CITS5206 Professional Computing
Professional Skills Take Home Test
Due Thu 28 September 2023 by 8pm in cssubmit

Read this guide before you start the test.

1. The **four questions** in this take home test assess material from the Professional Practice lectures and workshops for the unit CITS5206: teaching.csse.uwa.edu.au/units/CITS5206/cits5206workshops2023.html
2. The test will be published on LMS (Take Home Test menu) on Friday 15 Sept (LMS). Due Thursday 28 Sep by 8pm (week 9) in cssubmit.
3. I expect it will take you 2 to 3 hours to answer the 4 questions. Each answer should be from half to one page in length (around 300 words).
4. The test must be completed individually without consulting with others. You may use books, lecture notes and the web when preparing your answers, but your submitted answers must be your own work and be written in your own words.
5. You may not use any AI tools such as chatGTP or other online tutors to write or review your answers. Do not cut and paste text from lecture slides, books or web pages.
6. Submit your test answers as a **single pdf file** with each answer starting on a separate page.
7. Completed answers should be submitted via **cssubmit** using the *Take home test link* on the CITS5206 submission site: https://secure.csse.uwa.edu.au/run/cssubmit
8. This is a test assessment. **No late submissions will be accepted.** You have a a long time in which to complete the test. Do not leave it to the last minute.
9. The test contributes 20% towards your final mark for CITS5206. The test will be marked out of 20, with each question worth 5 marks.
10. The marking scheme that will be used to assess your test answers is provided in the following.

CITS5206 Take Home Test Marking Scheme[1]

This assessment aims to assess items (1) through (4) of the unit outcomes: (1) apply knowledge and skills of information technology in project situations; (2) critically analyse requirements and resources for IT projects; (3) justify the professional responsibility to produce reliable software and systems; (4) assess the social impacts of IT projects;

You will be given short questions or a scenario to analyse and asked to demonstrate that you can: Identify relevant topics we have covered which apply in this case and how they apply; Come up with a clear and concise recommendation or answer; and Justify that recommendation (logically, or via evidence covered in lectures etc.) Marks for each question will be awarded (out of 5) using the following expectations for what students are able to demonstrate in their answers:

Skilled (4-5) (UWA grade Distinction, High Distinction) All (or nearly all) relevant facts/topics in the given scenario are identified, with at most minor omissions/errors. Clearly identifies relevant technique(s) to address the problem. Clearly articulates a solution/resolution for the given scenario. Justifies the approach taken giving clear reasons for proposed solution. The audience is able to identify the focus of the work and is engaged by its clear focus and relevant details. Information is presented in a concise and logical manner. There is minimal interruption to the work from misspellings and/or mechanical errors.

Sufficient (2-3) (UWA grade Pass, Credit) Some relevant facts and topics identified but some major omissions or one-sided arguments. Lacks clarity or relevance in the choice of techniques for addressing the given scenario. Some attempt justification of the chosen approach but major omissions or errors eg fails to justify major points or identify key assumptions. Some misspellings and/or mechanical errors that negatively affect the audience's ability to read the work.

Developing (0-1) (UWA grade Fail) Little or no evidence of ability to identify relevant facts/topics. Poor choice of techniques for addressing the given scenario. Little or no evidence of ability to justify answers. Information is presented in a disorganized fashion causing the audience to have difficulty following the author's ideas. There are many misspellings and/or mechanical errors that negatively affect the audience's ability to read the work.

[1]Source credits: CITS4401 scenario marking guide (Arran Stewart) and resources.depaul.edu/teaching-commons/teaching-guides/feedback-grading/rubrics

Question 1: Minimal Viable Products

In an MVP the terms *viable product* refer to production of a software product that is viable for early adopters and is something tangible that customers can touch and feel.

a) Describe *one (or two) specific method(s)* that you have used in CITS5206 to create a VP that your client can use. Justify how this meets the requirement of an MVP. If you have not yet created a VP that the client has interacted with then reflect an approach you could take to do this earlier in a future project.

b) Discuss your experiences (success and failures) when producing a VP to allow your client to use your system for obtaining and responding to feedback from the client.

Question 2: Team Software Development

What is a *pull request* in a group software development process? Explain the purpose of pull requests and outline a good process of for performing a pull request. Use examples from your CITS5206 projects to illustrate your answer.

Question 3: Information Technology Ethics

The ACS Code of Professional Conduct has six principles to guide the conduct of software professionals: Primacy of the public interest; Enhancement of quality of life; Honesty; Competence; Professional development; Professionalism.

Consider a scenario where you are an IT professional working on a software system for *collecting and processing complaints made by patients, staff or visitors for a large hospital*. The deadline for delivering your part of the system is due in a short time. You decide to use the AI tool CoPilot to auto-complete your code and test cases. However, since your company does not allow the use of AI generated code, you do not mention this to your team manager.

a) Select **two (2) principles from the ACS Code of Professional Conduct** that apply in this situation. Choose the 2 you believe are most important for this scenario.

b) For each of the two principles you identified in (a), explain **how** the principle applies in this specific software development situation.

c) Propose a professional and ethical course of action for an IT professional in this situation.

Question 4: Cybersecurity

Consider the following scenario for a new software product for a large hospital (as in Question 3).

> The hospital is commissioning a software system for managing complaints reported by patients, staff or visitors about any aspect of their hospital experience including interactions with people at the hospital. Complaints will be triaged, and then managed by authorised staff on an integrity committee who will investigate and endeavour to resolve the complaints.

Perform an initial assessment of security threats for this system using the following steps.

a) Draw a diagram to describe a possible system design model for this system. Keep it simple: your model should have no more than 5 components. On your diagram, indicate two (2) assets with the highest priority for security protection. Briefly explain why you have chosen these two assets.

b) Outline a key security threat for the two assets you have highlighted in a). Choose the highest priority threat for each asset and briefly explain your choice.

c) Propose a mitigation or countermeasure for the two specific threats you identified in b).