



**PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF INFORMATICS

QUALIFICATION : BACHELOR OF INFORMATICS AND BACHELOR OF IT IN BUSINESS COMPUTING	
QUALIFICATION CODE: 07BAIF and 80BSBC	LEVEL: 7
COURSE: Enterprise Web Application Development	COURSE CODE: EWD621S
DATE: November 2019	SESSION: 2
DURATION: 3 Hours	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mrs. Katazo Amunkete and Mr. Veerabhadram Paduri
MODERATOR:	Mr. Kandetu Tengovandu

<p style="text-align: center;">INSTRUCTIONS</p> <ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.4. All marks are indicated in brackets at the end of each question.5. The length of the answer/s must be guided by the available mark/s.

SECTION A: STRUCTURED QUESTIONS

[45 Marks]

Question 1

Discuss the **first two (2)** phases of the Systems Development Lifecycle (SDLC). [4 Marks]

Question 2

In Business Process Modelling (BPM), what objects can we model. List and define **four (4)** of these objects. [8 Marks]

Question 3

Distinguish between functional and non-functional requirements. [4 Marks]

Question 4

Distinguish between administrative and technical controls. [4 Marks]

Question 5

Distinguish between client-side and server-side scripting and provide an example of each. [6 Marks]

Question 6

Discuss **any two (2)** benefits associated with Enterprise applications. [4 Marks]

Question 7

Explain what measure you would take to counter a Cross Site Scripting Flaw. [2 Marks]

Question 8

Discuss any difference between the POST and GET methods used for form submissions. [2 Marks]

Question 9

List the **four (4)** core activities of requirements engineering. [4 Marks]

Question 10

Why is it necessary for an enterprise to be on the web? [2 Marks]

Question 11

What is the major difference between cookies and sessions? [2 Marks]

Question 12

State **any three (3)** advantages of using open source technologies. [3 Marks]

SECTION B: PRACTICAL QUESTIONS

[40 Marks]

Question 13

List the **four (4)** basic parts of a JavaScript function and write out the basic syntax of a function.

[6 Marks]

Question 14

Write down the lines of code that achieve the following:

- Create a database called Session1. [1 Mark]
- Create a table called First with the following fields: First Name, Last Name and Date of Birth. Assign a primary key for the table, ensure that values are required for each field and assign a relevant data type to each field. [5 Marks]
- Insert values into each of the fields in the table you created in b). [4 Marks]
- Query the database for the content in the date of birth field. [2 Marks]
- Close the database connection created in Question 4. [1 Mark]

Question 15

Write a PHP script that assigns the date function to a variable and displays the message "You joined PHP on *(variable declared)*". Add a multi-line comment to explain the function of the script and comment each line of code. [5 Marks]

Question 16

Write a script that connects to a database called Session_One. All other parameters should be the default database parameters for the MySQL DBMS that is found on XAMPP/WAMP. [3 Marks]

Question 17

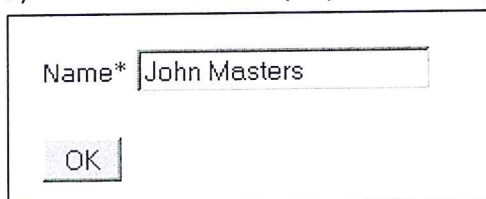
Write the code syntax to:

- open the a file called "session1.txt" in read-only mode. [2 Marks]
- close the file you created in a). [1 Mark]

Question 18

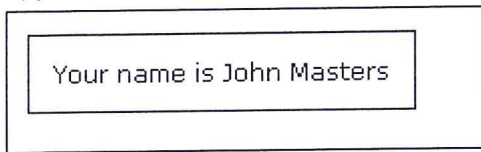
Write a script to:

- create the form displayed in the figure below: [3 Marks]



The image shows a simple web form within a rectangular border. On the left, the text "Name*" is followed by a text input field containing the text "John Masters". Below the input field is a button labeled "OK".

b) process the form when the submit button is clicked to display the line as shown below: [3 Marks]



Your name is John Masters

Question 19

a) Create a session variable named "session1" and store it with the value supplementary. [2 Marks]

b) Output the content of the session variable you created in a). [1 Mark]

c) Destroy the session (session1) you created in a). [1 Mark]

Please read the case study below and answer the questions that come below it. Please write the responses in your own understanding. Copying directly from the case will result in a score of zero for that question.

The Implementation of OOP (Object Oriented Programming) in Building an E-Commerce Website

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*Graduate student of Information
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Object-Oriented Programming (OOP) techniques are now the most popular programming techniques and are widely used by programmers to replace procedure-based programming techniques. OOP is the way or paradigm of programming that is object and class oriented where each object has attributes along with functions that interact with each other as well as objects.

It's not merely a different way to write program syntax, but also a mindset on analyzing system and programming problems. With OOP, the program can be made more modular, neat, easy to understand and to be further developed without a lot of syntaxes being changed. With a class being made, other programmers can easily use it without knowing the running process of that class. If we compare it with procedural programming code where codes are modeled using functions, thus the development is quite tricky because the program codes are not well organized and not separated

according to their functions.

OOP is currently the flexible programming pattern that every software developer or programmer employs; this OOP concept applies to both web application development and standalone software development. Many programming languages and frameworks, particularly for web applications, are now structured along-side OOP techniques.

The purpose of OOP is was created to facilitate the development of the program by following the models that already exist in everyday life. This confirms the state, behavior, and interaction of the object. It also provides benefits for freedom of development, improving quality, simplifying maintenance, enhancing capabilities in the modification, and increasing software reuse.

Based on the description above, it is deemed necessary to develop an application that implements the Object Oriented Programming

(OOP) concept in the making of an e-commerce website for the client. The website will be used in marketing its products, among others; fish meatballs, shredded fish, fish nuggets, amplang fish, and otak-otak. With the OOP concept, the website can be expanded or developed into a multistore website such as Lazada, bukalapak, and others because the OOP concept makes it possible to develop coding or applications with easier techniques. Some basic concepts of OOP include:

- Encapsulation (Class and Object)
- Inheritance
- Polymorphism

The OOP concept with UML (Unified Modeling Language) tools will be applied to the PHP programming language in building the e-commerce website KSM Tenggara Ceria application in Sinjai Regency.

