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| Release Date | Term 3, Week 1, Tuesday |
| Due Date | Term 3, Week 3, Sunday |

## Introduction

As a developer (dev) you are sometimes required to prove your knowledge to prospective clients and employers.

## Brief

In order to demonstrate your understanding of fundamental software concepts, you will provide answers to a series of short answer questions.

Q1. Provide an overview and description of a standard source control process for a large project

<https://code.tutsplus.com/articles/team-collaboration-with-github--net-29876>

CMP1043-2.1 Provide an overview and description of your source control process.

6.0 to >5.0 pts

HD

Provides an extensive overview and description of a standard source control process

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Provide an overview and description of your source control process. | 6.0 to >5.0 pts  HD  Provides an extensive overview and description of a standard source control proces | 5.0 to >4.0 pts  D  Provides a very good overview and description of a standard source control process | 4.0 to >3.0 pts  CR  Provides a good overview and description of a standard source control process | 3.0 to >2.0 pts  P  Provides a basic overview and description of a standard source control proces | 2.0 to >0 pts  F  Does not provide a sufficient overview and description of a standard source control process |

Q2. What are the most important aspects of quality software?

There is a standard for quality software

<https://www.silasreinagel.com/blog/2016/11/15/the-seven-aspects-of-software-quality/>

<https://www.tutorialspoint.com/software_testing/software_testing_iso_standards.html>

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| --- | --- | --- | --- | --- |
| CMP1043-2.2 What are the most important aspects of quality software? | 6.0 to >5.0 pts  HD  List discuss and demonstrate 6 software quality characteristics. | 5.0 to >4.0 pts  D  List discuss and demonstrate 5 software quality characteristics. | 4.0 to >3.0 pts  CR  List discuss and demonstrate 4 software quality characteristics. | 3.0 to >2.0 pts  P  List discuss and demonstrate 3 software quality characteristics. |

Q3 Outline a standard high level structure for a MERN stack application and explain the components

Provide an example of an app

my plan was to just explain what each letter of mern is doing?

Mongodb, express, react, nodejs

Tell me what each of these components are and what they do in context of the application

M - MONGODB - DATBASE

E - EXPRESS - BACKEND

R - REACT - FRONT END

N - NODE - BACKEND

Q4. A team is about to engage in a project, developing a website for a small business. What knowledge and skills would they need in order to develop the project?

**Hard skills:**

* Server
* Source control
* Ruby
* JavaScript
* HTML
* CSS
* Python
* Payment systems
* Understanding auth
* CLI
* Could services
* Responsiveness

**Soft skills:**

* Ability to work in a team
* Strong communication (internal & external communication)
* Time management
* Project management
* Development methodology (Agile)

Seek.com job reqs list e.g “Demonstrated experience as a full stack developer

* Broad technical experience in coding, DevOps, API’s and micro-services
* Proven experience in cloud native application development (react and similar frameworks or JavaScript)
* Experience in developing API’s and micro services (node.js, hapi, joi, swagger)
* Experience with applications that are hosted in Cloud Foundry or Kubernetes
* In addition, you will benefit from experience with TypeScript, NoSQL databases, AWS, Azure and GCP

describe how and where they will be implemented

Go into detail on each

Q5. With reference to one of your own projects, discuss what knowledge or skills were required to complete your project, and to overcome challenges

Question four is about skills in general, question 5 is specific to one of your previous works. WHY was payment gateways important for your project, WHY was source control necessary for your project

Q6 With reference to one of your own projects, evaluate how effective your knowledge and skills were for this project, and suggest changes or improvements for future projects of a similar nature

check comments on previous assessments to see what went wrong

Evaluates effectiveness of knowledge and skills accurately,

providing examples

and providing an insightful improvement on each skill

Q7 Explain control flow, using an example from the JavaScript programming language

<https://dev.to/mugas/control-flow-in-javascript-246l>

Q8 Explain type coercion, using examples from the JavaScript programming language

