Detailed documentation

1&2 Fork and clone the codebase

3 Key differences between two workflows

1. **CI/CD Separation**

- **Current Project**: Clear separation between CI (Continuous Integration) and CD (Continuous Delivery) workflows
- **chapter-8-example-3**: Combined approach - single workflow handles build, publish, and deploy

2. **Testing Integration**

- **Current Project**: Backend CI includes comprehensive testing with database services before building images
- **chapter-8-example-3**: No testing phase - builds and deploys without validation

3. **Deployment Strategy**

- **Current Project**: Manual deployment triggers (Continuous Delivery) - human approval required
- **chapter-8-example-3**: Automatic deployment on code changes (Continuous Deployment)

4. **Architecture Complexity**

- **Current Project**: Multi-service architecture with separate workflows for frontend/backend

- **chapter-8-example-3**: Single microservice deployment

5. **Error Handling & Validation**

- **Current Project**:
  - Job dependencies ensure tests pass before building
  - LoadBalancer IP validation with timeout handling
  - Proper Azure logout in all scenarios
- **chapter-8-example-3**: Basic deployment without validation steps

6. **Path-based Triggering**

- **Current Project**: Smart triggering based on changed paths (frontend/** or backend/**)
- **chapter-8-example-3**: Triggers on any change to main branch

