Rajarata University of Sri Lanka

Faculty of Applied Sciences

B.Sc in Information and Communication Technology

ICT 1306 (Object Oriented Programming)
Practical 06

Outline

- Inheritance
- Friend Function
- Multiple Inheritance

Outcome

At the end of this session students should be able to:

- Get knowledge about the Inheritance, type of inheritance, multiple inheritance and friend function.

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1. Create a class called Shape with int type width, int type height and a setData() to assign values. Create another class called Rectangle which inherit the properties of Shape class (Note: Type of Inheritance - public). Rectangle class consist with a function called getArea() which calculate the area of the rectangular. Print the calculated area by calling getArea() with cout object.

Change the type of inheritance into protected. (What is the output?)

2. Create a class called Student with string type name, string type regNo, int type indexNo as data members and getData() member function to get the values as user inputs. Define a function which take an object as an argument to display student details outside of the class and call it inside the main function. (What is the output?)

Declare display function with friend keyword inside the Student class. (What is the output?)

3. Consider question 1 Student class. Create two classes called ICTStudent with float type attendance, float type constant workingDays data members, default construstor to initialize workingDays as 90, function to get the attendance from the user, selectionCriteria () as member functions and the HPTStudent with float type noOfCompletedFieldActivity, float type constant noOfActivities data members, default constructor to initialize noOfActivities as 10, function to get number of completed activities, fieldActivityEvaluation() as member functions.

For ICTStudents

selectionCriteria() is used to get the status of the student suitability for industrial training. It is determined by each students' attendance for the last semester. Following equation is used to calculate the student rate.

Rate= (attendance/working days)*100

Get the final answer of the rate as an integer. If the student rate is exceeded the 80% he/she will be selected for the training.

For HPTStudents

noOfFieldActivity denotes the number of field activities completed by each student for a particular academic semester so the student rate is calculated in fieldActivityEvaluation() as follows,

Rate= (no of completed activities/total number of activities)*100

Get the final answer of the rate as an integer.

Inherit the Student class in both ICTStudent and HPTStudent classes.

4. Create a class called Student with string school, string degree data members and getEdu() member function to get values to the data members as keyboard input.

Create class called employee with string name, int employeeNo and getEmpData() member function to get values to the data members as keyboard input and another member function to display the values.

Create another class called manager which inherit both employee and student class. Include string title as a specific data member of this class. Add a function to getManagerData and display all details of the manager.

Create a class called laborer and it does not share any educational details.

Next Practical: Polymorphism