

14. (a) *Award [1 max].*

The grouping of the data and the methods that operate on the data into one single unit;
The practice of hiding the structure and representation of data within a class with the use of private variables / and making it only accessible outside that class via accessor functions;
The practice of hiding the structure and representation of data within a class and making it only accessible directly from within that class;

(b) *Award [3 max].*

Improved security;
Using data-hiding / Use of private variables;
So that other classes cannot (accidentally) access/change the data (directly) / So other classes have to use accessor methods to access the data / So programs can be made read-only;

Ease of maintenance / reusability;
Programs will be easier to update / reuse;
Because changes to the encapsulated class should not impact on other classes / Because all data and methods are in the same place;

Ease of understanding;
Programs will be easier to follow;
Because all data and methods are in the same place;

Ease of testing;
Because the class can be fully tested in isolation;
And limited code will contain fewer mistakes than the full program;

Faster development (of whole program);
Different classes can be worked on by teams;
Each class is effectively independent of others;

(c) *Award [3 max].*

Inheritance reduces the amount of coding in the sub-class / reduces repetition of code;
By allowing sub-classes to inherit the methods / attributes of their superclass;
Therefore, leading to time being saved in the development of code;

Inheritance reduces maintenance overhead;
Because modifications to the super class are automatically inherited by the subclasses;
Reduces the errors when writing code;

Inheritance allows for further expansion / simplifies future development;
As other subclasses can inherit from the classes already present;
Or add additional functionality specific to the sub-class;

Note: only award marks from one cluster (do not mix and match the marking points from different clusters).

(d) *Award [3 max].*

Modern programming languages use Unicode;
Which can encode 2^{16} (about 64,000) characters;
Compared to ASCII which only uses 8 bits;
Which includes special characters from different alphabets/languages/character sets;
Allowing these programming languages to be used by people from different parts of the world
(only award this marking point if a correct reason has already been given);