

assignment-1

Software Design and Architecture (SDA)



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SDA P1

**Question 1:**

1. **How coupling and cohesion are related to each other. Support your answer by giving an appropriate example.**

Coupling can be defined as the dependance of multiple modules on each other whereases the cohesion is the relationships among the different functions of a single module.

Coupling is the inter-Module binding and cohesion is an intra module-binding.

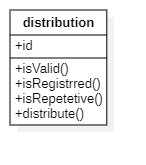
Coupling focuses on the dependencies which leads to more errors and it is reduced to get an error free code on the other hand the cohesion focuses of the relationships among the different functions of a single module that increases the strength of a module and leads to better performance.

*For example:*

We have a system to distribute the packages among needy ones. In this case we have three modules i.e., registration (registers needy ones), reception (verifies needy ones) and distribution (give package to verified ones given by reception).

These three modules are interdependent and cannot perform their tasks solely until receives output from previous task.

Within this particular scenario, **distribution** has **high coupling** and a **high cohesion** as every method inside module dependent on the other methods and some methods invoke other modules as well.



**Q1 (B):**

**Explain different types of cohesion and coupling for student registration system of UCP.**

Case-Study:

In student registration system of UCP different modules including (student, Information, Registrar Office, Department, Faculty).

Following are the major dependencies among the modules:

(1)

(2)

(3)

(3)

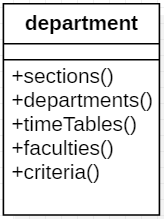
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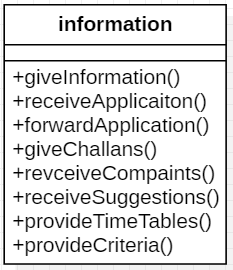
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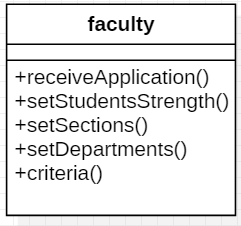
*Types Of Coupling:*

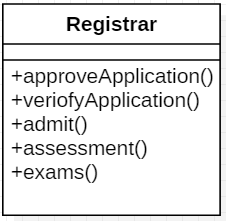
* **No Direct Coupling: Student has no direct coupling with faculty and department but indirectly it is dependent through registrar.**
* **Data Coupling: The data from student module is used by the rest of the modules which is data coupling of all other modules with registrar module.**
* **Stamp Coupling: Stamp coupling exists among the faculty and department module where and object of student is passed for registration from registrar office to these modules.**
* **External Coupling: If registrar office verifies the student’s previous results or CNIC from third party software or mean, it will then have external coupling with that external software.**

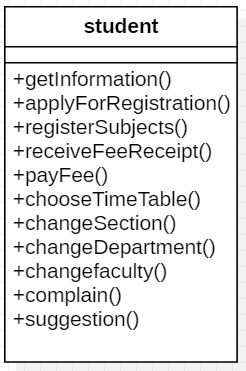
In order to analyze the types of cohesion in the system, we must propose the following modules along with their methods so that the relations among the methods can be easily understood.

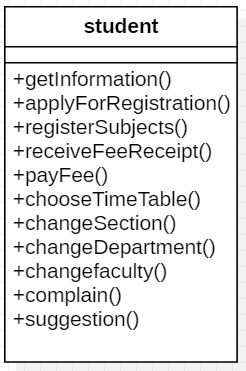
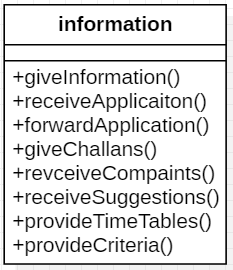












*Types of Cohesion:*

* **Functional Cohesion:**

**The goal of information module is to facilitate the student module so there is a functional cohesion.**

* **Sequential Cohesion:**

There is a sequential cohesion among multiple methods of the student module.

* **Communicational Cohesion:**

Communication cohesion exists among the methods of the student.

* **Procedural Cohesion:**

**Admission process for student module follows a sequence of steps to get admitted which is possessing procedural cohesion.**

* **Temporal Cohesion:**

**The department module exhibits temporal cohesion as all methods can be executed at the same time and there is no relationship among the methods in terms of dependency.**

* **Coincidental Cohesion:**

**The registrar module contains the methods which perform in loosely related to each other.**