**Advantages and Disadvantages of Object Oriented Programming**

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**Advantages and Disadvantages of Object Oriented Programming**

There are many advantages to object oriented programming when compared to procedural programming. Although the learning curve can be steep, learning object oriented programming is well worth the effort. Object oriented programming focuses on components, and the methods and data those components use. Every component is considered an object. A class is a collection of objects with common attributes and an object is an instance of that class. One advantage of object oriented programming is how it’s relatable to real world experiences. In programming and in the real world objects have attributes. A camera has a body, lens, shutter release and a light sensitive substrate. When someone tells you they have bought a digital camera you know what to expect.

Every class is part of a more general class of objects. The class digital camera has an “is a” relationship with the more general class camera. A digital camera “is a” type of camera and a digital camera inherits a lot of traits from the camera class. This is another advantage of object oriented programming, this inheritance makes it easier to use a digital camera when one already knows how to use a camera. When a photographer switches from film to digital the photographer does not need to relearn all of photography.

The photographer also never needs to learn the detailed intricacies of the shutter mechanism. The photographer only needs to know the interface of the camera to take a picture. The methods used by the shutter to open and close for a certain amount of time is hidden from, and not necessary for the photographer to make a picture. This principle of information hiding is another advantage of object oriented programming. A programmer only needs to understand the interface of an object to use it. Information hiding also keeps data secure from being manipulated from outside classes. When shooting in manual mode, you can change the aperture to adjust exposure and the photographer knows the change will have no effect on the shutter speed. The intricacies of the shutter mechanism are encapsulated in the shutter and protected from adjustments made from other objects of the camera.

More experienced photographers know how to use the method set exposure. Depending on the class of camera used, the set exposure method will be used differently. On a modern SLR a photographer uses set exposure by adjusting a combination of dials and buttons. The process is very different when using an antique 8X10 view camera. The set exposure method behaves properly for the different classes of camera that can use it. The set exposure method exhibits polymorphism and is another major advantage of object oriented programming.

A more practical advantage of object oriented programming is the increased efficiency and productivity of using many programmers working separately on different objects at the same time. Additionally, programmers can take advantage of existing objects to create their own from. Not only does this contribute to productivity but the programmer knows the existing code has been tested and is reliable.

The objects are reusable and portable, just like real life objects. A camera manufacturer can reuse the same shutter mechanism in different models of their line up. Additionally, many cameras can use third party lenses that are identical except for the mount used to connect to the camera body. These lenses know how to use the camera’s interface but don’t get involved with any other part of the image making process. If a photographer switches camera brands and needs to get new lenses they know that the third party lens is of high quality and can use one with the correct interface for the new camera brand.

There are some disadvantages to object oriented programming as well. The stand alone nature of objects may result in duplication of code leading to longer compilation times and inefficient use of hardware resources. This duplication can also decrease the efficiency and productivity mentioned earlier. Creating many specialized objects leads to overly complex code which can also lead to longer compilation times and poor use of resources. Although abstraction is generally one of the advantages of object oriented programming, problems that require simple solutions are often overly complex in the name of abstraction.

The shift in thinking when learning object oriented programming can be long and difficult. When problems are complex and require the code to be developed by many programmers, an object oriented programming language is the way to go.