The Unified Modeling Language (UML) is one of the tools that is very reliable in the world of object-oriented system development, this is because UML provides visual modeling that allows system developers to make blueprints for their vision in a standardized form, easy to understand and equipped with effective mechanisms for sharing and communicating their designs. UML diagrams have the main purpose of helping project development teams communicate, explore the potential of design and validate software architecture designs or program makers. UML defines several types of official diagrams, including Use Case Diagrams, Class Diagrams, Activity Diagrams, Sequence Diagrams, Collaboration Diagrams, Communication Diagrams, Statechart Diagrams, Component Diagrams, and Deployment Diagrams. In this study, Use Case Diagrams and Sequence Diagrams will be used.

The type of research used is experimental research which uses the design and implementation of techniques into the appropriate application. The research design was carried out by implementing the waterfall method with several stages such as Figure 1. The waterfall model is the oldest and most widely used software engineering paradigm. The waterfall model proposes an approach to systematic and sequential software development that starts at the level and progress

of the system in all analysis, design, code, testing, and maintenance. After each phase is defined, the stage is 'signed off,' and development continues to the next stage.

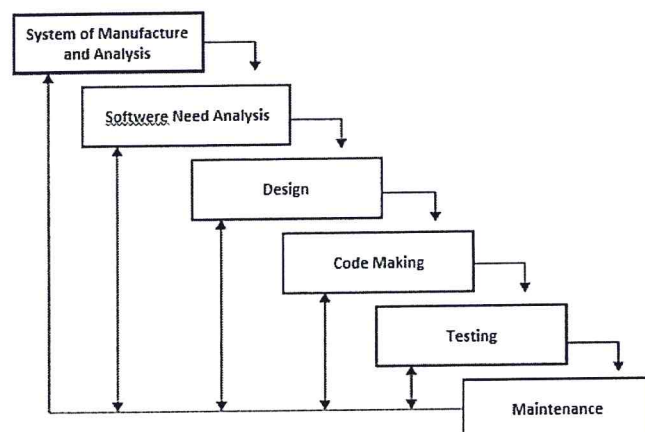


Fig. 1. Waterfall Model Based on Sommerville Reference

Before the OOP concept is implemented in the application, the business flow modeling is first done using UML tools. Following are some of the modeling results that have been made. Next is to write the program code based on the business flow that has been made above using the OOP concept. The following are some examples of program codes created using the Netbeans editor.

In this case, Figure 2 shows the activity which is covered by admin and also user activity. The user uses the system to make a transaction with another user even with admin. They could be ordering or cancelling the product; then the admin automatically continues to process the transaction. Admin as a provider of linking all user provide a management system to make an easy and clear transaction.

Figure 3 reveals how the sequence of selling product. Sequence, the user login, checking the product, paying product, then all of the selling data will save in the database. After the seller receives payment confirmation, the seller will send them to the customer. All the transaction is controlled by admin.

Figure 4. describes the inputting data of the product, editing or deleting. The seller logs in to the web are then checking the product menu; the database will save the data of the product. If the user finds the incorrect data of the product, the seller could

edit and change the product information or even delete the product in the product menu.

The buying scheme is showed in Figure 5. The seller and costumer could make a deal for product bridged by the web. The seller and costumer can be linked directly using the web, if they deal the costumer do payment or if denied, the transaction will be cancelled automatically. The costumer also can cancel the transaction before the payment. The admin can control all the activities of the seller and buyer easily.

After completing, the business model continued with the design and coding using the OOP (Object Oriented Programming) Php programming language as showed in Figure 6. The results of this study are websites that can be accessed via the URL www.umkmgo.com.

From this study, an e-commerce web application has been made, and it is named www.umkmgo.com. Coding systems that are used are based on OOP (Object-Oriented Programming), so there will not be any difficulty in the developing process of this application. The Reusable Code is possible with the concept of OOP, so it's suitable to be a programming technique in massive scale to be an online multistore, such as lazada, bukalapak, and others. Source codes as such provide a website with stable response time, either done by few or many users simultaneously.

