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FACULTY OF COMPUTING

MID TERM TEST

COURSE	:	SOFTWARE EVOLUTION & MAINTENANCE
COURSE CODE	:	BCS3153
COORDINATOR	:	KU SAIMAH KU IBRAHIM
DATE / DAY	:	22 APRIL 2024 / MONDAY
DURATION	:	1 HOURS 30 MINUTES
SEM / SESSION	:	SEM II SESSION 2023/2024

INSTRUCTIONS TO CANDIDATE:

1. Answer ALL the questions.

QUESTION	1	2	3	4	5	6	7	TOTAL
MARKS	5	6	10	10	4	6	8	49/50

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STUDENT NAME	Sho ming kang
SECTION	01B

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

Read the following questions carefully. Answer ALL questions:

1. You are currently managing a financial system that currently run on old version of operating system. Then, a new version of the operating system is released. You and your development team need to modify the software product's code to ensure that it continues to work correctly on the new operating system. Identify the (type of software maintenance) and anticipate (TWO (2) maintenance activities to be conducted.)

① change code & compatibility ② test ③

[6 Marks]

① The type of software maintenance is adaptive maintenance. The development team need to adapt the financial system from old version of operating system to the new version of operating system. ② One of maintenance activities is configuration of system. The development team needs to ~~configure~~ ^{make modify} the old version of operating system modify the configuration of system from old version of operating system to new version.

③ Another activity is fixing bugs. ~~There are~~ It may occurs some ~~compatibility~~ ^{compatibility} bugs or issues when configuring the old OS with new version of OS.

2. Software maintenance is the process to preserved the existing software, correcting errors, and making the necessary changes to maintain compatibleness in software operating environment. Discuss THREE (3) reasons why the maintenance of software is considered expensive.

training, technology advancement, customer support

[6 Marks]

- ① One of reason of maintenance of software is considered expensive is the maintenance time is short. The maintenance team need to correct errors and making the necessary changes in a short time like 2 hours for emergency maintenance or 1 months for scheduling ~~enhancement~~.
- ② Another reason is the maintenance team must be knowledge and expert in maintaining the system. Maintenance tasks are more complex and complicated compared to development tasks. The maintenance team must have knowledge about fix error and modify necessary changes to maintain compatibleness in software operating environment; then company will give a high salary for them.
- ③ The maintenance ~~activity~~ activities need to be carried out within the production environment. Since the system is deployed, the team needs to ensure the fixes and changes made without affecting the performance of existing system.

3. Software maintenance process is triggered by Change Request (CR). Identify the type of CR submitted and then, classify **THREE (3)** type of person who can submit CR.

The ^{type} ~~type~~ of CR submitted ~~are~~ ^{are} defect report, enhancements ² ~~request~~, or quality improvement. If the user ~~found~~ ^{found} ~~a~~ a defect within the system, request for functionality enhancement, found the system is getting lagged and slow, they ~~make~~ ^{can} make a change request.

There are three type of person who ~~can~~ ^{can} submit CR ~~which~~ ^{which} are maintenance personnels from maintenance organisation, clients personnels from client organisation and the users of the system. ²

(10)

For the following questions, please read the case study carefully.

Ezyshop, an e-commerce website developed for Richwork Group is a Malaysian online retail company to promote the online shopping experience among users. It has been developed in-house, by a group of developers using the COTS component. Ezyshop is expected to increase the company revenue in the retail industry, besides the availability of physical stores.

Due to the outbreak of Covid-19 pandemic, the e-commerce industry becomes a quickly growing segment. The shutdowns of the physical stores and the calls for social distancing further accelerated the growth of online shopping. This situation benefits Ezyshop to continue served its user to the maximum. However, the increasing number of users has slowly affected the performance of Ezyshop and caused user frustration. It has been reported that Ezyshop website frequently lagged during peak time.

Ezyshop was developed before the pandemic where some of the functions are not included in the current system. Currently, the maintenance team received a lot of requests to do some modifications on Ezyshop. To ensure the sustainability of the application and to satisfy users' needs, it is crucial for the team in accepting the unanticipated changes and make things happen.

4. As a Senior Auditor in software application maintenance team for Richwork Group, you are required to check and verify the maintenance activities are carried out correctly based on the software artifacts. Point out **FOUR (4)** artifacts that are essentials to be checked after maintenance has been carried out. Then justify each of your answer.

10
[10 Marks]

- ① ~~First Artifacts~~ ~~The first artifact is Service Level Agreement (SLA)~~
- ① Source Code. This is essential ~~to~~ to check the modification is implemented in the source code of the system ✓ 2.5
- ② Software Requirement Specification. Check the requirements is modified based on the requests and document the modified requirements inside SRS. ✓ 2.5
- ③ Software Design Document. Check the system architecture is modified based on the modification. ✓ 2.5
- ④ Software Testing Document. Check the testing result after implementing the modification and ensure all testing result is pass before deploying the system. ✓ 2.5

V8 v Doc

5. As the leader of the maintenance team, you proposed to improve the functionality and quality plugin attributes of the application. Provide TWO (2) reasons to support your decision.

4 [4 Marks]

- ① One of the ~~two~~ reasons is the maintenance team received a lot of requests to enhance the functionality of the current system, Ezyshop. In order to ~~satisfy~~ satisfy the needs of users by including functions that are ~~not~~ necessary in the Ezyshop to meet the application with the changing user requirements and emerging changes ~~to~~ before.
- ② Another reason is the performance issue of Ezyshop. When the number of users of Ezyshop increase, the Ezyshop website become lagged during peak time and cause user frustration.

pandemic Covid-19
no staff during
pandemic Covid-19

6. You find out that Ezyshop has insufficient documentation which makes the reverse engineering process difficult to be done. Identify THREE (3) important outputs when performing reverse engineering activity for Ezyshop website. ^{-recover the design pattern of system}

6 [6 Marks]

- ① One of the important outputs is the system architecture of Ezyshop with its components used and the relationship among the components.
- ② Another important output is recovering the lost of current artifacts about the current system Ezyshop such as design document and requirements documents.
- ③ Lastly, the important output is the features of the current system by visualizing the process of Ezyshop since the current system is the resource you rely on.

7. Due to the frozen functionality of the component used in EzyShop, you and your team decide to replace it by reengineering the particular part. Predict FOUR (4) risks that would be anticipated for the situation. Justify each risk accordingly.

8

[8 Marks]

- ① ~~Compati~~ ^{compatibility} ~~Compatibility~~ issues. This is a possibility that that the new components replaced will ~~exists~~ a not compatible with the version of operating system, hardware compared to the old and frozen functionality of the components used. ✓ 2
- ② Introducing of new bugs: After replacing the frozen functionality of the component used in EzyShop with the particular part ~~reengineering~~ reengineered, a new bugs will occur and the team needs to fix the bugs before deployment. ✓ 2
- ③ Complexity of System. This is possible to increase complexity of system after replacing the frozen functionality of complexity of the components used with particular ~~part~~ reengineered due to increase coupling in the system. ✓ 2
- ④ Performance issue. It is possible that the new components used in the Ezyshop will result slow in response time, lagging or have an expected crash after integrating with these new components reengineered. ✓ 2

END OF QUESTION PAPER