**Day 1 Assignments**

**Assignment 1: Case Study**

**Answer the following:**

1. **Identify two cases of hierarchy in the given problem statement.**

* The two cases of hierarchy are:

1. Admin Staff registering the new student into the system and only then able register for the required courses.
2. HOD as a super user allocating courses to the lecturers and only then lectures could grade students work.
3. **Identify the common behavior among the day scholar, host-elite, graduate and post graduate students.**

* The common behavior among them are they all take classes at the same school, they all pay tuition fees to the same school, they all use the same online portal system of the school, they all use the school’s ID card, they all can graduate their desired degree from the school,

1. **Identify the different layers possible in the system in terms of the users of the systems.**

* HOD, Lecturers & Students.

1. **The admin staff wants to generate a report containing the scores of students in a batch in the following manner:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Student Id | Student Name | Marks scored | Lecturer Name | Course registered |
| - | - | - | - | - |

**What details should the admin staff accumulate to arrive at this detailed report?**

* The admin staff should particularly accumulate almost all the fields to arrive at this detailed report in the given database.

First from the system admin the Student Id should be pulled then, from the allocated courses by HOD the database needs to pull out where Lecturer Name with the course that the Students registered for the class. Similarly, the score given by the lecturer on that particular class to a particular student also need to be pulled out from the database in order to arrive at the given above detailed report.

**Assignment 2: OOP features**

1. **Identify the attributes of the Student class. What are the details that can be exposed and what details can be hidden?**

* Attributes of the Student class are Name, Student Id, Age, Educational Level, Residential Status, Hostel Number, Address, GPA, Date of Birth, SSN and so on. Out of these SSN, GPA and Date of Birth, Address is confidential and should be hidden and rest of the other attributes can be exposed.

1. **Consider the calculation of grade for the Student. There are several student types. Let us assume that we need write a method for the calculation. How many methods would be written? Will they have the same name and signature? Will the functionality/code in these functions remain same?**

* We can do this calculation by using method overloading. Since grade is calculated using different parameters like homework assignments, projects, tests, exams, and so on. So, we must write as many methods as the number of parameters present in it. They have same name while the signature and functionality code differ because of the numerous grading parameters which differs throughout each student.

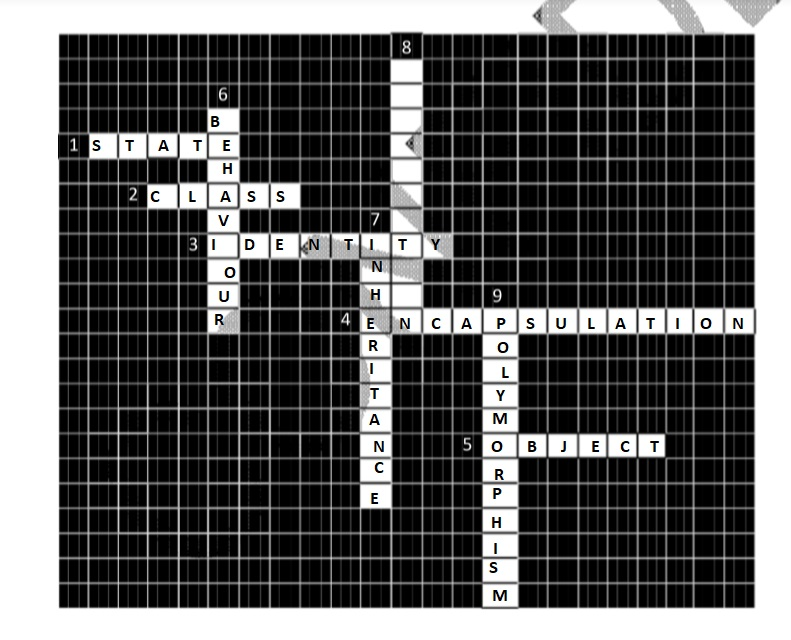
1. **The fees have to be paid by the host-elite and by the day scholars. The host-elites need to pay hostel fees along with semester fees. The day scholars need to pay only semester fees. How many function/s would you code in the Student class and why?**

* In this case we use method overriding since both category of student i.e., day scholar and host-elites, pay college fees either only tuition fee or including hostel fee. The host-elites student paying additional fee and the day scholar student paying only tuition fee has to use extended class to pay the regular and required tuition fee. I would use only one function and extend the function to other two different function later.

1. **For the options a, c and c identify the OOP features that would be implemented.**

* Option (a) is using Encapsulation feature of OOP.
* Option (b) is using Polymorphism feature.
* Option (c) is using Polymorphism and Inheritance.

**Assignment 3**

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