<https://www.freecodecamp.org/news/js-type-coercion-explained-27ba3d9a2839/>

Q9 Explain data types, using examples from the JavaScript programming language

Q10 Explain how arrays can be manipulated in JavaScript, using examples from the JavaScript programming language

Q 11 Explain how objects can be manipulated in JavaScript, using examples from the JavaScript programming language

Q12 Explain how JSON can be manipulated in JavaScript, using examples from the JavaScript programming language

Q13 For the code snippet provided below, write comments for each line of code to explain its functionality. In your comments you must demonstrates your ability to recognise and identify functions, ranges and classes

MERN Workbook (2019)

MERN Workbook (2019)

| Criteria | Ratings | Pts |  |
| --- | --- | --- | --- |
| This criterion is linked to a Learning Outcome CMP1043-2.1 Provide an overview and description of your source control process.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Provides an extensive overview and description of a standard source control process | 5.0 to >4.0 pts  D  Provides a very good overview and description of a standard source control process | 4.0 to >3.0 pts  CR  Provides a good overview and description of a standard source control process | 3.0 to >2.0 pts  P  Provides a basic overview and description of a standard source control process | 2.0 to >0 pts  F  Does not provide a sufficient overview and description of a standard source control process | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome CMP1043-2.2 What are the most important aspects of quality software?   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  List discuss and demonstrate 6 software quality characteristics. | 5.0 to >4.0 pts  D  List discuss and demonstrate 5 software quality characteristics. | 4.0 to >3.0 pts  CR  List discuss and demonstrate 4 software quality characteristics. | 3.0 to >2.0 pts  P  List discuss and demonstrate 3 software quality characteristics. | 2.0 to >0 pts  F  List and discuss 3 or more software quality characteristics. | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome CMP1043-2.3 Demonstrate sound design Architecture   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Shows almost flawless understanding of the high level structure of the app | 5.0 to >4.0 pts  D  Shows an excellent understanding of the architecture of the app | 4.0 to >3.0 pts  CR  Shows a solid understanding of the architecture of the app | 3.0 to >2.0 pts  P  Shows a basic understanding of the architecture of the app | 2.0 to >0 pts  F  Inadequate understanding of the app architecture | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome CMP1043-3.1 A team is about to engage in a project, developing a website for a small business. What knowledge and skills would they need in order to develop the project?   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Effectively describes a range of skills and knowledge required by IT workers to complete a quality web development project | 5.0 to >4.0 pts  D  For the most part describes a number of important skills and knowledge required by IT workers to complete an above-par web development project. | 4.0 to >3.0 pts  CR  Describes at least the most important knowledge and skills required by IT workers to complete a functioning web development project. | 3.0 to >2.0 pts  P  Covers several important knowledge and skills required by IT workers, however explanation suffers some vagueness. | 2.0 to >0 pts  F  Important knowledge and/or skills not addressed, or answer vague. | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome CMP1043-3.2 Within your own project what knowledge or skills were required to complete your project, and overcome challenges?   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Effectively describes a range of skills and knowledge used to complete a project. | 5.0 to >4.0 pts  D  For the most part describes a number of important skills and knowledge used to complete a project. | 4.0 to >3.0 pts  CR  Describes at least the most important knowledge and skills used to complete a project. | 3.0 to >2.0 pts  P  Covers several important knowledge and skills used for a project, however explanation suffers some vagueness. | 2.0 to >0 pts  F  Important knowledge and/or skills not addressed, or answer vague. | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome CMP1043-3.3 Evaluate how effective your knowledge and skills were this project, and suggest changes or improvements for future projects of a similar nature?   