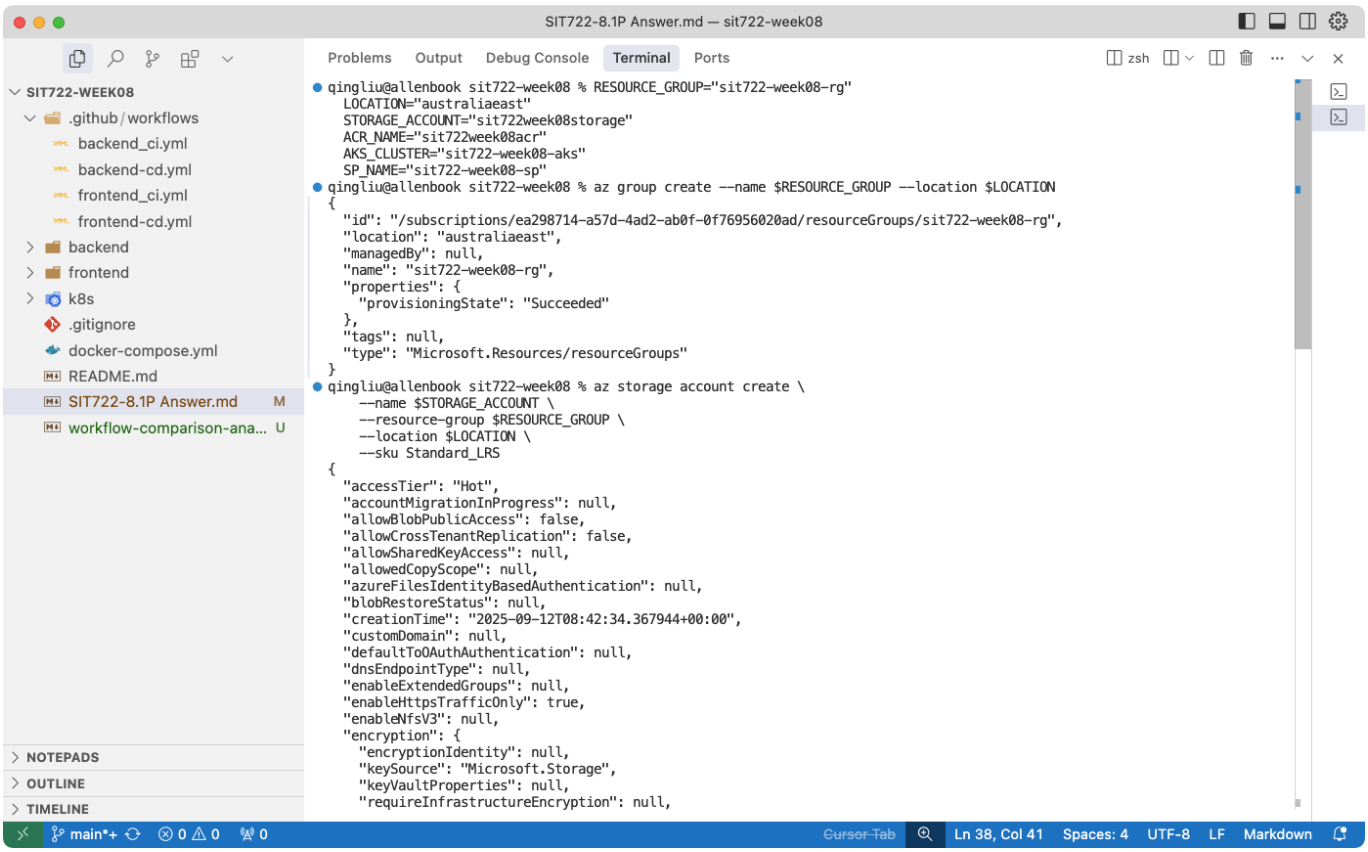
7. **Multi-job Orchestration**

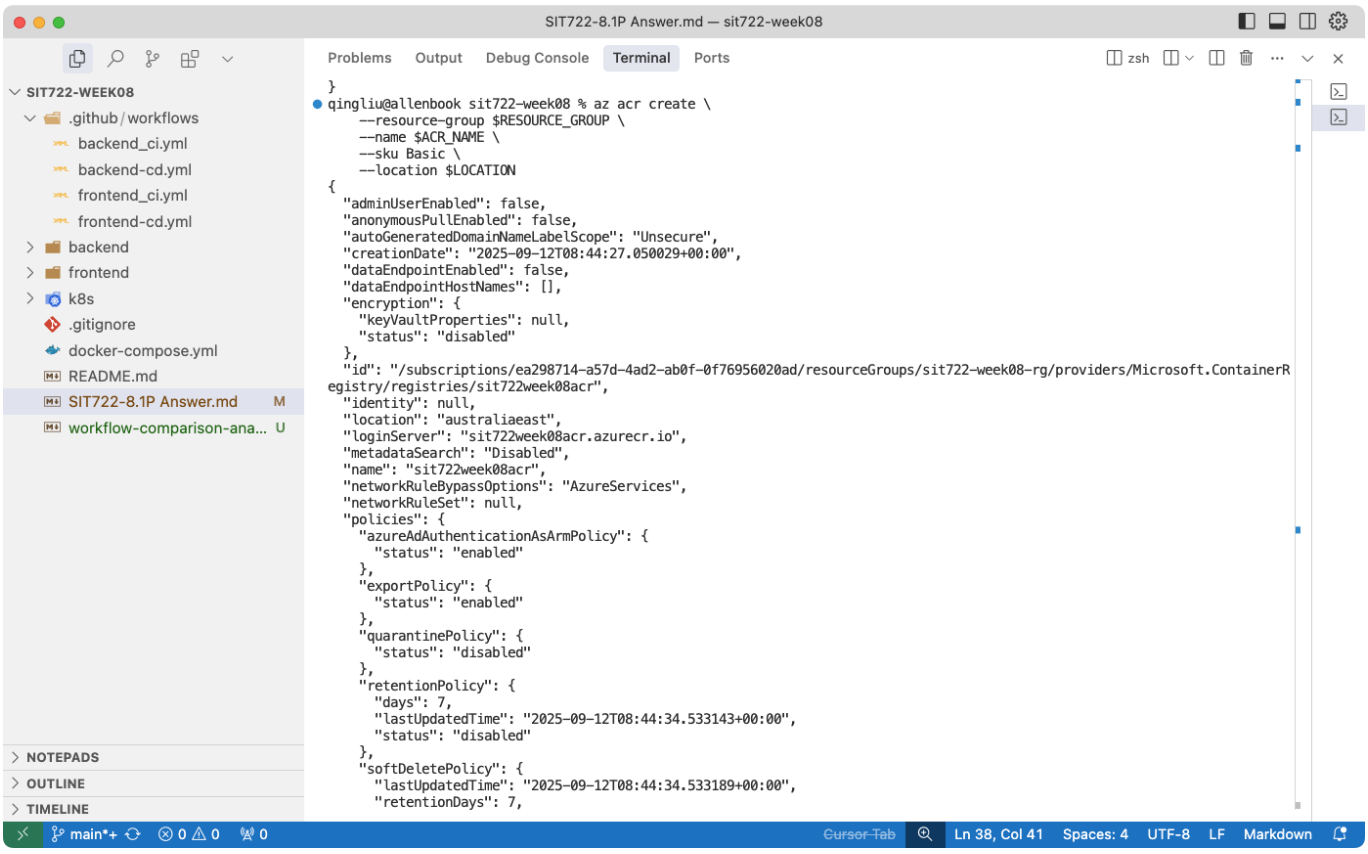
- **Current Project**: Complex multi-job workflows with outputs and dependencies
- **chapter-8-example-3**: Single job execution