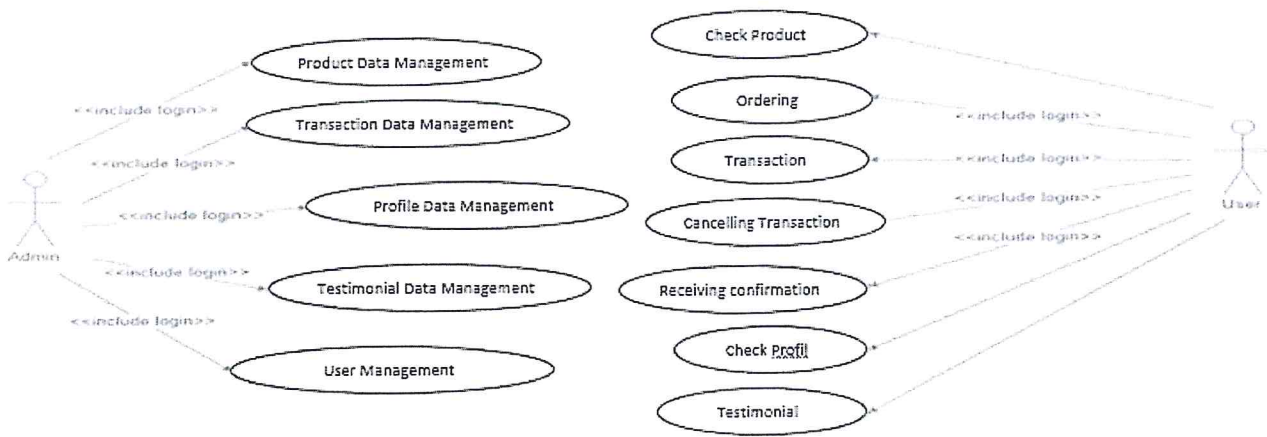


Fig. 2. Use Case Diagram

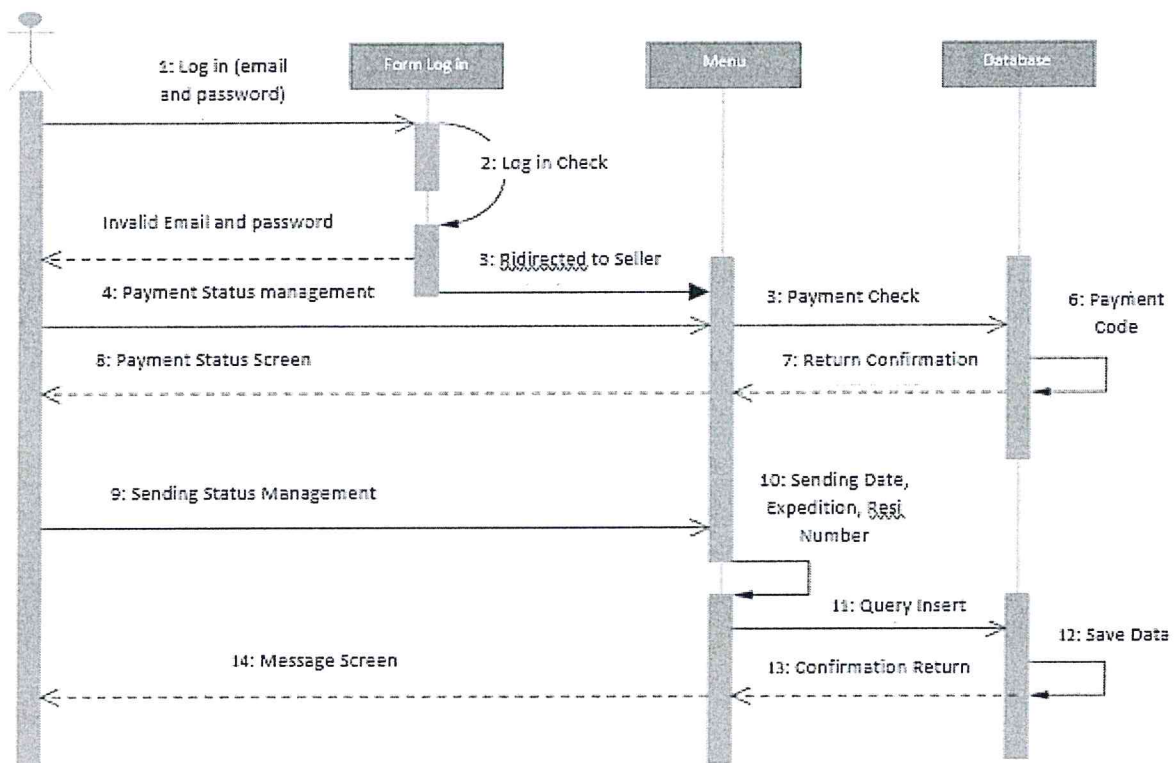


Fig. 3. Selling Menu in Crud Diagram Sequence

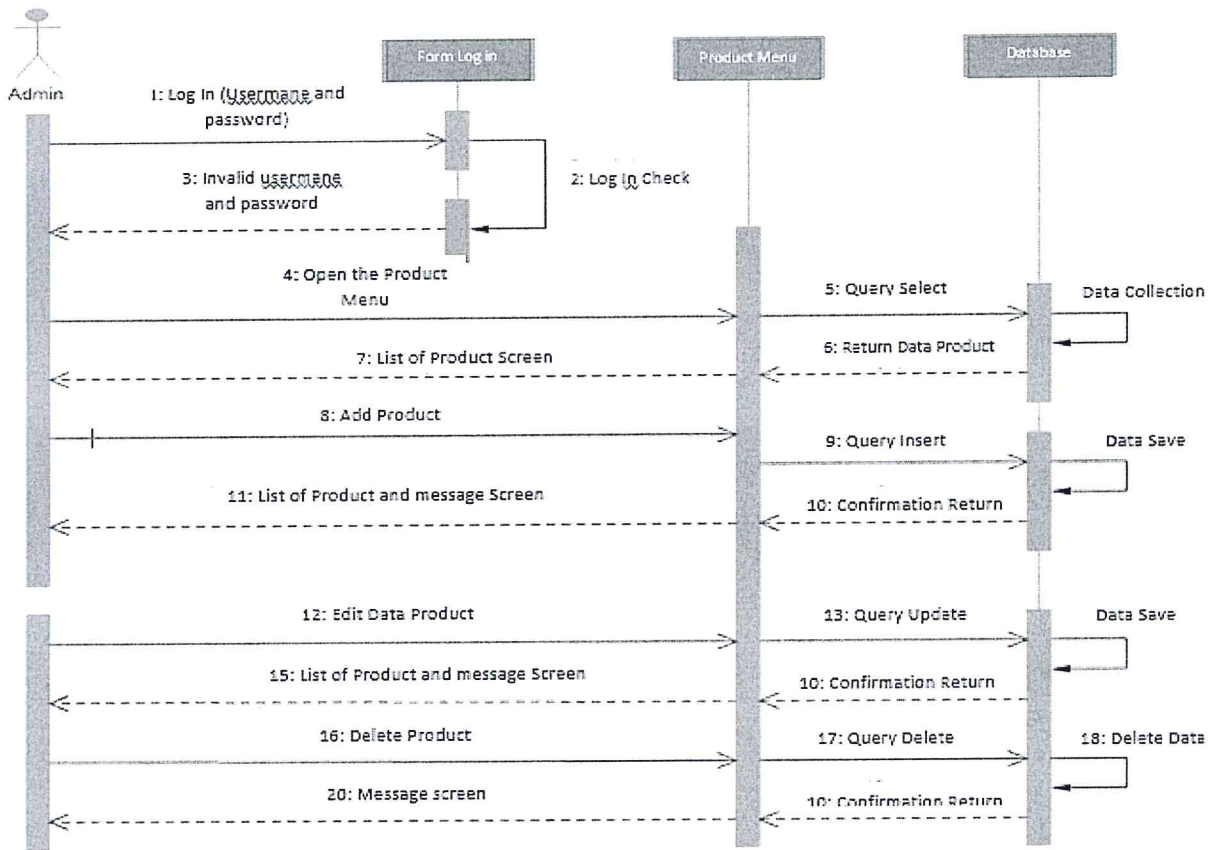


Fig. 4. Product Menu in Crud Diagram Sequence

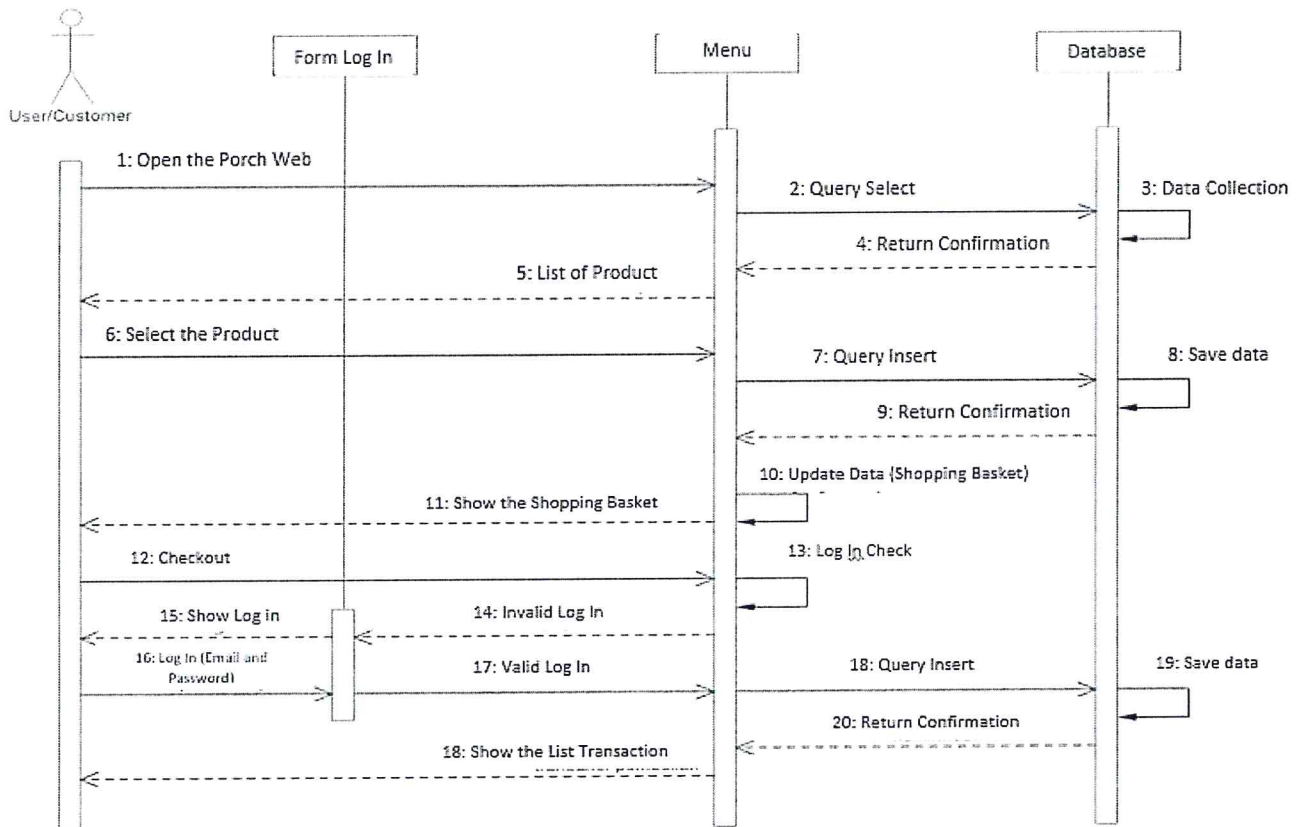


Fig. 5. Sequence Diagram of Buying Transaction

- D:\xampp2017\htdocs\ksmceria — Atom		2017\htdocs\ksmceria — Atom	
Selection Find Packages Help		nd Packages Help	
Db.class.php	x produk_ctrl.php	Db.class.php	x produk_ctrl.php
1 <?php		1 <?php	
2		2 if (\$memberstatus == "false") {	
3 require("Log.class.php");		3 header("location:?p=login&v=utama");	
4 class DB		4 } else if(\$memberstatus == "true" && \$j	
5 {		5 header("location:?p=utama");	
6 private \$pdo;		6 }	
7 private \$sQuery;		7 include './assets/class.upload.php';	
8 private \$settings;		8 \$statusaksiform = "ok";	
9 private \$bConnected = false;		9 \$jmlkosong = array();	
10 private \$log;		10 \$postdatas = filter_input_array(INPUT_P	
11 private \$parameters;		11 if (\$postdatas) {	
12 public function __construct()		12 foreach (\$postdatas as \$key => \$value	
13 {		13 \${\$key} = \$value;	
14 \$this->log = new Log();		14 }	
15 \$this->Connect();		15 switch (\$aksiform) {	
16 \$this->parameters = array();		16 case 'tambah':	
17 }		17 //echo "test";	
18 private function Connect()		18 \$post ori = \$postdatas;	
19 {			

Fig. 6. Source Code Product with OOP Implemented

-----End of Case-study-----

Question 20

(a) Why is the object-oriented programming technique referable over the procedural technique? [2 Marks]

(b) What makes the Unified Modeling Language a reliable systems development tool that is widely used? [3 Marks]

(c) Of what importance is Figure 2 to web application development and what processes does the figure depict? [3 Marks]

