

SWINBURNE UNIVERSITY OF TECHNOLOGY

COS20007 OBJECT ORIENTED PROGRAMMING

Key Object Oriented Concepts

PDF generated at 17:55 on Monday 9th October, 2023

Object Oriented Concepts

Task 6.2 P

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Concepts:

- 1) **Abstraction:** It is like removing the details which may not be necessary at that point of time but maybe significant at some point. Abstraction helps identify classification, roles, responsibilities and collaboration. It is more about getting rid of complexity in the representation, idea or design.
This can be seen as creating the overall template for some actual classes which share common attributes
It can also be seen as a way to create certain methods which is necessary for the actual classes to define hence giving them responsibilities.
For collaboration, the objects work in a team by fulfilling their on roles along with common objective.
My understanding of abstraction revolves around declaring an idea in the form of a method without any method body. For eg : In the class named Command in Iteration 4, we declared a method Execute, which was overridden in LookCommand class, also this makes it mandatory for the child class to implement all the abstract methods of the parent class.
- 2) **Encapsulation:** It is a process of bundling the various attributes and their methods into a class which makes it easier for implementation and also avoids code duplication. It is defined by the fact that objects contain both attributes and behaviours and involves data hiding. It basically involves classes and that everything is a part of a class. It also ensures that data is kept away from direct public access, hence protected. There are various access methods implemented to control access to variables and methods like- public, private, protected and internal.
- 3) **Inheritance:** Inheritance allows classes to inherit attributes and methods of a different class which allows creation of newer classes with common attributes and methods. My definition of inheritance is just like passing of parents properties to children. Children can be created as instances of parent classes with their own functionalities along with those inherited from parents. In inheritance, we create a parent class which are common for all children classes. For Eg: We created Shape class which has basic properties like color, and window dimensions and this class was inherited my shapes like rectangle, circle and line which have all the properties of the Shape class along with additional properties which define

themselves. It makes the code cleaner without implementing the common attributes and methods repeatedly.

- 4) **Polymorphism**: Polymorphism means 'many forms'. It is a complex concept in which we can create certain methods in a parent class and then create methods with the same names in either the same class or in children class. It involves two concepts: method overloading and method overriding.
- a) Overloading involves changing the type and number of parameters which further decides the choice of the method chosen.
 - b) Overriding defines changing the implementation of the method in the child class by using modifiers like virtual and override. With polymorphism we can create numerous implementations of a single method.

Concept Map

