

Final Individual Assessment

Information Systems Analysis and Design

CST2310

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Q1 Class Diagram

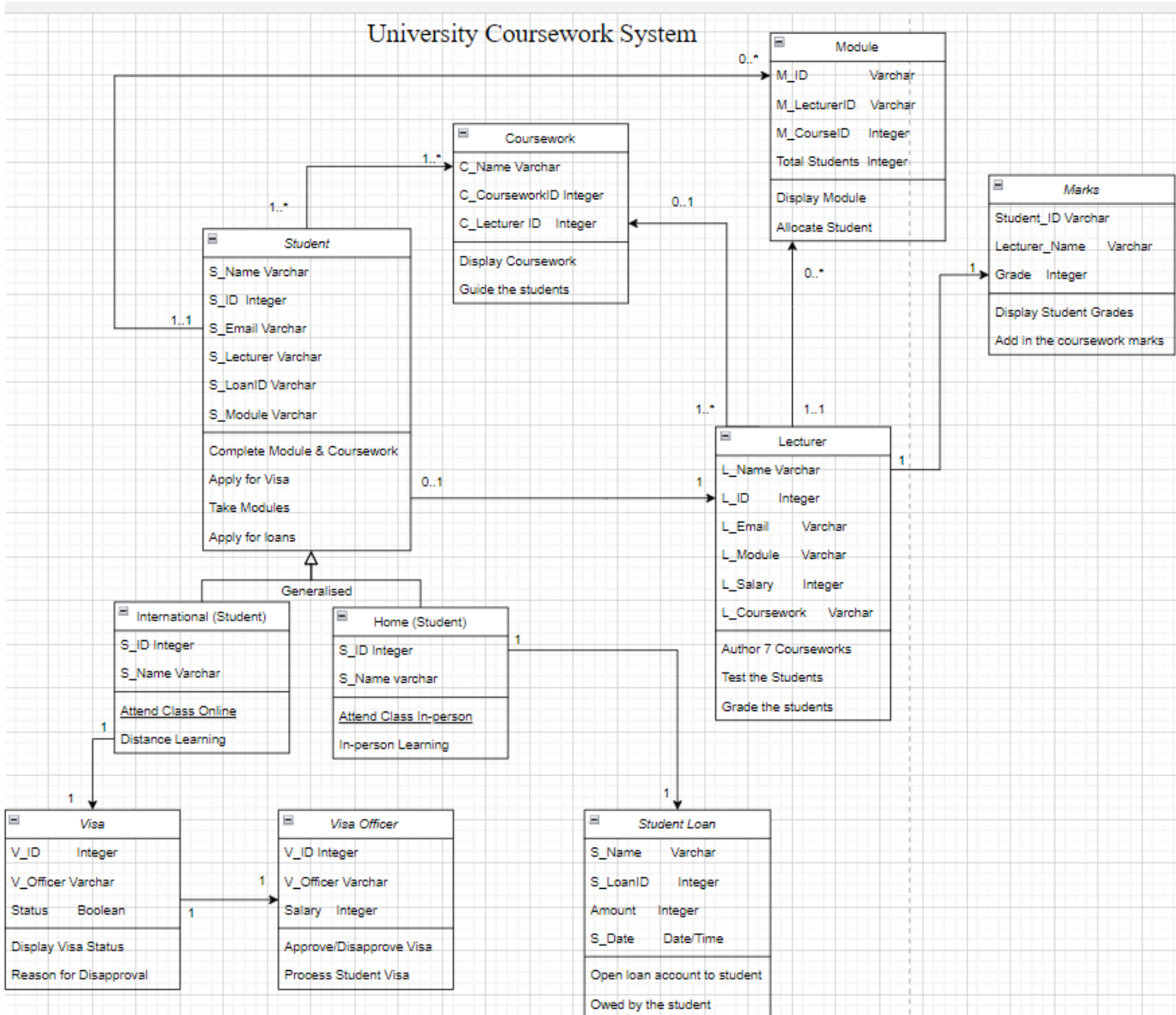


Fig. 1

1b Ans:

Generalisation is the connective relationship of a model element, also considered as a "Child" class to another "Parent" class. These are used to indicate the relationship between the classes, the right use of the attributes, relationship, and operations.

