**Program 1:**

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| Video |
| String \_title  String \_author  Int \_length  List <Comment> \_comments |
| NumberOfComments() int |

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| Comment |
| \_userName  \_text |
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This program will receive the title, author, and length of a video, then store that video to a list. The program will receive a username and the text of a comment. Those comments will be added to the comment list within the video class. Finally, the data for each video will be written to the console, followed by the associated comments using a foreach loop.

**Program 2:**

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| **Product** |
| **\_name**  **\_productID**  **\_price**  **\_quantity** |
| CalculatePrice() |

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| **Customer** |
| **\_custName**  **\_address : Calls Address.WholeAddress()** |
| DisplayCustomer() |

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| **Address** |
| **\_streetAddress**  **\_city**  **\_stateProvince**  **\_country** |
| IsInUS() : Calls Order.DetermineCountry()  WholeAddress() |

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| **Order** |
| **\_products<Product> : List**  **\_customers<Customer> : List**  **\_totalPrice**  **\_inUS**  **\_packingLabel**  **\_shippingLabel**  **\_shippingCost** |
| CreatePackingLabel()  CreateShippingLabel() – Calls DisplayCustomer()  CalculateTotal()  DetermineCountry() |
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This program will receive a customer name to the Customer class, and that customer’s address to the Address class. The a series of products and their associated quantities will be received. The price of each item will be calculated within the Product class. Using the country submitted to the address class, InUS will return either “US” or “no”. The order class will use this to determine the shipping cost. The customer information will be written to the console, followed by a packing label (using \_products List in Order class), and a shipping label (using \_customers List in Order class).

Program 3



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| Parent : **Event** |
| **\_eventTitle**  **\_description**  **\_date**  **\_time**  **\_address : Address.GetAddress()** |
| StandardDetails() (title, description, date, time, address)  FullDetails() (list all above and event type, lectures:speaker name and capacity, receptions:email, outdoor:weather)  ShortDetails() (event type, title, date) |



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| **Lecture : Event** |
| **\_speaker**  **\_eventCapacity** |
| LectureDetails() |

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| **Outdoor : Event** |
| **\_weather** |
| OutdoorDetails() |

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| **Reception : Event** |
| **\_email** |
| ReceptionDetails() |

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| **Address** |
| **\_addressString** |
| GetAddress() |

This program will set up a lecture, reception, and outdoor event using their parent Event class to receive title, a description, the date and time, and the address (by initiating the Address class). A menu will determine which event to return data and what type of data to return (Standard, Full, or Short). FullDetails() will make use of the child member attributes.

Program 4:

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| Parent : **Activity** |
| **\_date**  **\_lengthInMinutes** |
| Virtual GetSummary() form (03 Nov 2022 Running (30 min)- Distance 3.0 miles, Speed 6.0 mph, Pace: 10.0 min per mile)  Virtual CalculateDistance()  Virtual CalculateSpeed()  Virtual CalculatePace() |

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| **Running : Activity** |
| **\_distance** |
| Override GetSummary()  Override CalculateDistance()  Override CalculateSpeed()  Override CalculatePace() |

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| **Cycling : Activity** |
| **\_speed** |
| Override GetSummary()  Override CalculateDistance()  Override CalculateSpeed()  Override CalculatePace() |

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| **Swimming : Activity** |
| **\_laps** |
| Override GetSummary()  Override CalculateDistance()  Override CalculateSpeed()  Override CalculatePace() |

List<Activity> all activities, GetSummary()

This program will receive an activity type and some data (date and length in the parent Activity class and the data defined by the member attribute of each child class). Virtual methods will be overridden to perform calculations about distance, speed and pace for each activity. A for loop will iterate through the activities and call the calculation methods so as not to store the data.