**Foundation Program#1 – Abstraction with YouTube Videos**  
  
What does the program do?

The Program models YouTube and their comments. Each video stores a title, author and length in seconds, along with a collection of comments. Each comment has a commenter name and text. The program creates several videos with comments, stores them in a list, and then prints details for each video and comments.

Candidates for Classes

* Video
* Comment

Responsibilities of Each Class

**Video**

* Track title, author, length in seconds
* Store a list of comments
* Provide methods to add comments, get the number of comments and retrieve all comments

**Comment**

* Store commenter name
* Store comment text

Class Diagram

classDiagram

class Video {

-string \_title

-string \_author

-int \_lengthInSeconds

-List<Comment> \_comments

+AddComment(comment: Comment)

+GetCommentCount() int

+GetComments() IReadOnlyList<Comment>

}

Class Comment {

-string \_commenterName

-string \_text

}

Video “1” o—“0..\*” Comment

**Foundation Program#2 – Encapsulation with Online Ordering**

What does the program do?

The Program models an online ordering system. Each order contains products and a customer. Produces a packing and shipping label and will calculate the total cost including shipping. It will distinguish shipping prices based on whether it is based in the US or International.

Candidates for Classes

* Address
* Customer
* Product
* Order

Responsibilities of Each Class

**Address**

* Store street, city, state/province, and country
* Determine if the address is in the USA
* Return a formatted string of the address

**Customer**

* Store customer name
* Store address
* Determine if the customer lives in the USA

**Product**

* Store name, product id, price per unit, and quantity
* Compute total cost (price \* quantity )

**Order**

* Store customer
* Store list of products
* Compute total cost including shipping
* Generate packing label (product names + IDs)
* Generate shipping label (customer name + address)

Class Diagram

classDiagram

class Address {

-string \_street

-string \_city

-string \_stateOrProvince

-string \_country

+IsInUSA() bool

+ToMultilineString() string

}

Class Customer {

-string \_name

-Address \_address

+LivesInUSA() bool

}

class Product {

-string \_name

-string \_productID

-decimal \_pricePerUnit

-int \_quantity

+GetTotalCost() decimal

}

class Order {

-List<Product> \_products

-Customer \_customer

+AddProduct(product:Product)

+GetTotalCost() decimal

+GetPackingLabel() string

+GetShippingLabel() string

}

Cusstomer “1” o— “1” Address

Order “1” o—“1” Customer

Order “1” o—“0..\*” Product