(d) What is the purpose of the code "require("Log.class.php");" in line 3 of Figure 6? [2 Marks]

(e) In less than 7 lines, summarise the case study in your own words. [5 Marks]

-----End of Exam Paper-----



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FIRST OPPORTUNITY EXAMINATION – MEMORANDUM	
EXAMINER(S)	Mrs. Katazo Amunkete and Mr. Veerabhadram Paduri
MODERATOR:	Mr. Kandetu Tengovandu

INSTRUCTIONS
<ol style="list-style-type: none">1. Please use the memorandum or sample solutions to guide your marking.2. Use the marks allocated as a guide to mark.3. Reasonable, in depth and innovative correct solutions provided by the students should be allocated marks even if not provided in the memorandum.4. Take note of the marks allocated to each question.

SECTION A: STRUCTURED QUESTIONS

[45 Marks]

Question 1

Discuss the **first two (2)** phases of the Systems Development Lifecycle (SDLC). [4 Marks]

- **Systems Planning:** Project requirements summary, project team description, preliminary work schedule, service area demographic analysis
- **Systems Analysis:** E-R diagram, Data Flow Diagrams, high-level functional description

Question 2

In Business Process Modelling (BPM), what objects can we model. List and define **four (4)** of these objects. [8 Marks]

- **Organizations:**
 - Actors that make up an organization: agents, positions, roles
 - Social relations among them: delegations, permissions, ownership, authority
- **Business processes:**
 - Their components: also business processes or activities
 - Control logic
- **Information systems:**
 - Their functions: use cases
 - Interfaces with users and other systems
 - Databases, through conceptual schemas
- **Modelling languages:**
 - Model the concepts that are part of a modelling language; the result is a metamodel – that is a model of a model.

