EASTERN UNIVERSITY, SRI LANKA
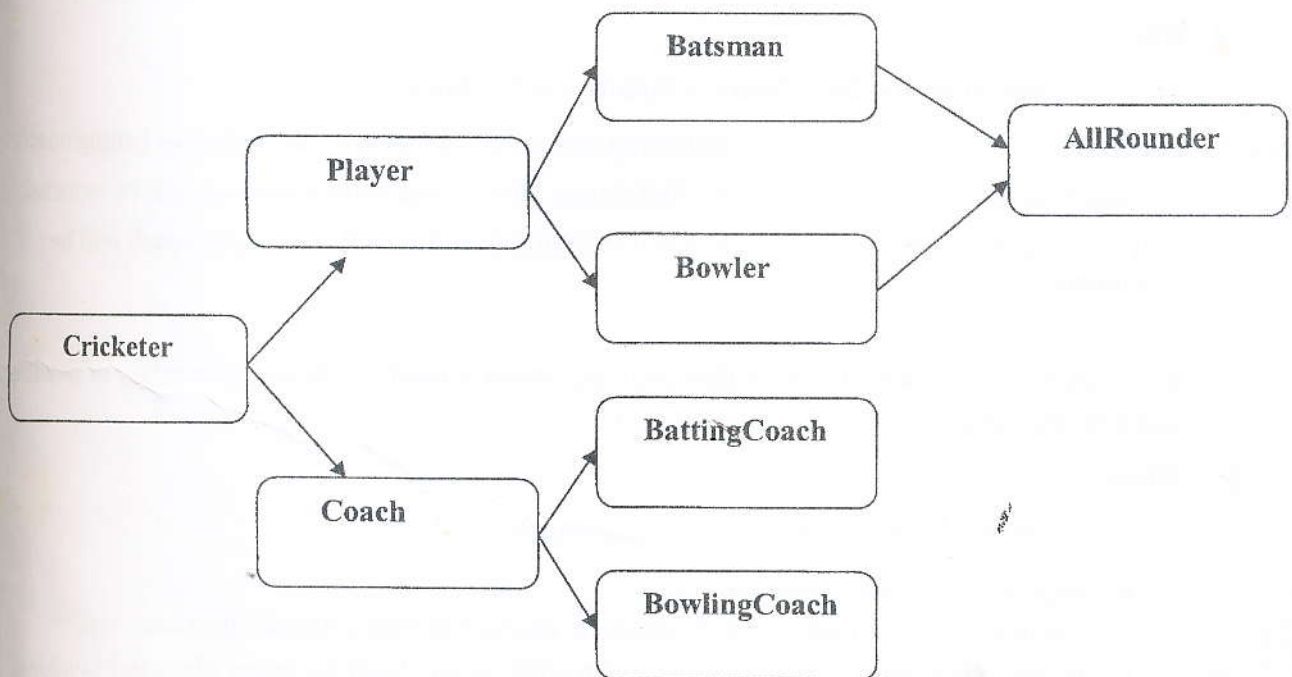## DEPARTMENT OF MATHEMATICS
FIRST EXAMINATION IN SCIENCE -2009/2010
SECOND SEMESTER (April /May, 2012)
CS 153 – PRACTICAL WORK ON CS 104

ANSWER ALL QUESTIONS   TIME ALLOWED: TWO HOURS

Q1)

Consider the following class hierarchy:

Cricketer is a base class which has attributes Name, Age and Address.

Player class has two extra fields PlayerNo and NoOfInnings.

Batsman class has attributes TotalRuns, NoOf Notouts and NoOfHundreds and has a function AvgBat() which is used to calculate the batting average as batavg.

Where,

$$batavg = TotalRuns / (NoOfInnings - NoOf Notouts).$$

Bowler class has attributes TotalWickets and NoOf5Wickets and has a function AvgBowl() which is used to calculate the Bowling Average as bowlavg.

Where,

$$bowlavg = TotalWickets / NoOfInnings.$$

AllRounder class has an attribute NoOfCatches and has a function Performance() which is used to calculate the performance as perform.

Where,

$$perform = (batavg + bowlavg + NoOfCatches) / 3$$

Coach class has three attributes CoachNo, BasicSalary and Allowance.

BattingCoach class has an attribute NoOfHours and has a function BatSalary() which is used to calculate the salary of batting coach as Salarybatcoach.

Where,

$$Salarybatcoach = BasicSalary + NoOfHours * Allowance.$$

In addition, you should consider the following conditions to calculate the salary of batting coach:

If the Salarybatcoach is greater than 50000 then 10% of the Salarybatcoach will be reducted;

If the Salarybatcoach is less than or equal to 50000 then 5% of the Salarybatcoach will be reducted.

BowlingCoach class has a function BowlSalary() which is used to calculate the salary of bowling coach as Salarybowlcoach.

Where,

$$Salarybowlcoach = BasicSalary + Allowance.$$

- Implement the above classes in C++.
  (Include default constructors, destructors, access functions, virtual functions, etc.)
- Write a program to test all the classes by creating an object for every class and invoking the corresponding function(s).

(70 Marks)

Q2)

Define a class TravelPlan in C++ with the following descriptions:

Private Members:
PlanCode of type long;
Place of type character array (string);
Number_of_travellers of type integer;
Number_of_buses of type integer.

Public Members:
A constructor to assign initial values of PlanCode as 1001, Place as "Agra",
Number_of_travellers as 5, Number_of_buses as 1
A function NewPlan( ) which allows user to enter PlanCode, Place and
Number_of_travellers. Also, assign the value of Number_of_buses as per the
following conditions :

Number_of_travellers	Number_of_buses
Less than 20	1
Equal to or more than 20 and less than 40	2
Equal to 40 or more than 40	3

A function ShowPlan( ) to display the content of all the data members on screen.

(30 Marks)