JOHN EDMONDSON HIGH SCHOOL

Assessment Notification

AMENDED 22/03/2024

Faculty: Industrial Arts   Course SOFTWARE DESIGN and DEVELOPMENT Year: 12

Assessment Task: HSC ASSESSMENT TASK 2

Assessment Weighting: 25%   Due: Term 2 Week 1 Date: 3/05/2024 by 8:20am

Task Type: Hand in Task ☒ In Class Task □ Practical Task □

Outcomes assessed (NESA)

- H2.1 explains the implications of the development of different languages
- H2.2 explains the interrelationship between emerging technologies and software development
- *H5.1 applies project management techniques to maximise the productivity of the software development*
- *H6.2 communicates the processes involved in a software solution to an inexperienced user*

Task Description/Overview

Learning to design and develop software solutions is the aim of this course. There are many possible development approaches and many different techniques that could be used as part of the creation of a software product.

Detailed Assessment Task Description

Submission MUST be uploaded to CANVAS by 8.20am 03/05/2024.
Refer to attached assessment documentation

Assessment Criteria (refer to attached assessment documentation for more detail)

Grade	Description	Mark Range
Outstanding (O)	The student has an extensive knowledge and understanding of the content and can readily apply this knowledge. In addition, the student has achieved a very high level of competence in the processes and skills and can apply these skills to new situations.	**90-100**
High (H)	The student has a thorough knowledge and understanding of the content and a high level of competence in the processes and skills. In addition, the student is able to apply this knowledge and these skills to most situations.	**80-89**
Sound (S)	The student has a sound knowledge and understanding of the content and has achieved a good level of competence in the processes and skills.	**60-79**
Basic (B)	The student has a basic knowledge and understanding of the content and has achieved a basic level of competence in the processes and skills.	**30-59**
Limited (L)	The student has an elementary knowledge and understanding in a few areas of the content and still required further work to achieve competence in the processes and skills.	**0-29**

Satisfactory completion of courses

A course has been satisfactorily completed, when the student has:

- Followed the course developed/endorsed by the NSW Educational Standards Authority (NESA)
- Applied himself/herself with diligence and sustained effort to the set tasks and experiences provided in the course.
- Achieved some or all of the course outcomes

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HSC Software Design and Development

HSC Assessment Task - 2

*****AMENDED 22/03/2024*****

Due Date: Term 2, Week 1, Friday - (03/05/2024) by 8:20am

Submission MUST be uploaded to CANVAS as a PDF by 8.20am.

Only submit on CANVAS, no hardcopy required.

Assessment Outcomes

A student:

- H2.1 explains the implications of the development of different languages
- H2.2 explains the interrelationship between emerging technologies and software development
- *H5.1 applies project management techniques to maximise the productivity of the software development*
- *H6.2 communicates the processes involved in a software solution to an inexperienced user*

Context

Learning to design and develop software solutions is the aim of this course. There are many possible development approaches and many different techniques that could be used as part of the creation of a software product.

Project management is about ensuring projects are completed on time and that they achieve their objectives.

Commercial software development teams would be assigned a project manager whose task is to coordinate the overall design and development process. These managers require high-level communication and time-management skills. They must be able to adapt to change, motivate and resolve conflicts. Their job is to focus all resources on the accomplishment of the project's goals.

The Software Development Life Cycle (SDLC) provides a framework for the development of the project. Software Development is a cyclical process. The requirements of the problem will change over time. During development, new ideas surface; the processes and techniques should cater to these needs.

Scenario

John Edmondson High School's Mathematics Faculty needs a system which will enable the teachers to sort all students of Year10 into their respective Maths group: Advanced, Intermediate and Standard.

The criteria for a student to belong in the:-
Advanced group: 85 – 100
Intermediate group: 60 – 84
Standard group: 0 – 59

A teacher will create a list of student names and their final mark in a database. The system should be able to:

- Calculate the group number.
- Display a class (group) list showing the group with all students' first name and surname.
- Search for a particular student which then displays his or her maths group.
- Add a new student to a group.
- Delete a student from a group.

