

# ASSIGNMENT COVERSHEET FOR INDIVIDUAL WORK

## Faculty of Design and Creative Technologies

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# Portfolio

## Week 1 (8%):

### How does your mobile phone demonstrate these key points?

These are 3 key points of User experience - as know as 3 layer of User experience:

**Human User:** how a mobile phone interacts with its user in many form of interaction. For example, User Interface (icons, voice assistant, notifications..). These aspects aim to make the interactions between our device and user more easily, more fluently, friendlier.

**Application:** designed as a model of different software components, services, and hardware working together to provide a wide range of services and functionalities like operating system (IOS, Android), connection (WIFI, Bluetooth), application ecosystem( apps, programs, software).

**Technology:** demonstrated by using diverse technologies, hardware, software, connectivity, and security to provide features and services. By each technology advances happens day by day, can be using to pushing the design much further , like the evolution from keyboard phone to touch-screen phone , wired to wireless.

### How can UML be used to model the service stack of User Interface, Applications, and Infrastructure?

UML be used to model the service stack of User Interface, Applications, and Infrastructure through many type of diagram:

#### -Use Case Diagram (Upper layer):

- a model of the system's intended use cases and its environment (entities outside or actors)

#### -Class Diagram (Lower layer):

- Create class diagrams to represent the application layer. In this layer, you can model the classes, objects, and their relationships.
- Include classes that represent the application's core functionality and any business logic.

#### -Activity Diagram:

- Activity diagrams can be used to model the workflow and business processes within the application. They can help you visualize how different components and processes interact.
- Show the flow of control between different activities and decision points within the application.

#### -State Machine Diagram:

- If your application has complex state transitions, you can use state machine diagrams to model the behavior of individual components or objects.
- Show the different states and transitions that an object or component can go through.

## Week 2 (8%):

Enterprise Architecture contains many models and modelling systems.

**Describe how ArchiMate (3 Layers + 3 Aspects) models an enterprise system. (Half page)**

**ArchiMate models an enterprise system by using 3 Layers and Aspects to build a detail enterprise system**

**Three Main Layers:**

- **Business layer:** Models the business aspects: processes, structures, products, services, and actors.

\***Business Actor:** describes a business entity with the ability to perform behavior capability.

\***Business Role:** identify the particular role of an actor, what is its specific behavior and how it can be assigned, or the part of an actor plays.

\***Business Collaboration:** describes an aggregate of two or more business internal active structure elements that work together to perform collective behavior.

\***Business Interface:** describes a point of access where a business service is made available to the environment.

-**Application layer:** Focuses on software applications, services, and components and illustrates the technology employed to support business operations.

\***Application Component:** describes as an encapsulation of self-contained unit which is modular, re-usable and replaceable that can perform multiple application functions.

\***Application Collaboration:** describes as an aggregate of two or more application structure elements that work together to perform application behavior.

\***Application Interface:** describes as a point of access that is made for user, other component and elements.

-**Technology Layer:** Depicts the IT infrastructure: servers, databases, networks, and protocols and shows the technological backbone that facilitates applications and business processes.

\***Node:** represents a physical or computational resource.

\***Device:** represents a physical IT resource which system software and hardware that can be used or stored.

\***System Software:** a software can be used for storing, executing, and using data deployed within it.

\***Technology Collaboration:** represents a collaboration of different structure elements that work together.

\***Technology Interface:** represents a point where other technology services of a node can be accessed by other.

\***Path:** a link between each other node, these nodes can interact for data, energy or material.

\***Communication Network:** set of structures that connects nodes for transmission, routing, and reception of data.

\***Artifact:** a “physical” element in the IT world, used to model (software) products such as source files, executables, scripts, database tables, messages, documents, specifications.

### Three Aspects:

- **-Active Structure Aspects:** focuses on represent entities that performing behaviors within the enterprise. In Business Layer, you can organizational structure with roles ,actors, collaboration, interface or object. While in the Application Layer, you can represents the structure of software components and their Collaboration. The Technology Layer mainly structure by node, which can be used to model behaviors and relationships between others in this layer.

**-Behavior Aspects:** made between the external behavior such as processes, events, and interactions. Also modeling how activities and processes flow within the organization. This Aspects are similar to the behavior elements in the other layers

**-Passive Structure Aspect:** Offers a deeper state of the element that are used to accessed or acted upon by other elements, like objects, artifacts or products.

