ABC parcel delivery

<u>Inheritance hierarchy</u>

ABC parcel delivery service offer a number of different shipping options. Create an inheritance hierarchy to represent various types of packages.

Use *Package* as the base class, then include classes *TwoDayPackage* and *OvernightPackage* that derive from *Package*. The base class *Package* should include data members representing the name, address, city, state and ZIP code for both the sender and the recipient, it should also include weight (in ounces) and cost per ounce to ship the package. *Package's* constructors should initialize these data members. Ensure that the weight and cost per ounce contain positive values. *Package* should contain a member function called *calculateCost* that returns a double value representing the cost of shipping the package i.e. cost per ounce by weight.

TwoDayPackage should contain a data member that represents a flat fee that the shipping company charges for two-day delivery service. *TwoDayPackage* constructor should receive a value to initialize this data member. *TwoDayPackage* should redefine *calculateCost* so that it computes the shipping cost by adding that flat fee to the weight-based cost (calculate by the base class).

OvernightPackage should contain an additional data member representing an additional fee per ounce charged for overnight-delivery service. *OvernightPackage* should redefine *calculateCost* so that it adds the additional fee per ounce to the standard cost per ounce before calculating the shipping cost. In addition couriers are often used for over night packages, this has the effect of doubling the shipping costs, if a courier is required the company name, contact person, address, city, state, zip code of the courier should be recorded.

Polymorphism

Create the following program

Option 1: Create parcels – this option should set up sender and recipient details and create a number of two-day and overnight parcel details, have a number of over night packages that require couriers

Option 2: Display Shipping details – This option should display the sender and receiver details and shipping cost for each package on the system.

Option 3: Cost Analysis – should give a total of complete shipment costs for all shipments and display the % break down of overnight to two-day shipment costs.

Option 4: Display Couriers details – display a list of all couriers required for parcell deliveries.

Option 5:Exit.