SIT226 Cloud Automation Technologies

High Distinction Task 1.2HD

Project Proposal

Background

In completing your studies this trimester you will learn the skills to deploy and manage microservice applications, along with various issues that need to be considered in parallel, e.g., costings, replication, reliability, and so on. The HD tasks for this unit form a sequence of three tasks that represent the completion of a project requiring you to demonstrate the achievement of a high level of expertise in the unit content, in turn evidencing your achievement of the Unit Learning Outcomes at an advanced level.

Get Prepared

This is the first in a sequence of three tasks. To obtain an HD grade in the unit, you must complete all three tasks successfully, and each must be marked complete before you can proceed to the next task in the sequence.

In this task, you will propose the work you will complete for the project, which must consist of a software solution deployed in Kubernetes. You may use any components in the solution, including open source software, applications used in your workplace, or even applications you have developed yourself. Any of your own components must either be complete or only require minor work however, i.e., you may not reuse project work done in parallel in another unit. The final project must be adequately complex to allow you to demonstrate the ULOs of the unit at an advanced level.

You should take the time to review the other HD tasks to understand the later expectations and also consider how your project will utilise different Kubernetes features, e.g., replication, configuration, services, scaling, affinity, logging/metrics/alerts, and so on. Your application doesn't need to demonstrate every Kubernetes feature to achieve an HD grade, however, you will need to think about this early on.

Example of Project Ideas

Outlined below are two project ideas, and you're welcome to select one as your project proposal.

1. Real-time Chat Application Deployment:

Deploy a real-time chat application leveraging WebSocket technology on Kubernetes. Implement automatic horizontal scaling to accommodate increasing chat loads during peak usage times. Utilize Kubernetes rolling updates for seamless software updates without downtime. Manage user data and authentication tokens securely using Kubernetes Secrets. Configure distributed storage for message persistence and attachment uploads.

Technologies may be required: Automatic application scaling, rolling updates, Secrets management, data storage, network policies, security mechanisms (Pod Security Policies), monitoring, and alerting.

2. Healthcare Appointment Booking System:

Deploy a healthcare appointment booking system on Kubernetes, allowing patients to schedule appointments with doctors. Implement automatic scaling to handle varying appointment booking demands throughout the day. Utilize Kubernetes StatefulSets for managing stateful components such as the appointment scheduler. Manage sensitive patient information securely using Kubernetes Secrets. Configure database storage for persistent data storage.

Technologies may be required: Automatic application scaling, StatefulSets for stateful components, Secrets management, data storage, access control, logging, and auditing.

Complete the Task

Page Limit: 1.5 pages of text formatted reasonably, e.g., 2cm margins, 11 or 12 point font, appropriate headings/spacing, etc.

Prepare a proposal for your project that consists of:

1. A description of the solution you will build and demonstrate. Explain the application domain you are focused on, any resources you have identified to facilitate completion of the project, why it is interesting, any significant challenges, and where you propose to deploy it for testing/ demonstration purposes (approximately 0.5-0.75 page). *Note: keep your answer "big picture", specific plans/architectures/components etc. will be addressed in the second task.*
2. For each of the five ULOs in the unit, briefly indicate/explain how you expect to demonstrate achievement of the ULO **at an advanced level** (approximately 0.5-0.75 page). Keep in mind that your submission of the project will be primarily in the form of a presentation, so you need to consider this carefully[i].

Submit Your Task

Prepare your submission using the word processor of your choice and submit a PDF to OnTrack.

Citations and Referencing

When completing any work for assessment it is necessary to acknowledge any content created by others that your work has relied upon through the use of citations and references. Failing to correctly identify the work of others is known as plagiarism and is considered an issue of Academic Integrity.

If your submission to this task has involved the work of others, you must include citations and references where appropriate. Deakin provides a web site that explains how to use citations and references, and includes explanations of various referencing styles:

https://www.deakin.edu.au/students/studying/study-support/referencing

You may select any style for your citations/references, however you must be consistent in applying that style in this task (you can use other styles in other tasks if you wish).

Note that any bibliography/list of references is not included in page limits.

[i] Remember that this is only a proposal, so your explanation of how your project will allow you to demonstrate each ULO is not a "final answer" and you will review these as part of the second task. At this time, the focus is on what your expectations are so that we can evaluate whether your idea has merit and/or has the scope that would allow you to complete a project that would be adequate to demonstrate HD achievement. If your project is adequate, you should have no problems coming up with ideas for this answer, although explaining those ideas may be challenging. If you are struggling for ideas (for any ULO), take the time to reflect on your project, is the idea big enough or does the project concept need to be developed in one or more areas? For some projects it will be difficult to complete this section at the beginning of the project lifecycle, so answer this as best you can and submit your task for feedback.