A 'Superclass' are algorithms assisting in transmitting data. In summary, a Super Class is an entity belonging to class that serves as the highest form of category in a structure and includes characteristics that are shared by the components of the 'Child Class'. Such classes can be used in a variety of data structures, including movement frameworks, determined database systems, and entities in decision-making contexts. 'Super Classes' are also known as 'Parent Classes' due to their transmitted character. When applied, the 'Parent Class's transmits on its characteristics and traits to the Subclasses or Child Classes (Decisions, 2021).

A 'subclass' is a class that is descended from the superclass. It gets all of the features from the 'superclass' as well as possesses unique attributes. Newly formed class is referred to as a 'subclass or child class'. However, not every 'entity' in a 'superclass' must be a part of some subclass. Subclass, with its own particular (or local) characteristics and relationships, as well as all of the superclass's attributes and relationships. An entity cannot reside in the database simply by belonging to a subclass (PadaKuu, 2023)

Q2 Activity Diagram

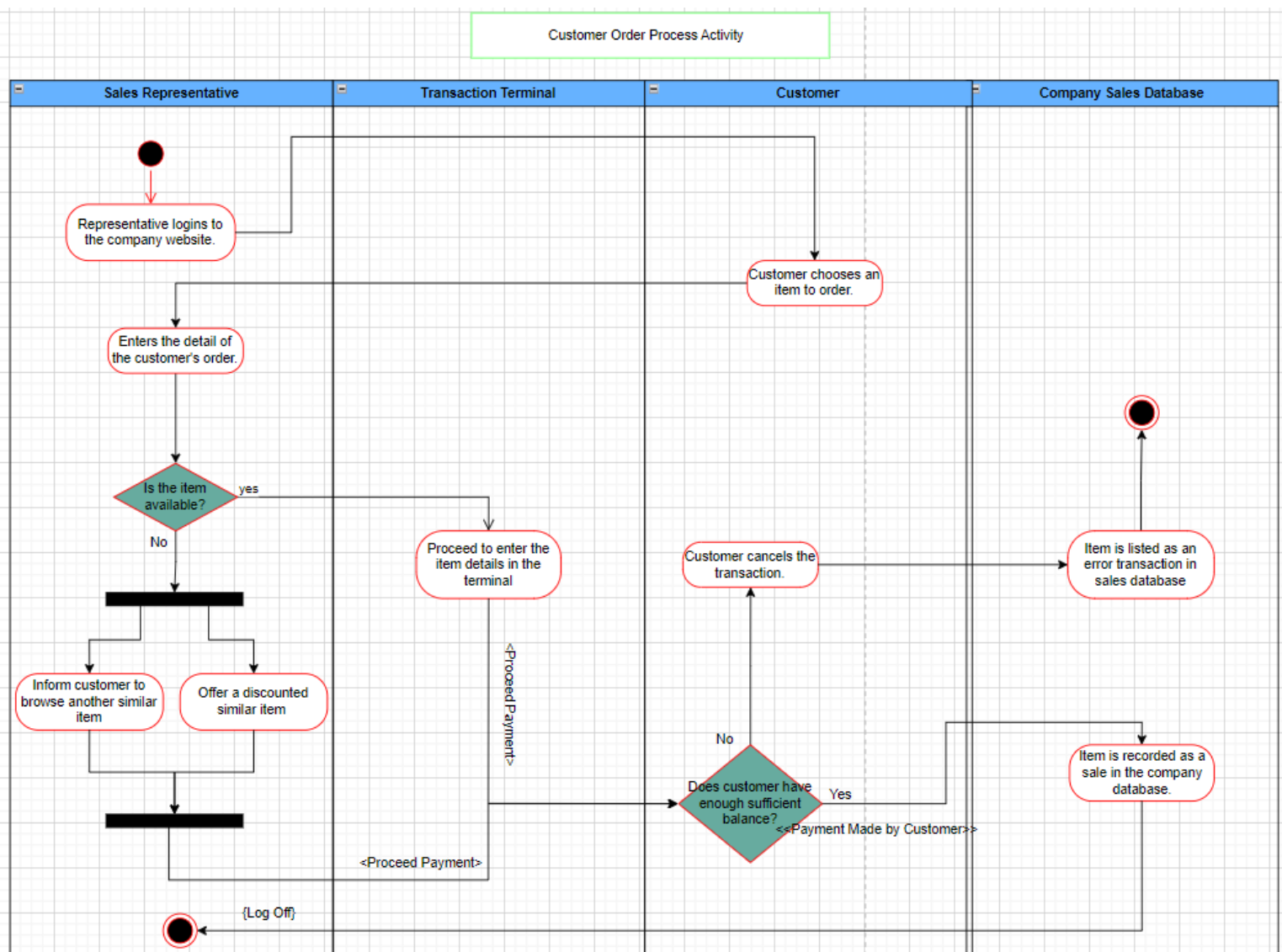


Fig.2

2b Ans:

UseCase-

A behavioural diagram is a 'use case' illustration. A single use case depicts a system's high-level functionality. A use case is represented by an ellipse with its name inscribed inside. A use case is invoked by an agent. It could be an individual, another system, or an organisation that wants to utilize the entire system. A rectangle also symbolises the system boundary. It also has two prerequisites, "include" and "extends." In general, the application case diagram aids in modelling the system's environment. In addition, diagrams of use cases can depict dependencies, modelling the system and the user interaction (Lithmee, 2018).

Activity Diagram-

A different kind behavioural map is an activity diagram. It is identical to a flowchart in that it conveys the process of moving to one task to another. The processes are the different system operations. activity diagrams depict the structure at a high level. The diagram begins with the first component. A condition is represented by a diamond symbol. it also includes an end symbol that ends the whole operation of the activity. Generally, a use case diagram is used as a purpose to create an activity diagram. The activity diagram contributes to modelling the workflow system (Lithmee, 2018).

Summary-

Use case diagrams and activity diagrams are behavioural UML diagrams that explain a system's dynamic nature. The distinction between a use case diagram or a schematic representation of an activity is that an employ case diagram is used to model the system and user interactions, whereas an activity diagram is used to model the system's workflow. These diagrams have numerous benefits. They aid in the modelling of business requirements and the acquisition of a high-level grasp of the system's functionality (Lithmee, 2018).

