



## DESCRIPTION OF COURSEWORK

Course Code	SOF204
Course Name	Software Architecture and Design Patterns
Lecturer	Noor Hida Natrah Binti Aziz
Academic Session	2025/04
Assessment Title	Project

### A. Introduction/ Situation/ Background Information

To design and analyze a software architecture.

### B. Course Learning Outcomes (CLO) covered

At the end of this assessment, students are able to:

CLO 2 Apply different architectural viewpoints to organize partitioning to support deployment, maintenance and functional extension of a software architecture.

### C. University Policy on Academic Misconduct

1. Academic misconduct is a serious offense in Xiamen University Malaysia. It can be defined as any of the following:
  - i. **Plagiarism** is submitting or presenting someone else's work, words, ideas, data or information as your own intentionally or unintentionally. This includes incorporating published and unpublished material, whether in manuscript, printed or electronic form into your work without acknowledging the source (the person and the work).
  - ii. **Collusion** is two or more people collaborating on a piece of work (in part or whole) which is intended to be wholly individual and passed it off as own individual work.
  - iii. **Cheating** is an act of dishonesty or fraud in order to gain an unfair advantage in an assessment. This includes using or attempting to use, or assisting another to use materials that are prohibited or inappropriate, commissioning work from a third party, falsifying data, or breaching any examination rules.

- 2.** All assessments submitted must be the student's own work, without any materials generated by AI tools, including direct copying and pasting of text or paraphrasing. Any form of academic misconduct, including using prohibited materials or inappropriate assistance, is a serious offense and will result in a zero mark for the entire assessment or part of it. If there is more than one guilty party, such as in case of collusion, all parties involved will receive the same penalty.

#### **D. Instruction to Students**

- This is a group project, consists of **55%** of the course grade.
- Based on the total number of students, minimum 4 or maximum 5 members are permitted for each group. Some components of the project are graded based on individual's merits. You are also encouraged to discuss with course lecturer.
- Submission Project
  - Submit to Moodle the project cover page, this document (i.e. Description of Coursework), your project documentation (in PDF), and Archi Model file (all of these can be zipped during submission).
- Only **one member** of the group needs to submit the project. State clearly in the project cover page all the group members' particulars. Also state in the project documentation the contribution/task done by each group member.

Your project documentation should use the following formats:

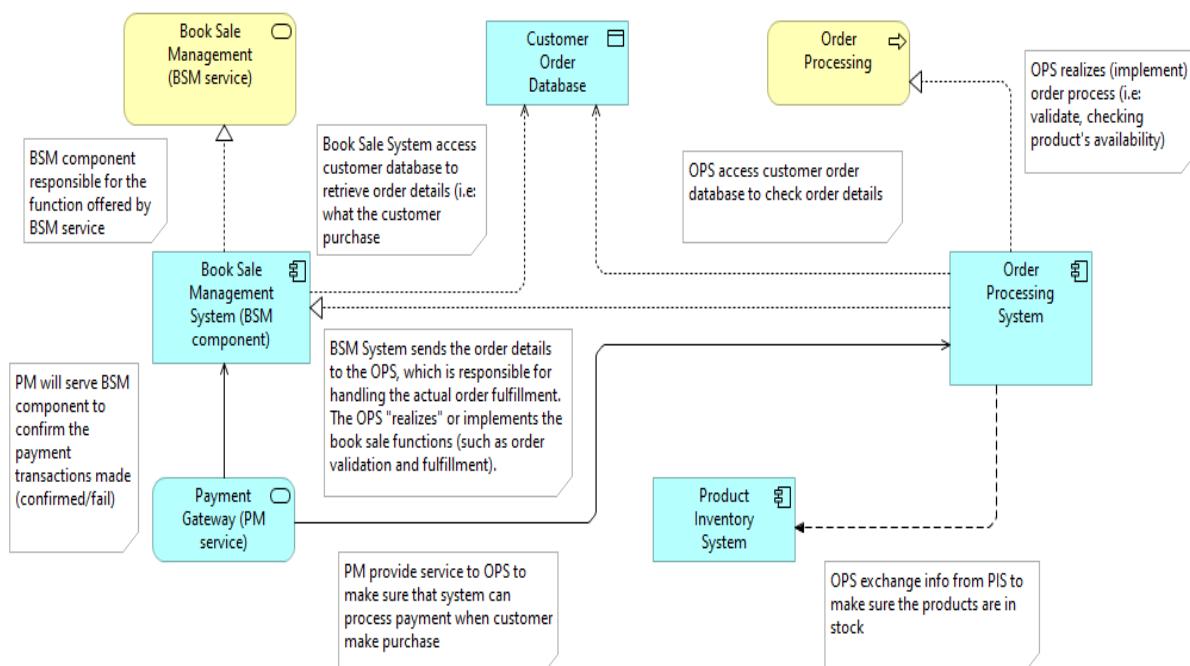
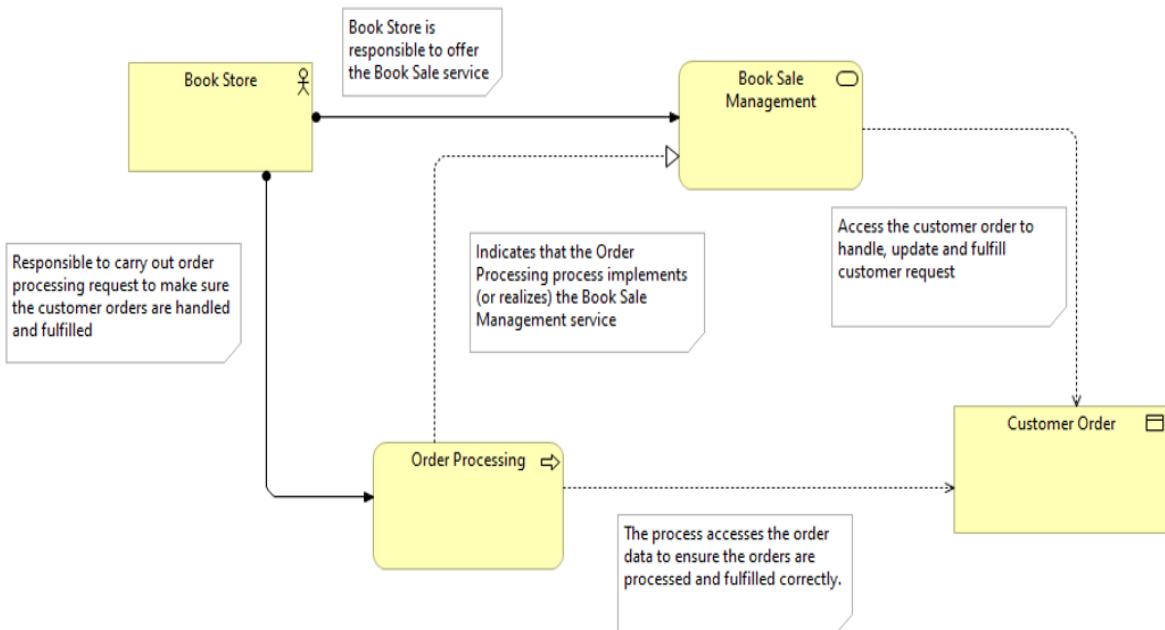
- Line Spacing: 1.5 lines
- Alignment: Justified
- Font size for the text: 12 points
- Font size for headers: 14 points
- Font type: Times New Roman
- Page length (excluding cover page and references): minimum 10 pages
- In-text citation
- References: at least 8 (any kind of references, such as books, Internet resources, journal papers, conference papers, my lecture slides, videos, etc.)
- Pictures/diagrams/figures/tables are allowed but not compulsory. They need to be cited properly if they are obtained from other sources. No mark will be deducted if you do not

use any pictures/diagrams/figures/tables. No extra mark is allocated for them too. Use them only if you think that they may aid your explanation.