Question 3

Distinguish between functional and non-functional requirements [4 Marks]

- A functional requirement is a requirement concerning a result of behavior that shall be provided by a function of the system
- Defines the functionality that the system to be developed offers.
- **Example:** A system must send an email whenever a certain condition is met (e.g. an order is placed, a customer signs up, etc).

- A quality requirement is a requirement that pertains to a quality concern, that is not covered by functional requirements.
- Defines desired qualities of the system to be developed and often **influence the system architecture** more than functional requirements do.
- **Example:** Emails should be sent with a latency of no greater than 12 hours from such an activity.
- Typically, quality requirements are about:
 - Performance,
 - Availability,
 - Dependability,
 - Scalability or portability of a system.

Question 4

Distinguish between administrative and technical controls. [4 Marks]
Admin controls are those that guide the use of the application, such as having policies in place, developing a quality assurance plan, etc. Technical controls are the controls implemented on the system which are guided by the policies and other guidelines that are in place.

Question 5

Distinguish between client-side and server-side scripting and provide an example of each. [6 Marks]

Client-side:

- Browser dependent
- Source code visible using browser source-viewing capabilities
- Web sites heavily reliant on HTML to provide functionality
- Used for:
 - ✓ Presentation (i.e. text/images, animations, etc.)
 - ✓ Validation of user input (Forms)
 - ✓ Handling manipulation of the browser (opening new tabs, redirection)

Example:

- User requests a web page via the browser
- Server receives the request and sends back the page that was requested
- The page returned is a static page (every user sees the same page)

(3 marks)

On the other hand,

Server-side:

- Generate custom responses for the client by returning dynamic content from a database (as opposed to static HTML pages)
- Retrieve information from users (forms)
- Manage sessions
- Server scripting language usually combined with client scripting language– E.g. PHP combined with HTML
- Server-side scripts reside on the web server
- Scripts run exclusively on the server -> not concerned with client browser support
- Results of requests are sent over the network to the client
- Source code not visible to client

Example:

- A client might connect to an airline's web server and request a list of flights from Boston to San Francisco between certain dates (E.g. 24 – 28 June). The server queries the database, dynamically generates an HTML document containing the flight list and sends the document to the client.
- Only returns what the user has requested, if another user specifies a different range of

dates. They also only see what they have requested.

- This technology (server-side) allows clients to obtain the most current flight information from the database by connecting to an airline's web server.

(3 marks)

(4 marks for explaining distinctions, 2 marks for examples)

Question 6

Discuss **any two (2)** benefits associated with Enterprise applications.

[4 Marks]

- Help to unify the firm's structure and organization: Forms one organization
- Management: Firm wide knowledge-based management processes
- Technology: Unified platform
- Business: More efficient operations & customer-driven business processes

(Discussion of any 2)

Question 7

Explain what measure you would take to counter a Cross Site Scripting flaw.

[2 Marks]

Validating or encrypting the data that users supply to forms

Question 8

Discuss any difference between the POST and GET methods used for form submissions. [2 Marks]

The POST method can submit more data, is more secure as the data is not appended to the URL and is mostly used when an action is to be performed – such as updating a database record.

The GET method appends name=value pairs to the URL but is mostly used to request information – such as retrieving a database record. It is a less secure method of submission.

Question 9

List the **four (4)** core activities of requirements engineering.

[4 Marks]

- Elicitation
- Documentation
- Validation and Negotiation
- Management

Question 10

Why is it necessary for an enterprise to be on the web?

[2 Marks]

Most people make use of the web and prefer to use their phones for conducting their business affairs and for shopping online. An enterprise should be on the web to make it more accessible to its clients and to enable it to run business process transactions over the internet.

Question 11

What is the major difference between cookies and sessions?

[2 Marks]

Cookies are a mechanism for storing data on the client computer by the remote browser. Because the cookie will be available the next time the web page is visited, cookies can be used to track or identify return users to a web page. WHILE,

Sessions are similar to cookies in that they serve basically the same purpose; to preserve some data between pages on a web site. However, sessions differ from cookie in that they are stored on the server.

Question 12

State **any three (3)** advantages of using open source technologies.

[3 Marks]

- It is developed and maintained by a worldwide community of developers
- Source code is made freely available to download and use
- There are no costs associated with using PHP for individual or commercial projects, including future updates

SECTION B: PRACTICAL QUESTIONS

[40 Marks]

Question 13

List the **four (4)** basic parts of a JavaScript function and write out the basic syntax of a function.

[6 Marks]

- The function keyword
- A function name
- A comma-separated list of arguments to the function in parentheses
- The statements in the function in curly braces

```
function name(parameter1, parameter2, parameter3, etc.) {  
    // code to be executed }  
}
```

Question 14

Write down the lines of code that achieve the following:

- a) Create a database called Session1. [1 Mark]
- b) Create a table called First with the following fields: First Name, Last Name and Date of Birth. Assign a primary key for the table, ensure that values are required for each field and assign a relevant data type to each field. [5 Marks]
- c) Insert values into each of the fields in the table you created in b). [4 Marks]
- d) Query the database for the content in the date of birth field. [2 Marks]
- e) Close the database connection created in Question 4. [1 Mark]

- a) create database Session1;
- b) create table First(fname varchar NOT NULL primary key, Last_name varchar NOT NULL, dob date NOT NULL);
- c) insert into First (Name, Age, Occupation, Salary) values (James, 20, Intern, 3500);
- d) SELECT dob FROM First
- e) mysqli_close(\$variable);

Question 15

Write a PHP script that assigns the date function to a variable and displays the message "You joined PHP on *(variable declared)*". Add a multi-line comment to explain the function of the script and comment each line of code. [5 Marks]

<?php (0.5 marks)

\$date="date('jS F Y'); (1 mark)

echo "You joined PHP on \$date"; (1 mark)

?> (0.5 marks)

1 mark for multi-line comments

1 mark for commenting each line

Question 16

Write a script that connects to a database called Session_One. All other parameters should be the default database parameters for the MySQL DBMS that is found on XAMPP/WAMP. [3 Marks]