Q3 Sequence Diagram

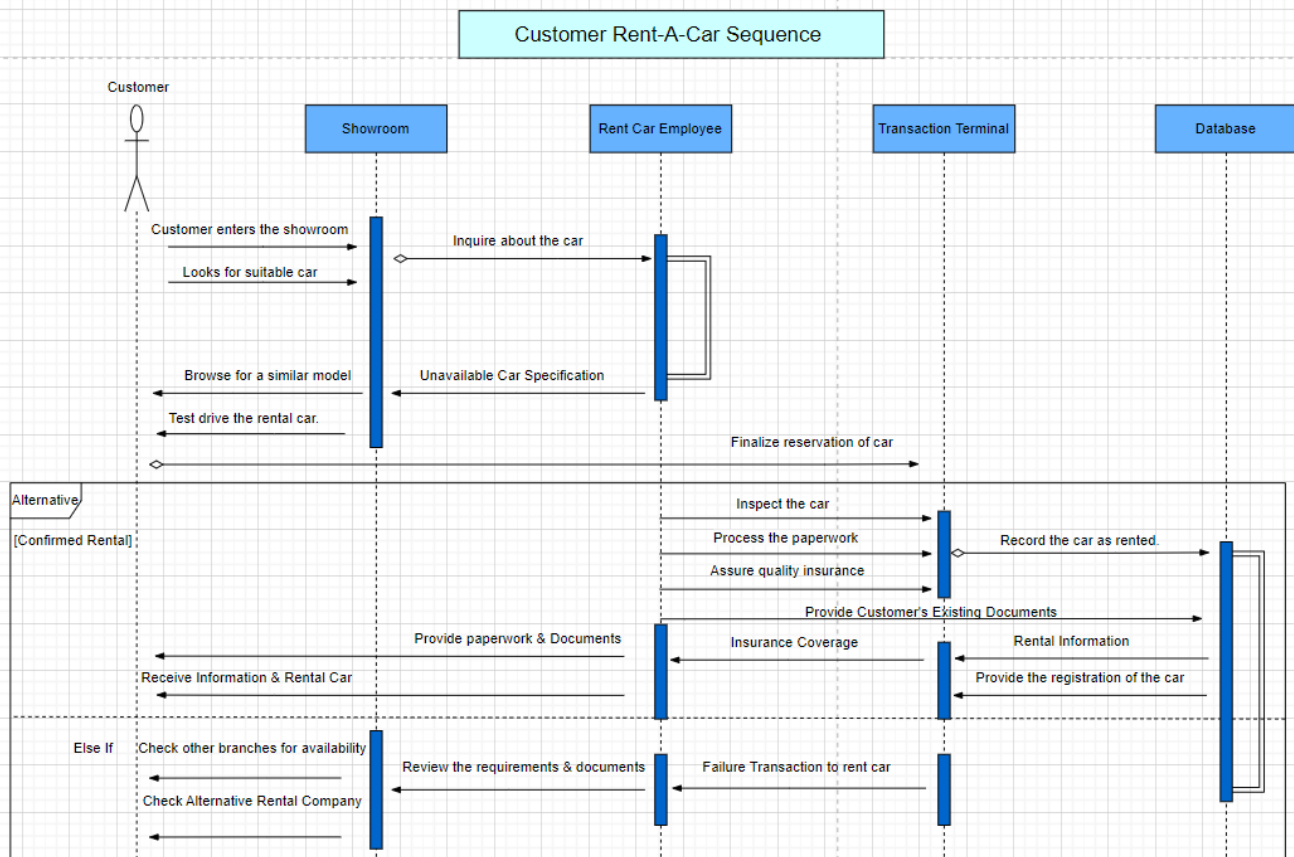


Fig. 3

2b Ans:

A sequence diagram is a diagram created using the Unified Modelling Language (UML) that demonstrates the series of messages exchanged between 'objects' in a connection. A sequence diagram is made up of a collection of objects represented by lifelines and the information that they share over time during interaction. A sequence chart is a type of diagram interaction, in that it describes how and in what order an assortment of objects engage with one another. Programmers and company workers use these diagrams to comprehend the specifications for an innovative system or to detail a current process. Event diagrams and event situations are other names for sequence diagrams. Sequence diagrams are classified into two types: UML diagrams and code-based diagrams (IBM, 2021).

Throughout the research stage, the sequence diagram can be used to depict the relationships of class instances, in order to visualize a use case. Sequence charts are able to determine the elements that a system requires and what objects of class do in interactions during the analysis process. The next stage is the design phase, where the sequence diagram, iterates the interactions within the system. Finally, sequence diagrams can be used during the building of a system architecture to demonstrate the behaviour of the engineering techniques and strategies that the system employs (IBM, 2021).

Q4 General Data Protection Regulation.

4a Ans:

Storage Limitation.

