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**SOFTWARE DESIGN AND ARCHITECTURE**

**LAB 4 TASK**

**CLASS DIAGRAM**

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**Course and Section:**

BSSE--4B

**Submitted To:**

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**Question 1:**

Draw a class diagram for a scenario of a test system. The process flow is outlined below. Use association according to your own understanding

**i. Students attend Classes;**

**ii. Teachers mark attendance;**

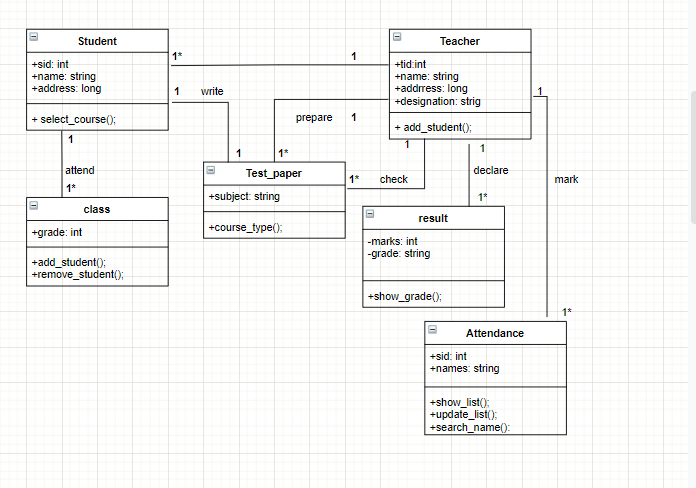
**iii. Teachers prepare test papers;**

**iv. Students write test papers;**

**v. Teachers check test papers;**

**vi. Teachers declare results;**

**Answer:**

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**Noun:**

* Student
* Name--- attribute of student
* Id—attribute of student
* Address--attribute of student
* Classes
* attendance
* Teacher
* Name-- attribute of teacher
* Id-- attribute of teacher
* Address-- attribute of teacher
* Designation-- attribute of teacher
* Teachers—redundant
* Test paper
* Test paper—redundant
* result

**Question 2:**

A company has a number of employees. The attributes of Employee include employee ID (primary key), name, address, and birth date. The company also has several projects. Attributes of Project include project ID, project name and start date. Each employee may be assigned to one or more projects, or may not be assigned to a project, a project must have at least one employee assigned, and it may have any number of employees assigned. As employee's billing rate may vary by project, and the company wishes to record the applicable billing rate for each employee when assigned to a particular project. At the end of each month, the company mails a check to each employee who has worked on a project during that month. The check amount is based on the billing rate and the hours logged for each project assigned to the employ

**Answer:**

**STEP 1:**

**Nouns:**

Company—irrelevant class

employee -- class

project---- class

billing\_rate----class

employee\_id-- attribute of employee

name: attribute of employee

address: attribute of employee

birth rate: attribute of employee

project\_id: attribute of project

project\_name: attribute of project

start date: attribute of project

employee—redundant class

project—redundant class

check\_mail-- operation

**STEP 2:**

**Redundant classes:**

Employee

Project

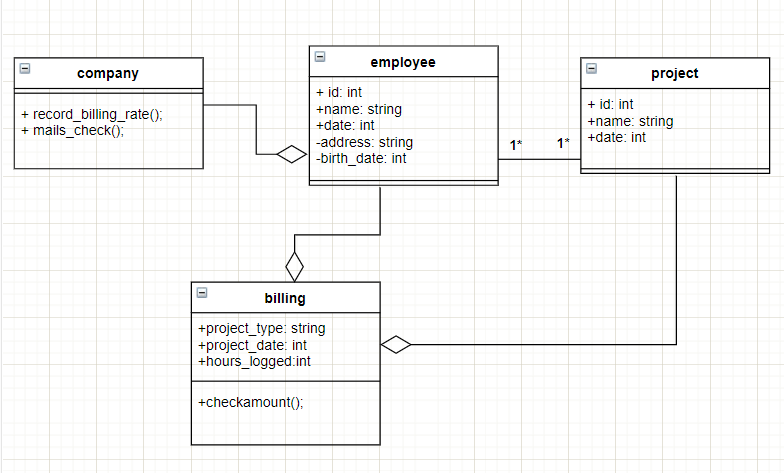
**Attributes:**

* employee ID (primary key), name, address, and birth date for **class Employee**.
* project ID, project name and start date for **class project.**
* Hours\_logged, project\_type, project\_date

**Operations:**

Check\_mails(), record\_billing\_rate(), check\_amount():

**Diagram:**



**Q3: Select smart draw or Visio and make a list of UML classifiers, UML relationships and UML enhancing features.**

**Answer:**

**Uml classifiers in ms Visio:**

In MS Visio, you can start with a blank UML template or (in some cases) modify a UML starter diagram.

* Class diagram
* Component diagram
* Object diagram
* Use case
* Sequence
* State machine
* Sub system
* Node
* Deployment diagram
* Object diagram

**Uml Relationships in ms Visio:**

**Uml Relationships:**

In UML, a relationship is a connection between model elements. A UML relationship is a type of model element that adds semantics to a model by defining the structure and behavior between model elements. Some relations are listed below;

* Association
* Generalization
* Aggregation
* Composition
* realization

**Uml enhancing Features in ms Visio:**

* It is related to object-oriented design and methodology.
* It is used as study tool to understand uml concepts.
* It is also applied in software industry and business. It can be used to visualize the workflow of a factory.
* It is used to visualize the workflow of the system.