\$variable = mysqli_connect("localhost", "root", "", "Session_One ");
(0.5) (0.5) (0.5) (0.5) (0.5) (0.5)

OR

\$server="localhost"; (0.5 marks)

\$username="root"; (0.5 marks)

\$password=""; (0.5 marks)

\$database=" Session_One"; (0.5 marks)

\$variable = mysqli_connect("\$server", "\$username", "\$password", "\$database");
(0.5) (0.5)

Question 17

Write the code syntax to:

(a) open the a file called "session1.txt" in read-only mode. [2 Marks]

echo readfile("session1.txt"); OR echo fopen("session1.txt", "r");

(b) close the file you created in a). [1 Mark]

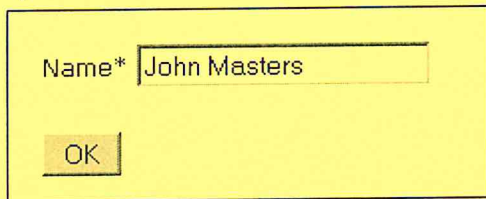
fclose("session1.txt");

Question 18

Write a script to:

a) create the form displayed in the figure below:

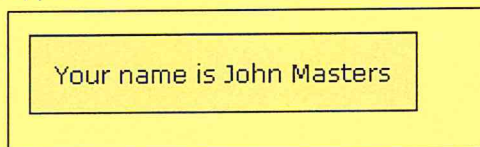
[3 Marks]



The screenshot shows a simple web form. It has a label 'Name*' followed by a text input field containing the text 'John Masters'. Below the input field is a submit button labeled 'OK'.

```
<form name="htmlform" method="post" action="script1.php">
Name *
<input type="text" name="full_name"></br></br>
<input type="submit" name="submit" value="OK">
</form>
```

b) process the form when the submit button is clicked to display the line as shown below: [3 Marks]



The screenshot shows a rectangular box containing the text 'Your name is John Masters'.

```
<?php

if (isset($_POST["submit"])) {
    $name = $_POST["full_name"];

    echo "<p> Your name is $name </p>";
}

?>
```

Question 19

a) Create a session variable named "session1" and store it with the value supplementary. [2 Marks]

```
session_start();
$_SESSION["session1"] = "supplementary";
```

b) Output the content of the session variable you created in a).

[1 Mark]

```
echo $_SESSION["session1"];
```

c) Destroy the session (session1) you created in a).

[1 Mark]

```
unset($_SESSION["session1"]); OR session_destroy();
```

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Lukman
*Graduate student of Information
Technology Faculty
Universitas Hasanuddin
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The type of research used is experimental research which uses the design and implementation of techniques into the appropriate application. The research design was carried out by implementing the waterfall method with several stages such as Figure 1. The waterfall model is the oldest and most widely used software engineering paradigm. The waterfall model proposes an

approach to systematic and sequential software development that starts at the level and progress of the system in all analysis, design, code, testing, and maintenance. After each phase is defined, the stage is 'signed off,' and development continues to the next stage.

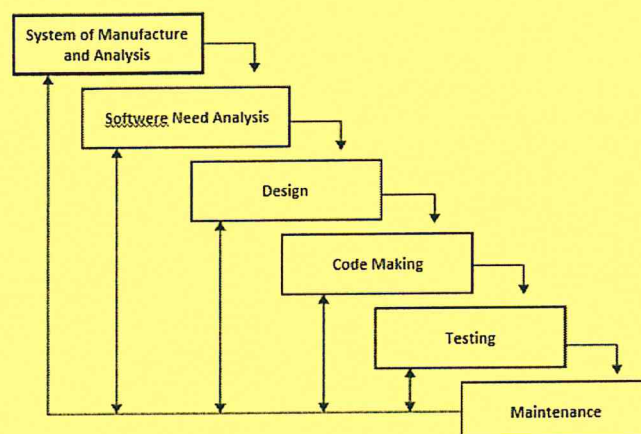


Fig. 1. Waterfall Model Based on Sommerville Reference

Before the OOP concept is implemented in the application, the business flow modeling is first done using UML tools. Following are some of the modeling results that have been made. Next is to write the program code based on the business flow that has been made above using the OOP concept. The following are some examples of program codes created using the Netbeans editor.

In this case, Figure 2 shows the activity which is covered by admin and also user activity. The user uses the system to make a transaction with another user even with admin. They could be ordering or cancelling the product; then the admin automatically continues to process the transaction. Admin as a provider of linking all user provide a management system to make an easy and clear transaction.

Figure 3 reveals how the sequence of selling product. Sequence, the user login, checking the product, paying product, then all of the selling data will save in the database. After the seller receives payment confirmation, the seller will send them to the customer. All the transaction is controlled by admin.

Figure 4. describes the inputting data of the product, editing or deleting. The seller logs in to the web are then checking the product menu; the database will save the data of the product. If the user finds the incorrect data of the product, the seller could

edit and change the product information or even delete the product in the product menu.

The buying scheme is showed in Figure 5. The seller and costumer could make a deal for product bridged by the web. The seller and costumer can be linked directly using the web, if they deal the costumer do payment or if denied, the transaction will be cancelled automatically. The costumer also can cancel the transaction before the payment. The admin can control all the activities of the seller and buyer easily.

After completing, the business model continued with the design and coding using the OOP (Object Oriented Programming) Php programming language as showed in Figure 6. The results of this study are websites that can be accessed via the URL

www.umkmgo.com.

From this study, an e-commerce web application has been made, and it is named www.umkmgo.com. Coding systems that are used are based on OOP (Object-Oriented Programming), so there will not be any difficulty in the developing process of this application. The Reusable Code is possible with the concept of OOP, so it's suitable to be a programming technique in massive scale to be an online multistore, such as lazada, bukalapak, and others. Source codes as such provide a website with stable response time, either done by few or many users simultaneously.



