of 0, while <code>Friday</code> is 5.
escape sequence	A backslash (\) followed by another character, which has a special meaning when part of a string.
event	a notification to the program that the user has done something, such as clicking a button or typing in a text box
event handler	code that is executed in response to an event
execute	Run the program that has been compiled. Can use "debug" or "start" in VS. Runtime errors are detected during execution. Logical errors MAY also be detected during execution.
expression	a combination of variable/s, operation/s and/or values that yields a value.
F 	
Term	Definition
for	Pre-tested, count controlled looping, definite, structure
foreach	Loop structure similar to FOR loop in Python. Used to iterate over a sequence (eg array), when the iterator is not to be modified.
function	A named piece of value-returning code that can be executed (run, called) by name.
G 	
Term	Definition
	Graphical User Interface. In this unit, we use WindowsForms in

GUI	VS to generate a GUI.
H	
Term	Definition
HAS-A relationship	one class contains an object of the other class. This forms a "HAS-A" relationship between the two classes. EG: A Person HAS-A BankAccount
I	
Term	Definition
IDE	Integrated development environment. The IDE we will be using in this unit is Visual Studio 2015 Community.
identifiers	<p>Variable names, function and method names etc.</p> <p>Can contain a mix of letters, digits and underscore.</p> <p>Naming convention in this unit is to use:</p> <ul style="list-style-type: none">* Camel case for variables and parameters (starts with lowercase letter and every subsequent word starts with uppercase letter)* Pascal case (starts with uppercase letter and every subsequent word starts with uppercase letter) for class and method names* ALL CAPS for constant identifiers <p>All identifiers must be self-explanatory.</p> <p>Method names should be verbs. Class, variable and parameter names should be nouns. Use a name that tells what the method does or what the class, variable or parameter is used for (ie. what value does it hold).</p> <p>For further information, see the IT121 Coding Style Guide on Blackboard.</p>
immutable	cannot be changed
inheritance	Extending the functionality of an existing class by creating a new class (subclass) that derives from the existing class (super class). The subclass inherits the properties of the super class. (https://msdn.microsoft.com/en-us/library/ms228387(v=vs.90).aspx)

initialisation	Giving a variable a value
int	integer (whole number) value
internal	Access modifier - access is limited to the current assembly
invoke	Call a method; execute a method
IS-A relationship	one class is derived (subclassed) from another class. There is a IS-A relationship between those two classes. EG: a Circle is-a 2D_Shape
M	
Term	Definition
	A literal numeric number in code. It is "magic" because it may be unclear to the reader what it represents.
magic numbers	DO NOT USE MAGIC NUMBERS in your code. Instead, assign the literal value to a constant. Using constants safeguards against the value being changed accidentally after misinterpreting what it represents.
Main	The starting point of program execution. Can be value-returning or void (non-value-returning). See also function, procedure.
method	A named piece of code that can be executed (run, called) by name.
O	
Term	Definition
object	<div>An instance of a class created by calling the class constructor eg: <pre>Car myCar = new Car(...);</pre> creates an object (instance) called <code>myCar</code> of type (class) <code>Car</code>.</div>
OOP	Object Oriented Programming.
out	C# keyword. Parameter modifier which enables the changes to the parameter made in the called method to be reflected in the variable passed from the calling code, much like a reference

	variable.
overloading	Multiple methods with the same name, but different number (or type) of parameters.
<div>P</div>	
Term	Definition
parameter	<p>The variable that stores the value passed by a function call eg</p> <pre>public static void do_something(int parameter_1, double parameter_2){</pre> <p>...</p>
parse	<p>To analyze (a string of characters) in order to associate groups of characters with the syntactic units of the underlying grammar (http://www.dictionary.com/browse/parse?s=t)</p> <ul style="list-style-type: none">- C# methods: to convert the string representation of a number into a numeric type (https://msdn.microsoft.com/en-us/library/xbtzcc4w(v=vs.110).aspx)
placeholders	<p>In strings, used to indicate where a value will be placed in output.</p> <p>Syntax: Indexed from 0, and put in braces eg {0} then {1} etc.</p> <p>Values are comma separated arguments following the string literal</p> <p>The number of placeholders must match the number of value arguments supplied eg:</p> <pre>Console.WriteLine("Answer is {0}", value); Console.WriteLine("Hello {0} and {1}", firstPerson, secondPerson);</pre>
Polymorphism	<p>The ability of different objects to interpret and respond to program commands, or messages in a way that makes sense to that particular object.</p> <ul style="list-style-type: none">* a subclass object can be used wherever a superclass object is expected* the overriding method of the derived class is determined at runtime
postcondition	A contract with the user of a method (detailed in the method