- Insert in your project documentation the screenshots of your software architecture which you draw using Archi.
- **Archi Model file must be submitted. It is because the screenshots of your software architecture do not contain additional information which is included in your Archi Model file.**
- The example below illustrates what is an Archi Model file:

	Name	Date modified
Pictures		
Music	UNITY	10/10/2024 12:25 PM
Videos	Airport IT System	9/22/2024 12:04 AM
SWE305 - GA	Airport IT System.archimate.architemplate	9/22/2024 12:04 AM
SOF204	Airport IT System.archimate.bak	9/22/2024 12:04 AM
Scenes	AMS	9/22/2024 12:04 AM
DMT321 & S'	Book (Tutorial)	10/8/2024 11:17 AM
	Book (Tutorial).archimate.bak	10/8/2024 11:17 AM
	FIDS	9/22/2024 12:02 AM

As mentioned above, you need to insert the screenshots from Archi software in your project documentation. Below is an example of the screenshots (I only include 2 screenshots here. The first is for the business layer, the second is for the application layer. Your project shall have more than two screenshots):



Apart from your project documentation (convert to PDF format), your Archi Model file which contains all the drawings and the associated documentation for each drawing must be uploaded to Moodle as well. Make sure that the right Archi Model file is uploaded.

**Deadline: 12PM, 20 June 2025 (Friday, Week 12). Submit to Moodle**

Late submission through email (before 12PM, 22 June 2025) will incur a late penalty of 5%-mark deduction from your acquired mark. Submission after 12PM, 22 June 2025 will not be accepted unless you have a justified reason.

#### E. Evaluation Breakdown

No.	Component Title	Percentage (%)
1.	Project documentation (in Word format): concrete scenarios for quality attributes	3
2.	Project documentation (in Word format): Functionality requirements	3
3.	Project documentation (in Word format): Analysis of the tactics for improving each quality attribute	5
4.	Architecture modeling (using Archi): the appropriateness and extensiveness of the application, business and technology layer	10
5.	Architecture modeling (using Archi): the views of model	10
6.	Description and analysis of how your organization's software architecture can be integrated with either the IoT or cloud system (Include in project documentation. Write this part under a new section/heading. Every group member must provide independent and separate write-up for this. You must include your name for your write-up. No name means no mark for you) ( <b>individual mark</b> )	10
7.	Format and language clarity (e.g., wording, alignment, etc) of the project documentation	2
8.	Documentation in Archi model for all the drawings	7
9.	Presentation ( <b>individual mark</b> )	5
	<b>TOTAL</b>	<b>55</b>

## F. Task(s)

Assume you are a software architect for a large company with over 500 employees (such as a shopping mall, transportation hub, supply chain, e-commerce or healthcare provider—you can create your own fictional company). Your job is to design the new IT system's software architecture. Additionally, you will decide whether the system should integrate with an Internet of Things (IoT) platform, a cloud-based solution or hybrid approach. (you can research these technologies before making your decision).

Your task is to:

- Identify and describe specific scenarios for at least three quality attributes you want the IT system to exhibit. Each attribute should be supported by multiple relevant scenarios.
- List at least 30 functional requirements for the system. (If unsure what functional requirements are, refer to Chapter 4 in the PowerPoint slides for guidance.)
- Conduct a detailed analysis of the techniques (tactics) that will be employed to enhance each of the chosen quality attributes.
- Use the Archi modeling tool exclusively (available at <https://www.archimatetool.com/> ) for modeling your architecture. Ensure the Business layer, Application layer and Technology layer are both designed using this tool. Other modeling tools are not allowed.
- Create a minimum of 15 views of your software architecture. Each view should present the modules in different configurations. (Note that 15 views are the basic requirement, and additional views can improve your grade.)
- Describe and analyze how your organization's software architecture can be connected to either an Internet of Things (IoT) platform, a cloud-based system and hybrid approach. Discuss the integration process, benefits, and potential challenges (this is an individual's effort)
- Presentation (Week 13 – Week 15) – individual

