

COMP7142 – Popular Network Technology		
Subject : COMP7142 – Popular Network Technology		
Name Example : LK22-2 Marvin Luckianto	Status Start Date End Date	: Qualification : June 14, 2025, 05:00 PM : June 21, 2025, 23:59 PM



## PERATURAN:

Regulations:

- Peserta ujian tidak diperkenankan untuk bekerja sama dengan peserta ujian lainnya.  
*Students are not allowed to discuss and/or cooperate with other students.*
- Peserta ujian tidak diperkenankan untuk membuka dan/atau menyalin jawaban dari buku, catatan, video, dan jenis referensi lainnya.  
*Students are not allowed to open and/or copy answer from books, notes, videos, and other references,*
- Peserta ujian tidak diperkenankan untuk membuka dan/atau menyalin jawaban dari internet.  
*Students are not allowed to open and/or copy answer from the internet.*
- Jawaban yang dapat diterima dan dinilai adalah jawaban yang dikumpulkan sebelum batas waktu yang telah ditentukan.  
*The answer must be submitted before the designated deadline to be accepted and graded.*
- Jika Anda tidak membaca peraturan ini, maka Anda dianggap sudah membaca dan menyetujuinya.  
*By taking this exam, you agree to these regulations, regardless of whether you have read it or not,*



## SOFTWARE YANG DIGUNAKAN:

*This exam uses the following software:*

- Ansible
  - Terraform
  - Azure CLI
  - Visual Studio Code (VS Code)
  - Microsoft Azure
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## FILE YANG DIKUMPULKAN:

*The following files must be submitted:*

- DOCX
  - YAML
  - HCL
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## PERHATIAN!

*Attention!*

- Apabila jawaban yang dikumpulkan tidak sesuai dengan tema soal, maka akan nilai akan dinolkan.  
*Submitting an answer with a different theme from the given case will result in a score of zero.*
  - Jawaban akan dinilai berdasarkan teknik yang diajarkan dalam praktikum dengan menggunakan software yang telah ditentukan.  
*The scoring will be based on the materials taught during the practicum classes using the designated software. Using different software than requested may result in your answer not being graded.*
  - Kompres jawaban yang akan diunggah dengan format [INISIAL]-[NAMA].zip.  
*Compress all files that will be uploaded. The file name and extension must use the following format: [INITIAL]-[NAME].zip.*
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GOOD LUCK 😊 ❤

## Soal

*Case*

# Empowering Inclusive Communication: Automating Scalable Deployment of LinKasa on Azure Kubernetes Service

**Handy** is an educational application developed to help users learn and communicate using sign language, empowering inclusive communication for the Deaf and hard-of-hearing communities. By combining interactive lessons, gesture recognition, and real-time sign translation, **Handy** brings sign language learning into the digital age, making it more accessible, engaging, and effective.

To further enhance its capabilities and scale its impact, **Handy** is now supported by **LinKasa**, an innovative extension platform designed to complement and strengthen **Handy** experience. **LinKasa** enables deeper user engagement, personalized learning paths, and real-time progress tracking — expanding Handy's reach and effectiveness for learners worldwide.

As **Handy** continues its mission to bridge communication barriers, **LinKasa** plays a critical role in driving its global expansion. To support this growth, the development team is deploying **LinKasa** in a highly available, containerized environment on Azure Kubernetes Service (AKS). This cloud-native architecture ensures performance, security, and scalability across regions and user bases.

As part of this infrastructure initiative, your responsibility is to automate the setup and configuration of the **LinKasa** platform. This includes provisioning AKS clusters and establishing a secure Azure Container Registry (ACR) to store, manage, and distribute container images efficiently. With robust CI/CD integration and infrastructure-as-code practices, LinKasa will be positioned to deliver reliable, scalable services — all in support of Handy's inclusive educational mission.

- **Provision Infrastructure with Terraform:**

- Use Terraform to define and provision the necessary cloud resources in Azure for the deployment.
- Create a Virtual Network, Subnets and other required Networking Component.
- Deploy an AKS Cluster that will host the containerized application
- Ensure high availability by provisioning the AKS Cluster across multiple availability zones in Singapore.

- **Containerize the Application:**
  - Create Dockerfile to containerize applications from the supplied application.
  - Ensure the application is properly configured and tested for configuration.
- **Create an Azure Container Registry (ACR):**
  - Set up an **Azure Container Registry (ACR)** to securely store the container images for the application.
  - Make sure the **Azure Container Registry (ACR)** is using naming format **[QUALIF] [INITIAL] [GENERATION]** (Example: QUALIF LK 222).
  - Push the containerized application images to ACR.
- **Deploy the Application on AKS:**
  - Use Kubernetes manifest (YAML files) to define and deploy the containerized application on the AKS Cluster
  - Ensure that the application is running correctly and create services to expose the application to the public or internal network.

Good Luck! 😊 ❤️

**Wonderful things can be achieved through teamwork, hard work, and perseverance.**

Blue Jackets 22-2