## Practical 8 – Inheritance and Polymorphism

**Objectives:**

At the end of the lesson, the students should be able to:

* Understand the concept of inheritance and polymorphism.
* Implement constructors for derived classes and override member functions.
* Design and use virtual functions.

**Question 1**

Implement a base class Person. Derive classes Student and Instructor from Person. A person has a name and a birthday. A student has a major, and an instructor has a salary. Write the class definitions, the constructors and the member functions display for all the classes.

(P10.9, Horstmann 475)

**Question 2**

1. Create a base class called Athlete that contains **2** member variables for attributes common to all professional athletes: *name* and *annual salary*. It should also contain two pure **virtual** methods, read() and display(). The method read() is called to read data from the user for setting the values of the attributes, and display() is called to print those attributes. Include the appropriate constructors and accessor/mutator methods.
2. Create two classes **derived** from Athlete, called TennisPlayer and BasketballPlayer. TennisPlayer should have a member variable to store the player’s *current world ranking*. BasketBallPlayer should have member variables for the player’s *team name*, and his *average points per game*. Override the Athlete virtual read() and display() functions to both read in and display the appropriate data based on the attributes of TennisPlayer and BasketballPlayer. Include the appropriate constructors and accessor/mutator methods.
3. Code the main() to test the classes. You may want to use a vector of Athlete pointers to test your programs.

*-- End --*