Fig. 2. Use Case Diagram

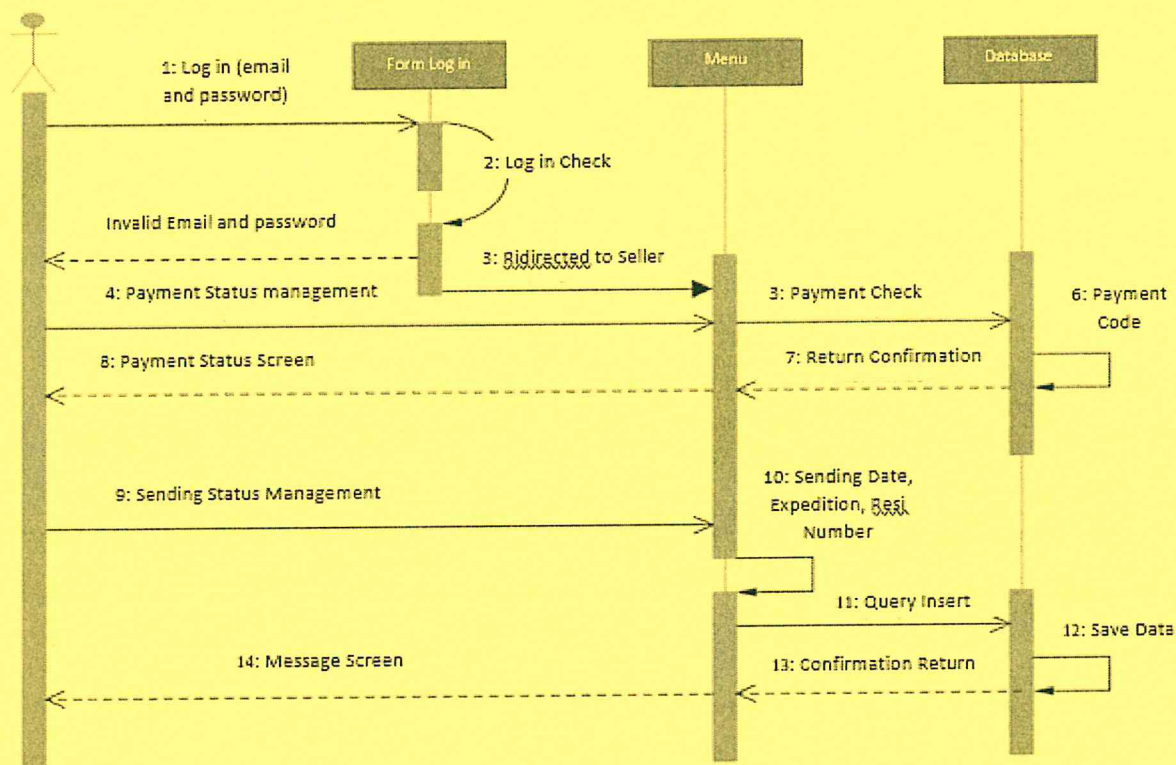


Fig. 3. Selling Menu in Crud Diagram Sequence

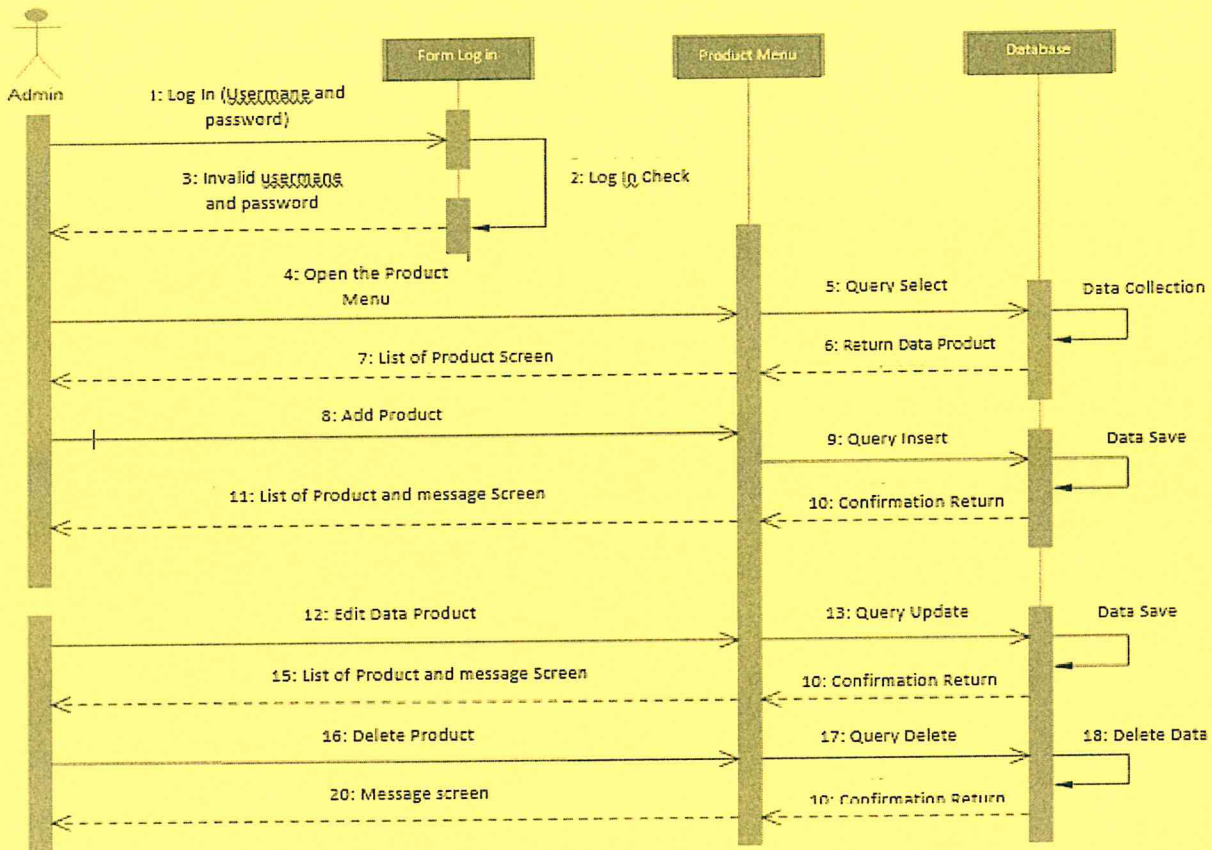


Fig. 4. Product Menu in Crud Diagram Sequence

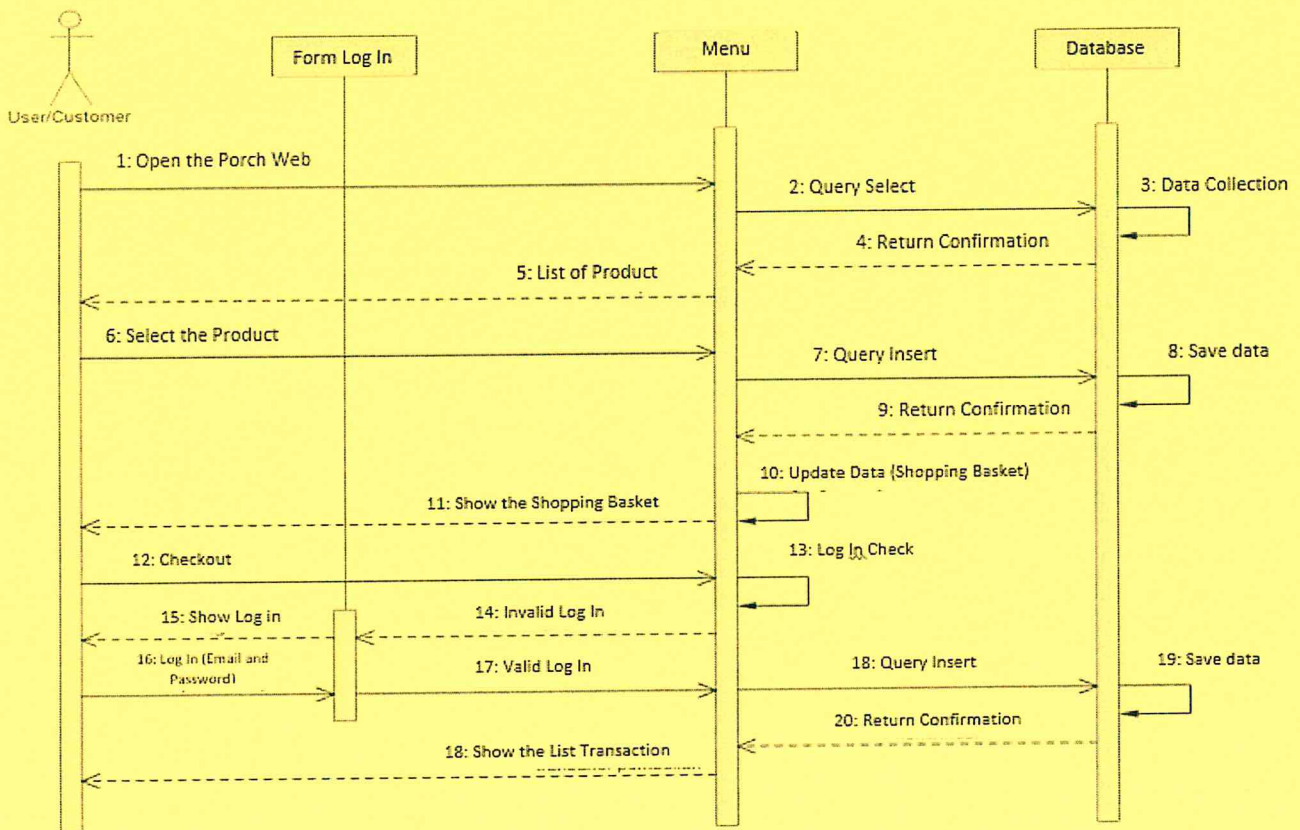


Fig. 5. Sequence Diagram of Buying Transaction

The image shows two Notepad++ windows side-by-side. The left window is titled 'D:\xampp2017\htdocs\ksmceria -- Atom' and shows the source code for 'Db.class.php'. The right window is titled 'D:\xampp2017\htdocs\ksmceria -- Atom' and shows the source code for 'produk_ctrl.php'. Both windows have a menu bar with 'Selection', 'Find', 'Packages', and 'Help'. The code in both windows is highlighted in a light blue color.

```
1 <?php
2
3 require("Log.class.php");
4 class DB
5 {
6     private $pdo;
7     private $$Query;
8     private $settings;
9     private $bConnected = false;
10    private $log;
11    private $parameters;
12    public function __construct()
13    {
14        $this->log = new Log();
15        $this->Connect();
16        $this->parameters = array();
17    }
18    private function Connect()
19    {
```

```
1 <?php
2 if ($memberstatus == "false") {
3     header("location:?p=login&v=utama");
4 } else if($memberstatus == "true" && $j
5     header("location:?p=utama");
6 }
7 include './assets/class.upload.php';
8 $statusaksiform = "ok";
9 $jmlkosong = array();
10 $postdatas = filter_input_array(INPUT_P
11 if ($postdatas) {
12     foreach ($postdatas as $key => $value
13         ${$key} = $value;
14     }
15     switch ($aksiform) {
16         case 'tambah':
17             //echo "test";
18             $post ori = $postdatas;
```

Fig. 6. Source Code Product with OOP Implemented

-----End of Case-study-----

Question 20

(a) Why is the object-oriented programming technique referable over the procedural technique? [2 Marks]

