

McKenna Johnson

CSE 210 – Programming with Classes

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Explaining Encapsulation

Encapsulation is similar to Abstraction; in that it relies on creating separate classes from the main program and then applying them. However, Encapsulation takes it one step further – instead of the main program being able to access all aspects of the class (and use/change as it sees fit), the encapsulated code is only accessible by certain methods within the class itself. Think of it a bit like the difference between a self-checkout convenience store versus a clerk ran store. With the first, you can get in, get what you need, and leave. With the second, you need to interact with the clerk, who does all the running around and processing for you. In programming, this is beneficial for a few reasons. It allows for better security within a program (so things don't accidentally get changed), and it also makes it easier to make changes. When everything is operating in one spot versus two or more, you can more readily find and see what needs adjusting. This can be used for many things, but a helpful application could be for programs that need more secure code. By using encapsulation, you can reduce access to sensitive data for unneeded parties.

A code example pulled from the "Reference" file in this week's program:

```
public class Reference
{
    private string _book;
    private int _chapter;
    private int _verse;
    private int _endVerse;

    public Reference(string book, int chapter, int verse)
    {
        _book = book;
        _chapter = chapter;
        _verse = verse;
        _endVerse = 0;
    }

    public Reference(string book, int chapter, int startVerse, int endVerse)
    {
```

```
_book = book;  
_chapter = chapter;  
_verse = startVerse;  
_endVerse = endVerse;
```

```
}
```

```
public string GetDisplayText()
```

```
{
```

```
    if (_endVerse == 0)
```

```
    {
```

```
        return $"{_book} {_chapter}:{_verse} | ";
```

```
    }
```

```
    else
```

```
    {
```

```
        return $"{_book} {_chapter}:{_verse}-{_endVerse} | ";
```

```
    }
```

```
}
```