### What does an Enterprise Architect do in their work? (Half page)

An Enterprise Architect is responsible for designing, planning, and managing the IT structure, IT network and operation of an organization's IT systems and processes. They also need to understanding the company's goals and objectives, analyzing its current IT infrastructure. Understand how to involve the upkeep, maintenance, and upgrade of enterprise software and hardware, implementing emerging technologies or platforms to serve the company better also a part of their work. Here's a breakdown of what does an Enterprise Architect do in their work:

**Strategic Planning:** Enterprise architects initiate new projects by aligning them with predetermined long-term business goals of the organization. They leverage a technology plan they have

developed to facilitate technology objectives such as innovation, cost reduction, and gaining a competitive advantage in both hardware and software.

**Architecture Design:** Enterprise architects build blueprints that lead their team to guarantee that the organization's technological architecture, hardware, software, data, applications, and networks run smoothly and efficiently.

**Risk Management:** Risks associated with technological decisions are assessed by enterprise architects, and mitigation strategies are proposed. They consider security weaknesses in data privacy, regulatory compliance, and business continuity.

**Cost and Change Management:** Enterprise architects manage IT spending optimization, identifying areas for cost savings through technology consolidation, cloud adoption, or resource optimization. They are also responsible for ensuring that employees are prepared and that the changes are consistent with the overall plan.

**Future Improvement:** Enterprise architects constantly monitor the technological landscape and the changing demands of the company. They modify the IT strategy and architecture as needed to stay up with changing business conditions.

### Week 3 (8%):

Cloud services provide the opportunities for enterprise systems to pivot and respond in an agile way to market forces.

#### **Explain how Cloud services help a business to be cost effective. (Half page)**

Cloud Services like Amazon Web Services can help businesses by offering businesses a cost-effective solution in several key ways:

**Reduced Capital Expenditure:** Cloud services can greatly reduce the cost of hardware, software which may cost thousands of dollars but still demand continuous maintenance. It also doesn't require any rental costs for physical server hardware, which reducing their upfront capital expense.

#### **Low initial investment costs:**

Usually, you have to build entire IT infrastructure from scratch. This is a investment that cost both your plenty of time and money because your business must purchase a data severs. Risky and expensive, this investment is a challenge for your business in the early state. Since the cloud doesn't require any human resources, money or time to deploy, which lower the cost of investing in data severs for your business.

**Pay-as-You-Go model:** This pay-as-you-go model allows your businesses to pay only for what they use, promoting cost-efficiency. There's no need to pay for idle resources, allow your business financial stay flexibility.

**Access to Advanced Technologies:** Cloud service companies are constantly introducing new technology and services. Businesses may benefit from these improvements without making large initial expenditures.

## How can the three layers for Cloud services help a gaming platform? (Half page)

The cloud computing layers that are available are: infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). These layers can be used to benefit a gaming platform in various ways:

### -Infrastructure as a Service (IaaS):

- + Scalability: IaaS allows gaming platforms to scale their infrastructure more flexibly based on server demand which can vary considerably.
- + Resource Management: IaaS make it easier to manage and customize resources such as storage and networking, which can be adjusted to match the requirements of the gaming platform.
- + Cost-Efficiency: IaaS allows the platform to pay only the part of resources that they used by the Pay-as-You-Go model, making it a cost-effective solution.

### -Platform as a Service (PaaS):

- + Scalability: PaaS platforms may scale applications automatically based on demand, making it simpler to deal with surges in player activity.
- + Efficiency: PaaS allowing game developers to concentrate on game creation and less focus on server administration and maintenance.
- + Middleware Support: PaaS can provides middleware and development tools that useful for gaming aspect, which help the game feature more variety. EX: Steam API key, cloud databases.

### -Software as a Service (SaaS):

- **Cloud gaming storage:** SaaS can be used to transfer game data directly from cloud servers to user's devices, obliterated the need of installing games locally.
- **Authentication and Management:** SaaS can be used to oversee user authentication (steam guard), account management (third-party add-on), and in-game transaction.
- **Data Analytics:** Analytics tools made through SaaS can be manage to collecting difference data based on player behaviors, preferences, and performances. These information is a valuable source of data feedback that can be used to improve user gaming experience.

## Week 4 (8%):

**ArchiMate is one of many tools that can be used for service design and modelling in enterprise systems.**

Choose another service design tool and define the capability. (Half page)

Another service design tool that i have used aside with ArchiMate is Lucidchart. These are the capability of Lucidchart, a dual free-pay software:

**Various of Diagram Creation:** Lucidchart has a tons of diagrams that user can used for their purpose. From flowcharts to UML, organizational charts, network diagrams, mind maps, and so on, difference drag-and-drop interface can also be used for adding shapes or connectors to your own diagrams.

**Collaboration:** It is designed for collaboration between Multiple user. This made it easier for working together when create and design diagrams in real-time working environment. Users can interact with others via comments, chatting, see where other user has done, and notifications when something changes.

