COSC2429 Intro to Programming

Week 12 – Glossary

base case

A branch of the conditional statement in a recursive function that does not give rise to further recursive calls.

immutable data type

A data type which cannot be modified. Assignments to elements or slices of immutable types cause a runtime error.

infinite recursion

A function that calls itself recursively without ever reaching the base case. Eventually, an infinite recursion causes a runtime error.

mutable data type

A data type which can be modified. All mutable types are compound types. Lists and dictionaries (see next chapter) are mutable data types; strings and tuples are not.

recursion

The process of calling the function that is already executing.

recursive call

The statement that calls an already executing function. Recursion can even be indirect — function f can call g which calls h, and h could make a call back to f.

recursive definition

A definition which defines something in terms of itself. To be useful it must include *base cases* which are not recursive. In this way it differs from a *circular definition*. Recursive definitions often provide an elegant way to express complex data structures.

attribute

One of the named data items that makes up an instance.

class

A user-defined compound type. A class can also be thought of as a template for the objects that are instances of it.

constructor

Every class has a "factory", called by the same name as the class, for making new instances. If the class has an *initializer method*, this method is used to get the attributes (i.e. the state) of the new object properly set up.

initializer method

A special method in Python (called `__init__`) that is invoked automatically to set a newly created object's attributes to their initial (factory-default) state.

instance (or object)

An object whose type is of some class. Instance and object are used interchangeably.

instantiate

To create an instance of a class, and to run its initializer.

method

A function that is defined inside a class definition and is invoked on instances of that class.

object

A compound data type that is often used to model a thing or concept in the real world. It bundles together the data and the operations that are relevant for that kind of data. Instance and object are used interchangeably.

object-oriented programming

A powerful style of programming in which data and the operations that manipulate it are organized into classes and methods.

object-oriented language

A language that provides features, such as user-defined classes and inheritance, that facilitate object-oriented programming.