BITS PILANI, DUBAI CAMPUS I Semester 2018 – 2019 III Yr. C.S.

Course: CS F301 POPL

**Individual** **Assignment (5% weightage)**

Evaluation will be based on

Individual effort and Timely Demonstration

Date for Demonstration: **14/10.2018 Sunday** in Lab. (your Linux account in 172.16.22.5)

Note: Delayed Demonstration will result in reduction in marks.

**Copying / Allowing Copying not permissible and will not be considered**.

**Multiple Inheritance in C++ Lab Exercise (Individual Assignment. Demo. Only using your LINUX User ID in CP Lab.)**

Consider **Teaching Assistants** who are teaching **basic-level courses.** They act both as **Students** and **Instructors** and they t**ake** and **teach** courses. **Instructors** are also **Employee**s and inherit **pay-related** information from the class **Employee**. **Teaching Assistants** inherit the **pay-related & course-related** information from the class **Instructor**, while the **tuition-payment-related** & **course-taking-related** information are inherited from the class **Student.**

Write a C++ program using the ideas of **Multiple Inheritance** to solve this given problem. Your program should read all **input** data from text files, which are passed as **command line parameters** and display the following **output** on **screen** as well as **a single output text file** (append all outputs to a single text file only; the output file name also should be passed as a command line parameter):

1) List EMPLOYEE\_ID and SALARY for all employees.

2) List all the students (STUDENT\_ID and STUDENT\_NAME) who are instructors and the courses taught by them.

3) List all the students (STUDENT\_ID and STUDENT\_NAME) who are not instructors.

4) List STUDENT\_ID, STUDENT\_NAME, FEES\_PAID, TAKING\_COURSES for all students.

**Create the appropriate base classes and derived classes as necessary and deploy suitable constructors and methods/functions.** Provide methods in each of the different type of classes like **getdata()**which will read data from a file to populate the different fields of the class, **putdata()**for writing data to a file and **listdata()** for processing and listing the output, whichever are necessary. Write the **main() method** which creates the various classes, the data for which is read from the input files. The output for each query can be displayed as well as written to an output file, with heading and detail lines (each line shows one record).

**Employee: (pl. read from text file created by you using VI editor. The file name should be passed as a command line parameter or argument to your program)**

|  |  |  |
| --- | --- | --- |
| **Employee** | | |
| **EMPLOYEE\_ID** | **EMPLOYEE\_NAME** | **SALARY** |
| **E001** | **ANGEL** | **20000** |
| **E002** | **SANTHOSH** | **18000** |
| **E003** | **SUJALA** | **21000** |
| **S001** | **AMRUTHA** | **1000** |
| **S002** | **SUDARSHAN** | **1500** |
| **S003** | **VIJAYA** | **2000** |
| **S004** | **SADIA** | **2500** |

**Instructor: pl. read from text file created by you using VI editor. The file name should be passed as a command line parameter or argument to your program)**

|  |  |
| --- | --- |
| **Instructor** | |
| **INSTRUCTOR\_ID** | **COURSE\_TEACHING** |
| **E001** | **OPERATING SYSTEMS** |
| **E002** | **COMPUTER ARCHITECTURE** |
| **E003** | **ARTIFICIAL INTELLIGENCE** |
| **S001** | **Computer Programming Lab.** |
| **S002** | **DSA Lab.** |
| **S003** | **Compiler Lab.** |
| **S004** | **DBS Lab.** |
| **S001** | **DD LAB** |
| **S002** | **PHYSICS LAB** |
| **S003** | **CHEMISTRY LAB** |
| **S004** | **BIOLOGY LAB** |

**Student: (pl. read from text file created by you using VI editor. The file name should be passed as a command line parameter or argument to your program)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Student** | | | **COURSES\_TAKING** | | |
| **STUDENT\_ID** | **STUDENT\_NAME** | **FEES\_PAID** | **C1** | **C2** | **C3** |
| **S005** | **HARDY** | **16000** | **POPL** | **CA** | **OS** |
| **S006** | **HARSHITH** | **18000** | **POPL** | **CA** | **OS** |
| **S007** | **VINAYAK** | **16000** | **POPL** | **CA** | **OS** |
| **S001** | **AMRUTHA** | **18000** | **POM** | **IR** | **ML** |
| **S002** | **SUDARSHAN** | **14500** | **POM** | **IR** | **HCI** |
| **S003** | **VIJAYA** | **12000** | **POM** | **IR** | **NNFL** |
| **S004** | **SADIA** | **12500** | **POPL** | **IR** | **OS** |