

Jaypee University of Engineering and Technology, Guna

Department of Computer Science and Engineering

Object Oriented Systems & Programming Lab (14B17CI676)

Lab Exercise-9(Inheritance)

[Imp Note: All the programs must be written in C++ with distinguished variable names. If any kind of plagiarism is observed, the punctuality marks (10) will be awarded by zero.]

1. Create a base class called **shape**. Use this class to store two double type values that could be used to compute the area of figures and a member function **get_data()** to initialize these data members. Derive two specific classes called **triangle** and **rectangle** from the base shape. Both the classes **triangle** and **rectangle** has separate member functions **display_area()** to compute and display the area of respective figures.

Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively, and display the area.

Remember the two values given as input will be treated as lengths of two sides in the case of rectangles and as base and height in the case of triangles, and used as follows:

Area of rectangle = $x * y$

Area of triangle = $\frac{1}{2} * x * y$

2. An educational institution wishes to maintain a database of its employees. The database is divided into a number of classes whose hierarchical relationships are shown in Fig.1. The figure also shows the minimum information required for each class. Specify all the classes and define methods to create the database and retrieve individual information as and when required.

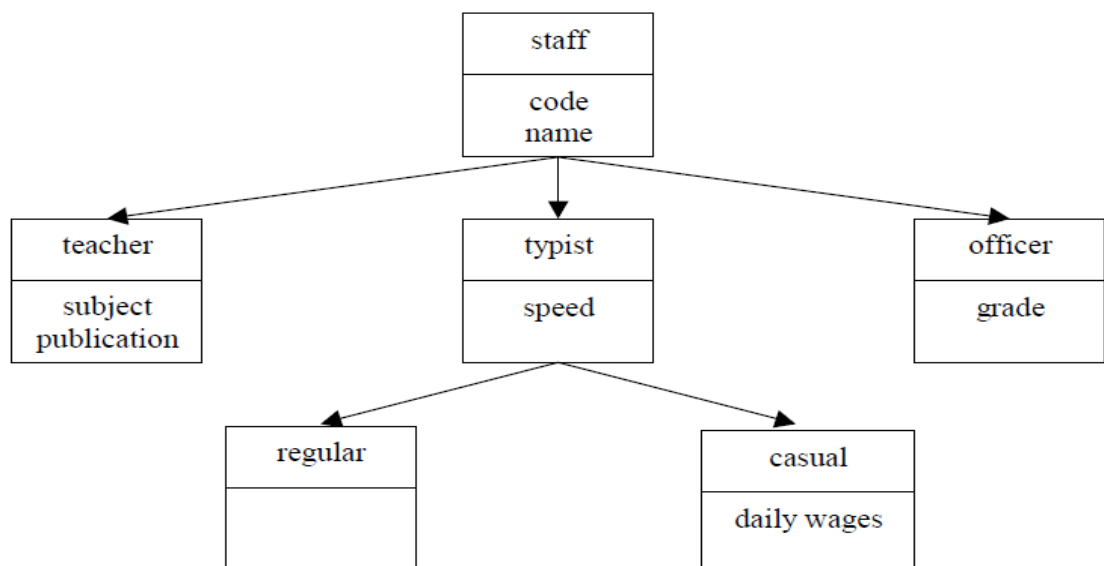


Fig. 1

3. There is a class student, that stores name of school or university from which he is enrolled and name of highest degree he has obtained so far. It has the function to get and display the members. Design a class Employee with name and employee number. Derive Manager, Scientist and Laborer classes. The manager class has extra attribute title and dues. The scientist class has extra attributes number of publications. The Laborer class has nothing extra. The classes have necessary functions for set and display the information. A manager or a scientist is employee; and he may be student of a university also. Use inheritance.