This is a critical component of GDPR compliance. "Data must be kept in a form that authorizes verification of users to provide no further time than what is required for the objectives with which individual information are processed," according to the ICO. Individual information may be stored for longer time frames if it is processed exclusively for public interest archiving, scientific or historical research, or statistical reasons. These exceptions must adopt the suitable organizational and technical safeguards demanded by the General Data Protection Regulation (GDPR) to protect individuals' rights and freedoms." You have to clearly clarify to the client the duration you will keep their data and ensure that it is correctly destroyed once it has served its purpose. This sets established standards for the clients and increases confidence because they know that once their personal data is used, it will not be siloed away, expecting until it is disclosed or seized in a breach. It reduces both exposure and loss in the case of a breach of data (Accountable, 2021).

Ensuring that confidential data is erased or anonymized when it is no longer required reduces the risk of it becoming irrelevant, excessive, inaccurate, or out of date. Aside from aiding with adhering to information elimination and precision principles, this also lowers the chance that hackers will use such data incorrectly, to the detriment of all parties involved. Personal data that is kept for an inordinate amount of time is, by definition, "useless". Individuals are unlikely to be able to a legal justification for keeping data and information (Accountable, 2021).

4b Ans:

1) "Increases in territorial scope."

-Article 4(a) of the GDPR groups with respect to its territorial reach that "the regulation applies to the processing of personal data in the context of the activities of an establishment of a controller or a processor in the Union, regardless of whether the processing takes place in the Union or not" (EU GDPR 2018).

2) "Increases in penalties."

-In terms of the total amount of GDPR fines assessed, France, Germany, and Austria come out on top with just over \$56.5 million, \$26.1 million, and \$19.9 million, respectively. The French data protection regulator penalized Google their biggest GDPR fine to date of \$55.4 million for alleged violations of the disclosure policy and lack of proper consent, instead of a data breach ('More than 160,000 GDPR Data Breach Notifications Across 28 European Countries', 2020)

4) "Breach notifications."

-A breach notification is generally described as an unauthorized use or release of information that violates a person's Privacy and jeopardizes the confidentiality or security of their sensitive information. Unless the authorized, entity or business associate, as applicable, can show that there is a minimal possibility that the protected health information has been compromised based on a risk assessment, an unauthorized use or disclosure of protected health information is deemed to be a breach (Office for Civil Rights, OCR, 2009).

4c Ans:

The four security controls:

Pseudonymization

Physical Systems are used to analyse flow of information in the interconnected physical and cyber worlds. The findings show that a physical system's physical and digital attributes when combined can both conceal and reveal information. Finding a consistent representation of the physical and cyber components, their interactions, and the dynamics of the system, as well as developing a formalized modelling technique for predicting information flow, are essential to formalizing this study (Akella, R., Tang, H. and McMillin, B.M. 2010).

'Security controls' are alternatives or protections intended to limit the likelihood that a threat may exploit a vulnerability.

Adopting across the organization security awareness programs, for example, can help reduce the danger of a hacking attempt on the system, individuals, and information systems. Risk mitigation is another term for risk reduction. Policies, procedures, or standards that govern people or business practises in compliance with the organisation's security goals are referred to as administrative security controls. Additional security measures are required to ensure ongoing surveillance and enforcement in order to establish administrative controls (Swanagan, 2020).

A security policy, for example, is a managerial oversight, but its security criteria are carried out through individuals (operational controls) and systems. (technical controls).

Surveillance relates to the latest technology personnel, and resources used by organisations to keep track of the activities of various real-world places and facilities. Patrol security personnel, thermal detectors, and alerting systems are among examples. 'Closed circuit television' (CCTV) cameras, which record the activity of many locations, are common types of surveillance. The advantage of these monitoring systems is the fact that they're just as useful for catching illicit conduct as they serve the purpose of preventing it. Threat actors who view a security camera are less likely to break into or vandalise a building because they are afraid their identify will be recorded. Similarly, if an item or piece of machinery is taken, surveillance can give the video evidence required to identify the perpetrator and their techniques (Cobb, n.d.).

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