

ECS769P Advanced Object - Oriented Programming

Lab 3: Polymorphism (in-lab assessment in week 7)

Exercise 1: Employee (basic exercise)

Complete the Employee examples introduced in the lecture. Try to write the code yourself without looking at the notes. Successfully compile and run the programs.

Exercise 2: Parcel delivery cost calculation – Polymorphism (core exercise)

Improve the Parcel delivery cost calculation application you created from last week by applying polymorphism. Now, create an Abstract Base class and make the cost calculation function pure virtual. The program should contain a vector of Package pointers to objects of all different packages. Loop through the vector to process the packages polymorphically. For each package, invoke get functions to obtain the address information of the sender and the recipient, then print the two addresses as they would appear on mailing labels. Call each Package's function to calculate the delivery cost. Keep track of the total delivery cost for all Packages in the vector, and display this total when the loop terminates.

Exercise 3: Shape area calculation (core exercise)

Design and Implement a simple program that calculates the area of a Shape. For each of the following Shape (Circle, Oval, Rectangle, Square and Triangle), prompt the user to enter relevant input values, calculate then print out the area.

Notes:

- Use appropriate inheritance hierarchy.
- Apply polymorphism.
- Data validation should be considered.