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PR

Further Java

Question 1

Describe the facilities in Java for defining classes and for combining them through composition, inheritance and interfaces. Explain with a worked example how they support the principle of encapsulation in an object-oriented language. [15 marks]

What is meant by reflection or introspection in Java? Give an example of its use. [5 marks]

Answer

Classes, data fields and methods; composition of classes as data fields in a new class; extending a class to add new fields and methods, possibly overriding, overloading or masking existing methods; abstract classes as templates; interfaces as abstract classes with exclusively abstract methods to act as specifications. Modifiers to control visibility; initialisation and finalization; final modifier to guarantee behaviour.

Every class defined in a program gives rise to an instance of Class at run time which can be used to investigate the specification of the class in terms of the names and types of its ancestry, fields and methods.