The system needs to be built for implementation in 2025. The principal of JEHS has asked you to build the system using a development environment of your choice. The system will incorporate a Database management System (DBMS) to manage class lists. All the resources to build the system will be provided by the school.

Phase 1 – Defining and Understanding the Problem

To understand the depth and complexity of the problem, we commence by creating system modelling tools.

Question A: Draw a storyboard for this system to help you understand the design of the user interface.

Question B: Draw a system flowchart to represent the above system.

Question C: Brainstorm all software development approaches**.** Recommend and justify a suitable software development approach for the system. In your response identify why the other approaches are not suitable.

Phase 2 – Planning and Designing Software Solutions

There are numerous tool and techniques available to assist developers during this stage. The overview of the planning and designing phase is:

- Break problem down into manageable pieces and design a method of solving each component piece.
- Decide on data types and design data structures.
- Create algorithms.
- Consider design of interface and consider selecting programming language.

Phase 3 – Implementing Software Solutions

In this stage development of source code is written and tested. Plans and designs formulated in stage 2 are implemented in a programming language.

Phase 4 – Testing and Evaluating Software Solutions

This stage is central to a software development company's quality assurance. The major aim of testing is to detect and correct errors before the system is installed (converted).

Question D: Recommend and justify a method of conversion which would be used following the completion of the system.

Phase 5 – Maintaining Software Solutions

Maintenance is an ongoing process of correction and refinement. Many software products have a life span of some ten to fifteen years. These products will require maintenance for them to continue to meet the expectations of their users. Maintenance includes the correction of errors (bugs) in the source code together with upgrades to enhance the functionality of the product to meet new or changing requirements.

Question E: Identify and justify a feature for upgrade to enhance the functionality of the product to meet new or changing requirements.

Question F: Despite improvements in software technology, the development of successful software projects remains a significant issue.

(i) Identify and discuss reasons for the failure of software projects.

(ii) Outline the responsibilities of software developers. How does meeting these responsibilities contribute to successful software projects?

Marking Criteria

QUESTION A

Marking Criteria	Marks
A comprehensive storyboard showing features of the screens and links between screens.	9-10
A comprehensive design of at least two screens, with links between the screens.	6-8
A comprehensive design of at least one screen.	4-5
An attempt at designing a single screen.	1-3

QUESTION B

Marking Criteria	Marks
A correct system flowchart.	7-8
A substantially correct system flowchart.	5-6
A system flowchart with at least three correct symbols.	3-4
An attempt at constructing a system flowchart.	1-2

QUESTION C

Marking Criteria	Marks
Identifies and justifies the appropriate approach with reference to the scenario, along with why the other approaches are unsuitable.	7-8
Identifies and justifies the appropriate approach with reference to the scenario.	5-6
Describes a suitable software development approach.	3-4
Identifies a software development approach.	1-2

QUESTION D

Marking Criteria	Marks
Recommends and justifies a method of implementation with reference to the scenario.	5-6
Recommends a method of implementation.	3-4
Identifies a method of implementation.	1-2

QUESTION E

Marking Criteria	Marks
Identifies a feature for upgrade to enhance the functionality of the product, with justification.	5-6
Identifies a feature but with omissions in the explanation.	3-4
Identifies a feature only.	1-2

QUESTION F(i)

Marking Criteria	Marks
Identifies and explains at least 3 reasons for the failure of software projects.	5-6
Identifies and explains at least 2 reasons for the failure of software projects.	3-4
Identifies and explains at least 1 reason for the failure of software projects.	1-2

QUESTION F(ii)

Marking Criteria	Marks
Outlines at least 3 responsibilities of software developers and explains how meeting these responsibilities contribute to successful software projects.	5-6
Outlines at least 2 responsibilities of software developers and explains how meeting these responsibilities contribute to successful software projects.	3-4
Outlines at least 1 responsibility of software developers and explains how meeting these responsibilities contribute to successful software projects.	1-2

TOTAL - /50

Notes

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