GMIT

INSTITIÚID TEICNEOLAÍOCHTA NA GAILLIMHE-MAIGH EO
GALWAY-MAYO INSTITUTE OF TECHNOLOGY

GALWAY-MAYO INSTITUTE OF TECHNOLOGY

SEMESTER 2 EXAMINATIONS 2017/2018

MODULE: COMP08013 - Software Engineering

PROGRAMME(S):
GA_KSOFG_H08   BACHELOR OF SCIENCE (HONOURS) IN SOFTWARE DEVELOPMENT

YEAR OF STUDY: 4

EXAMINER(S):

GARRETT JORDAN	(Internal)
Mr. Tom Davis	(External)
Dr. Des Chambers	(External)

TIME ALLOWED: 2 Hours

INSTRUCTIONS: **Answer 3 questions. All questions carry equal marks.**

PLEASE DO NOT TURN OVER THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO.
The use of programmable or text storing calculators is expressly forbidden.
Please note that where a candidate answers more than the required number of questions, the examiner will mark all questions attempted and then select the highest scoring ones.

There are no additional requirements for this paper.

QUESTION 1   **TOTAL MARKS: 100**

Q 1(a)   **20 Marks**

Explain **all** the following terms as related to Scrum in an agile environment:

- Scrum Master

- Sprint

- Burndown chart

- Product Owner

Q 1(b)   **40 Marks**

Explain the benefits of Prototyping when used in the software development process.

What is the objective of Throw-away Prototyping?

Explain why the throw-away prototype should not be considered as a final system.

Q 1(c)   **40 Marks**

Typical advise to software development teams working in an agile environment would be:

"Start with Scrum and then invent your own version of Extreme Programming(XP)."

Provide a discussion which contrasts the differences between SCRUM and Extreme Programming(XP).

QUESTION 2   *TOTAL MARKS: 100*

Q 2(a)   **20 Marks**

Briefly describe **Two** requirement validation techniques.

Q 2(b)   **40 Marks**

An automated ticket-issuing system sells rail tickets. The following is the requirements statement for this ticket-issuing system:

"Users select their destination and input a credit card and a personal id number. The rail ticket is issued, and their credit card charged. When the user presses the start button, a menu display of potential destination's is activated, along with a message to the user to select a destination. Once a destination has been selected, users are requested to input their credit card. Its validity is checked, and the user is then requested to input a personal id. When the credit transaction has been validated, the ticket is issued."

Discover ambiguities or omissions in the above statement of requirements for part of a ticket–issuing system. Outline modifications to the requirements to remedy the issues you have outlined.

Q 2(c)   **40 Marks**

Using examples outline the differences between Functional and Non-Functional requirements.

Write out a set of non-functional requirements for the ticket issuing system in 2b above, setting out its expected reliability and its response time.

QUESTION 3   **TOTAL MARKS: 100**

Q 3(a)   **20 Marks**

"Risks can be ignored in an Agile software development environment" – Discuss.

Q 3(b)   **40 Marks**

Discuss some risks that may arise in software projects under TWO of the following headings:
- Technology
- Staff
- Business Impact
- Customer

Q 3(c)   **40 Marks**

Fixed price contracts may be used to move project risk from client to contractor. Suggest how the use of such contracts may increase the likelihood that product risks will arise.

QUESTION 4   **TOTAL MARKS: 100**

Q 4(a)   **20 Marks**

Identify the maintenance classification of **each** the following, briefly give your reason for each classification:
- A database is storing data in a way that it violates Data Protection Legislation.
- A company has introduced an online system for customers to place orders. The online system needs to be integrated into their normal ordering system.
- A bank decides to offer a new mortgage product. This will have to be included in the system so that mortgage interest and payments can be calculated.
- A more advanced touch feedback system is added to a current mobile product.
- A better data input screen is added to a part of the current system.

Q 4(b)   **40 Marks**

Apart from the challenges of heterogeneity, rapid delivery and trust, identify other problems that software engineering is likely to face in the twenty first century.

Q 4(c)   **40 Marks**

There are circumstances when an organization can decide to scrap a system when the system assessment suggests it is of high quality and high business value. Discuss

QUESTION 5   *TOTAL MARKS: 100*

Q 5(a)   **20 Marks**

Briefly explain the following terms as they apply to software testing:
- Static testing
- Dynamic testing

Q 5(b)   **40 Marks**

Explain why test first development helps the programmer develop a better understanding of the systems requirements.

What are the potential difficulties with test first development?

Q 5(c)   **40 Marks**

There are many strategies that can be used to test software. Describe **FOUR** kinds of tests which should be considered