With OOP, the program can be made more modular, neat, easy to understand and to be further developed without a lot of syntaxes being changed. With a class being made, other programmers can easily use it without knowing the running process of that class. If we compare it with procedural programming code where codes are modeled using functions, thus the development is quite tricky because the program codes are not well organized and not separated according to their functions.

(b) What makes the Unified Modeling Language a reliable systems development tool that is widely used? [3 Marks]

The Unified Modeling Language (UML) is one of the tools that is very reliable in the world of object-oriented system development, this is because UML provides visual modeling that allows system developers to make blueprints for their vision in a standardized form, easy to understand and equipped with effective mechanisms for sharing and communicating their designs. UML diagrams have the main purpose of helping project development teams communicate, explore the potential of design and validate software architecture designs or program makers.

c) Of what importance is Figure 2 to web application development and what processes does the figure depict? [3 Marks]

Figure 2 shows the activity which is covered by admin and also user activity. The user uses the system to make a transaction with another user even with admin. They could be ordering or canceling the product; then the admin automatically continues to process the transaction. Admin as a provider of linking all user provide a management system to make an easy and clear transaction.

(d) What is the purpose of the code `require("Log.class.php");` in line 3 of Figure 6? [2 Marks]

The code reuses the code in the file `Log.class.php`, the `require` function is used to call for code from another file to be made use of in the calling script.

(e) In less than 7 lines, summarise the case study in your own words. [5 Marks]

Students should focus on the use of OOP in web application development and the purpose of the application discussed in the case study (buying and selling application).

-----End of Memo-----