	comment) - a state/condition that is guaranteed at the completion of a method if and only if the precondition is met.
precondition	A contract/promise to the user of a method - a condition described in the method's documentation (comments). It is something that can be relied on to be true when the method starts, otherwise the postcondition is not guaranteed.
private	Access modifier - access is limited to the containing type
procedure	A named piece of non-value-returning code that can be executed (run, called) by name.
project	A VS project is a program that you create which contains all the necessary files. A project can be opened via the .sln (solution) file for that project.
property	A member that provides a flexible mechanism to read, write, or compute the value of a private field. (https://msdn.microsoft.com/en-AU/library/x9fsa0sw.aspx)
protected	Access modifier - access is limited to the containing class or types derived from the containing class
pseudocode	Pseudocode (pronounced SOO-doh-kohd) is a detailed yet readable description of what a computer program or algorithm must do, expressed in a formally-styled natural language rather than in a programming language. (source: http://whatis.techtarget.com/definition/pseudocode)
public	Access modifier - access is not restricted
R 	
Term	Definition
reference type	Variables of reference types store references to their data (objects), while variables of value types directly contain their data. [https://msdn.microsoft.com/en-us/library/490f96s2.aspx]
repetition	control structure in programming involving repeated actions or looping (in C#: for, while, do while)
return	Programming keyword. Used to return a value to the code that called the method in order for it to be used in some way. Every

value-returning method must have at least one return statement.

S	
Term	Definition
scope	Where (in the code) a variable is visible or accessible.
SDLC	Software Development Life Cycle. One example is the Waterfall Model: Request - Analysis - Design - Implementation - Testing - Maintenance
selection	Control structure in programming that involves branching dependant on conditional statements (in C#: if, else, switch)
semantics	The meaning of statements in a programming language. (NB: statements can be syntactically correct, but be semantically incorrect.) Semantic errors are detected by the VS editor (red highlighting) and produce errors at compilation.
sequence	Control structure in programming which implies the sequential order that (procedural) code is executed (top to bottom of code)
signature	Access modifier, return type, method name and parameter list (https://msdn.microsoft.com/en-us/library/ms173114.aspx)
statement	represents an action or command. Does not return a result and is executed solely for its side effect.
static	Modifier - declaring that something belongs to the type itself rather than to a specific object (https://msdn.microsoft.com/en-au/library/98f28cdx.aspx)
stub	A method that provides the necessary functionality in order for the program to build (compile), but is missing all but trivial logic.
subclass	the class extending a superclass. Alternative name: child class
superclass	the class extended by the subclass. Other names: base class, parent class
syntax	Which words and symbols are allowed in a particular language, and how those words and symbols may be used. Syntax errors

are detected in the VS editor (red highlighting) and produce errors at compilation.

T	
Term	Definition
this	keyword - refers to an instance variable of 'this object'
V	
Term	Definition
value type	Variables of reference types store references to their data (objects), while variables of value types directly contain their data. [https://msdn.microsoft.com/en-us/library/490f96s2.aspx]
variable	<p>A way to store data in memory. A variable has a name, a type and a value. eg:</p> <pre>int number = 23;</pre> <p>This variable's name is 'number'. Its type is int (integer) and its value is 23.</p>
variable assignment	<p>Giving a value to a variable. If that value comes from another variable, the value is copied, not moved.</p> <p>To store in the variable on the left hand side of the "=" the value of the expression on the right hand side of the "=". For example:</p> <pre>// the variable 'total' is given the value of 23 int total = 23; // the variable 'total' is given the value of 24, // overwriting its previous stored value total = 24; // the variable 'total' is given whatever is currently stored // in 'total', plus 25 total = total + 25</pre>

variable declaration	Creating a variable by providing the TYPE and variable NAME.												
variable initialisation	Giving (assigning) a VALUE to a variable.												
virtual method	a virtual method may be overridden in the subclass												
void	non-value returning i.e. returns NO value.												
VS	Visual Studio (a Microsoft IDE). In T2 2016, we will be using Visual Studio 2015 Community. (Free download.)												
VS Keyboard Shortcuts	<table><tr><th>Keystrokes</th><th>Description</th></tr><tr><td>F5</td><td>Start with debugging</td></tr><tr><td>Ctrl+F5</td><td>Start without debugging (leaves Console window open)</td></tr><tr><td>Ctrl+k, c</td><td>Comment out</td></tr><tr><td>Ctrl+k, u</td><td>Uncomment</td></tr><tr><td>F6</td><td>Build</td></tr></table>	Keystrokes	Description	F5	Start with debugging	Ctrl+F5	Start without debugging (leaves Console window open)	Ctrl+k, c	Comment out	Ctrl+k, u	Uncomment	F6	Build
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W													
Term	Definition												
waterfall model	A model of software development including the steps of: Request; Analysis, Design, Implementation, Testing, Maintenance (RADITM)												
while	Pre-tested, conditional controlled, indefinite, looping structure												
white-box testing	test cases created with knowledge of the code.												

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