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Evaluates effectiveness of knowledge and skills accurately, providing examples, and providing an insightful improvement on each skill | 5.0 to >4.0 pts  D  Evaluates effectiveness of knowledge and skills, providing examples, and providing an improvement on each skill | 4.0 to >3.0 pts  CR  Evaluates effectiveness of knowledge and skills, providing examples, and providing improvements relating to the skills and knowledge, suffers from some vagueness or lack of connection between evaluation and improvement. | 3.0 to >2.0 pts  P  Evaluates effectiveness of some knowledge and skills, providing examples, and providing several improvements. | 2.0 to >0 pts  F  Fails to provide evaluative statements on knowledge or skills, fails to provide any examples, or fails to provide any improvements. | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-3.1 Explains the concept of control flow in programming   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Provides a thorough explanation of control flow in programming | 5.0 to >4.0 pts  D  Provides an explanation of control flow in programming | 4.0 to >3.0 pts  CR  Provides some explanation of control flow in programming | 3.0 to >2.0 pts  P  Provides general statements about control flow in programming | 2.0 to >0 pts  F  Does not provide sufficient explanation of control flow in programming | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-3.2 Explains the concept of type coercion in programming   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Provides a thorough explanation of type coercion in programming | 5.0 to >4.0 pts  D  Provides an explanation of type coercion in programming | 4.0 to >3.0 pts  CR  Provides some explanation of type coercion in programming | 3.0 to >2.0 pts  P  Provides general statements about type coercion in programming | 2.0 to >0 pts  F  Does not provide sufficient explanation of type coercion in programming | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-3.3 Explains the concept of data types in programming   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Provides a thorough explanation of data types in programming | 5.0 to >4.0 pts  D  Provides an explanation of data types in programming | 4.0 to >3.0 pts  CR  Provides some explanation of data types in programming | 3.0 to >2.0 pts  P  Provides general statements about data types in programming | 2.0 to >0 pts  F  Does not provide sufficient explanation of data types in programming | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-5.1 Demonstrates an ability to manipulate arrays   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Demonstrates an extensive ability to manipulate arrays | 5.0 to >4.0 pts  D  Demonstrates a very good ability to manipulate arrays | 4.0 to >3.0 pts  CR  Demonstrates a good ability to manipulate arrays | 3.0 to >2.0 pts  P  Demonstrates a basic ability to manipulate arrays | 2.0 to >0 pts  F  Does not demonstrate sufficient ability to manipulate arrays | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-5.2 Demonstrates an ability to manipulate objects   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Demonstrates an extensive ability to manipulate objects | 5.0 to >4.0 pts  D  Demonstrates a very good ability to manipulate objects | 4.0 to >3.0 pts  CR  Demonstrates a good ability to manipulate objects | 3.0 to >2.0 pts  P  Demonstrates a basic ability to manipulate objects | 2.0 to >0 pts  F  Does not demonstrate sufficient ability to manipulate objects | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-5.3 Demonstrates an ability to manipulate JSON   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6.0 to >5.0 pts  HD  Demonstrates an extensive ability to manipulate JSON | 5.0 to >4.0 pts  D  Demonstrates a very good ability to manipulate JSON | 4.0 to >3.0 pts  CR  Demonstrates a good ability to manipulate JSON | 3.0 to >2.0 pts  P  Demonstrates a basic ability to manipulate JSON | 2.0 to >0 pts  F  Does not demonstrate sufficient ability to manipulate JSON | |  | 6.0 pts |  |
| This criterion is linked to a Learning Outcome PRG1006-4.1 Recognise functions, ranges and classes & PRG1006-4.2 Identify functions, ranges and classes   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 12.0 to >10.0 pts  HD  Demonstrates an extensive ability to recognise functions, ranges and classes | 10.0 to >8.0 pts  D  Demonstrates a very good ability to recognise functions, ranges and classes | 8.0 to >6.0 pts  CR  Demonstrates a good ability to recognise functions, ranges and classes | 6.0 to >4.0 pts  P  Demonstrates a basic ability to recognise functions, ranges and classes | 4.0 to >0 pts  F  Does not demonstrate sufficient ability to recognise functions, ranges and classes | |  | 12.0 pts |  |
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