## APPENDIX 1

### MARKING RUBRICS

**\*Note: the criteria numbers are corresponding to the numbers listed in Section E of this document**

<b>Component Title</b>	<b>Project</b>					<b>Percentage (%)</b>	<b>55</b>	
<b>Criteria</b>	<b>Score and Descriptors</b>					<b>Weight (%)</b>	<b>Marks</b>	
	<b>Excellent (5)</b>	<b>Good (4)</b>	<b>Average (3)</b>	<b>Need Improvement (2)</b>	<b>Poor (1)</b>			
<b>1</b>	Relevant and comprehensive concrete scenarios with no mistakes	Relevant and comprehensive concrete scenarios with a few minor mistakes	Adequate and relevant concrete scenario with some major mistakes	Inadequate but relevant concrete scenario with some major mistakes	Inadequate and irrelevant concrete scenario	3		
<b>2</b>	Detailed and comprehensive functionality requirements with no or minimal mistakes	Comprehensive functionality requirements with some mistakes	Adequate functionality requirements with some major mistakes	Adequate functionality requirements with many major mistakes	Inadequate functionality requirements with substantial major mistakes	3		
<b>3</b>	Detailed and comprehensive analysis of tactics with no or minimal mistakes	Comprehensive analysis of tactics with some mistakes	Adequate analysis of tactics with some major mistakes	Adequate analysis of tactics with many major mistakes	Inadequate analysis of tactics with substantial major mistakes	5		
<b>4</b>	Extensive and appropriate modeling of application, business and technology layer with no or minimal mistakes	Extensive and appropriate modeling of application layer with some mistakes	Adequate level of extensiveness and appropriateness in the modeling of application layer with some major mistakes	Adequate level of extensiveness and appropriateness in the modeling of application layer with many major mistakes	Inadequate level of extensiveness and appropriateness in the modeling of application layer with substantial major mistakes	10		
<b>5</b>	Detailed and comprehensive modeling of views with no or minimal mistakes	Comprehensive modeling of views with some mistakes	Adequate modeling of views with some major mistakes	Adequate modeling of views with many major mistakes	Inadequate modeling of views with substantial major mistakes	10		
<b>6 (individual mark)</b>	Sufficiently detailed and relevant description and analysis of the integration of	A large extent of detailed and relevant description and analysis of the integration of	Description and analysis of the integration of the organization's software architecture with	Description and analysis of the integration of the organization's software architecture with	No description and analysis of the integration of the	10		

	the organization's software architecture with either an IoT or a cloud system	the organization's software architecture with either an IoT or a cloud system	either an IoT or a cloud system, with many details missing.	either an IoT or a cloud system, with complete irrelevancy	organization's software architecture with either an IoT or a cloud system		
7	The report complies completely with the format and the language used is clear	Most parts of the report comply with the format and the language used is clear	Most parts of the report comply with the format and the language used is considerably clear	Many parts of the report do not comply with the format and the language used is considerably clear	Most parts of the report do not comply with the format and the language used is not clear	2	
8	All drawings are clearly documented in Archi model	Most of the drawings are clearly documented	Some of the drawings are clearly documented	Most of the drawings are not documented. Documented drawings are mostly unclear	Minimal or no effort in documenting the drawings	7	
9 <b>(individual mark)</b>	The presentation is very fluent, clear, and informative	The presentation is fluent, clear, and informative	The presentation is adequately fluent, clear, and informative	The presentation is not fluent, clear, and informative	The presentation is not fluent, clear, and informative. Besides, there are major mistakes in the presented content	5	
<b>TOTAL</b>							<b>100</b>

**Note to students: Please submit this document together when you submit your works.**