**Integration:** Lucidchart offer they user variety of popular project manager tools that integrated with it, such as Google Workplace, Microsoft and Atlassian.\

Compare ArchiMate with your other tool. (Half page)

The difference between ArchiMate and Lucidchart focus on these key points, which make them have their own unique and different from each other:

**Purpose :** Lucidchart is a multiple purpose diagraming platform with wide range of diagrams, which made it lack the specification for enterprise architecture or modeling. On the other hand, ArchiMate can give user the best equipment to modeling any enterprise architecture easily, from model the structure, behavior, relationship to focus on business processes, information and technological aspect.

**Modeling Language:** There is no standardized modeling language in Lucidchart. In fact, it have a general purpose diagraming platform so that their users can create diagrams based on their specific purpose or needs. Mean while, ArchiMate give their user a formal modeling language that focus on enterprise architecture by many difference set of concepts, relationships and layers.

**Free-or-not:** Both Lucidchart and ArchiMate offer two versions: a community version and a paid version. Lucidchart provides an online platform that is free to use, but it has limitations in terms of features. On the other hand, ArchiMate offers a free personal app, version 2.1 , that users can download and use offline. Although some features are reduced in the free version, it still offers convenience and effectiveness.

## Week 5 (8%):

Quality of Service (QoS) is critical for customer experience and business continuity.

**List the elements that make QoS. (Half page)**

Quality of Service (QoS) is the user experience and satisfaction and delight of our service by looking into our customer feedback and to see if we are achieving the things we've set out to do with our service. From there, we can improve our service and make it better, giving the best service that we can offer to old and new customer. It defined by several key factors include effectiveness, efficiency, learnability, satisfaction, and errors. Here how these terms work in the context of QoS or Quality of Service:

**Effectiveness:** This terms show how success the service fulfills the customer's needs or solves their problems showed through success rate metric. A higher success rate our service give, the better and effective that our service have been given to customer.

**Efficiency:** Efficiency refers to the optimization of the services and how effectively is time or work required by customers to obtain what they want. "It's cost me 2 minutes to login !" or "Why its is too complicated here just to see where my previous order ?" is an example of efficiency. The better services is, the quicker and simplifier task and time took from customer obtain what they needs.

**Learnability:** This terms evaluates how easily user can learn to use the service. Is it too complicated or not? Does it easy to use for elderly or kids? A high learnability service is the one that user can learn how to use it easily and proficiently, even for new users.

**Satisfaction:** Do our customer satisfy about service? Did it give them what they need or solves their problems perfectly? Customer satisfaction is a metric we used to see the level of contentment that our customers have with a particular service.

**Errors:** This factor evaluates the number or type of problems encountered by the customer while using our service, which measures by the rate of cancellation or system rejection. Is it to many bug that user can't even use it? Too laggy ? Various of problems in software, hardware or physic layer could happen and reduced the quality of use in our service. A good service is the one can aim to fixing, minimize errors to keep the customer experience smooth and non-frustration.

## What software services improve customer experience? (Half page)

Customer experience and tools can significantly improve customer experience in various industries by using it. These are some different software services that can help our business enhancing customer experience:

**-Live Chat and Help Desk Software:** Many tools like LiveChat and Help Scout can add real-time communication with customers to your service, allowing your customer knew more, faster problem solving and make the satisfaction goes up..

**-User Experience (UX) and User Interface (UI) Design Tools:** With Sketch or Figma tool, business can create more user-friendly platform or software, increase the efficiency,,learnability of our services, deceased UI Errors, make them less complicated to be used.

**-Social Media Management Tools and Email marketing software:** These tools can attract ,enchant more users by increase engagement and communication between user and your



service, fostering better online relationships. Mailchimp, Buffer are well-know in this case, which can be use to make the Efficiency and Effectiveness even better.

**-Feedback and Survey Tools:** By looking to customer feedback, we can learn and know more about what they need and how we can serve them beautifully. Software such as SurveyMonkey and Typeform will be the best tool for many service want to pump up in every side: Effectiveness, Efficiency, Learnability, Satisfaction and Errors;.

**ArchiMate Model (10%)**

Mum’s Cake store is a standalone retail outlet with 50,000 customers per day. The satisfy customers and to meet service demand Mum’s has adopted the latest digital technologies for security and Information Services. There is a mix of robots, integrated information services, automated checkouts, and friendly human help services. Model this enterprise system using the three layers (Business, Application, and Technology), and the three Aspects (Passive, Behavioural, and Passive) using the ArchiMate design tool. (1 Page)