4 Create all required Azure resources

```
1. Set Variables

RESOURCE_GROUP="sit722-week08-rg"
LOCATION="australiaeast"
STORAGE_ACCOUNT="sit722week08storage"
ACR_NAME="sit722week08acr"
AKS_CLUSTER="sit722-week08-aks"
SP_NAME="sit722-week08-sp-qingliu"

2. Create Resource Group

az group create --name $RESOURCE_GROUP --location $LOCATION

3. Create Storage Account

az storage account create \
--name $STORAGE_ACCOUNT \
--resource-group $RESOURCE_GROUP \
--location $LOCATION \
--sku Standard_LRS

4. Create Azure Container Registry (ACR)

az acr create \
--resource-group $RESOURCE_GROUP \
--name $ACR_NAME \
--sku Basic \
--location $LOCATION
```

```
5. Create AKS Cluster

az aks create \
--resource-group $RESOURCE_GROUP \
--name $AKS_CLUSTER \
--node-count 2 \
--node-vm-size Standard_B2s \
--location $LOCATION \
--attach-acr $ACR_NAME \
--generate-ssh-keys

6. Create Service Principal with Owner Permission

# Get subscription ID
SUBSCRIPTION_ID=$(az account show --query id -o tsv)

# Get resource group ID
RESOURCE_GROUP_ID=$(az group show --name $RESOURCE_GROUP --query id -o
tsv)

# Create service principal with Owner role on the resource group
az ad sp create-for-rbac \
--name $SP_NAME \
--role Owner \
--scopes $RESOURCE_GROUP_ID \
--json-auth

7. Get ACR Login Server (for GitHub secrets)

az acr show --name $ACR_NAME --resource-group $RESOURCE_GROUP --query
loginServer -o tsv
```


SIT722-8.1P Answer.md — sit722-week08
Problems Output Debug Console Terminal Ports
zsh
SIT722-WEEK08
.github / workflows
backend_ci.yml
backend-cd.yml
frontend_ci.yml
frontend-cd.yml
backend
frontend
k8s
.gitignore
docker-compose.yml
README.md
SIT722-8.1P Answer.md M
workflow-comparison-ana... U
NOTEPADS
OUTLINE
TIMELINE
qingliu@allenbook sit722-week08 % RESOURCE_GROUP="sit722-week08-rg"
LOCATION="australiaeast"
STORAGE_ACCOUNT="sit722week08storage"
ACR_NAME="sit722week08acr"
AKS_CLUSTER="sit722-week08-aks"
SP_NAME="sit722-week08-sp"
qingliu@allenbook sit722-week08 % az group create --name $RESOURCE_GROUP --location $LOCATION
{
"id": "/subscriptions/ea298714-a57d-4ad2-ab0f-0f76956020ad/resourceGroups/sit722-week08-rg",
"location": "australiaeast",
"managedBy": null,
"name": "sit722-week08-rg",
"properties": {
"provisioningState": "Succeeded"
},
"tags": null,
"type": "Microsoft.Resources/resourceGroups"
}
qingliu@allenbook sit722-week08 % az storage account create \
--name $STORAGE_ACCOUNT \
--resource-group $RESOURCE_GROUP \
--location $LOCATION \
--sku Standard_LRS
{
"accessTier": "Hot",
"accountMigrationInProgress": null,
"allowBlobPublicAccess": false,
"allowCrossTenantReplication": false,
"allowSharedKeyAccess": null,
"allowedCopyScope": null,
"azureFilesIdentityBasedAuthentication": null,
"blobRestoreStatus": null,
"creationTime": "2025-09-12T08:42:34.367944+00:00",
"customDomain": null,
"defaultToOAuthAuthentication": null,
"dnsEndpointType": null,
"enableExtendedGroups": null,
"enableHttpsTrafficOnly": true,
"enableNfsV3": null,
"encryption": {
"encryptionIdentity": null,
"keySource": "Microsoft.Storage",
"keyVaultProperties": null,
"requireInfrastructureEncryption": null,
main*+ 0 0 0
Cursor Tab
Ln 38, Col 41 Spaces: 4 UTF-8 LF Markdown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backend_ci.yml
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frontend_ci.yml
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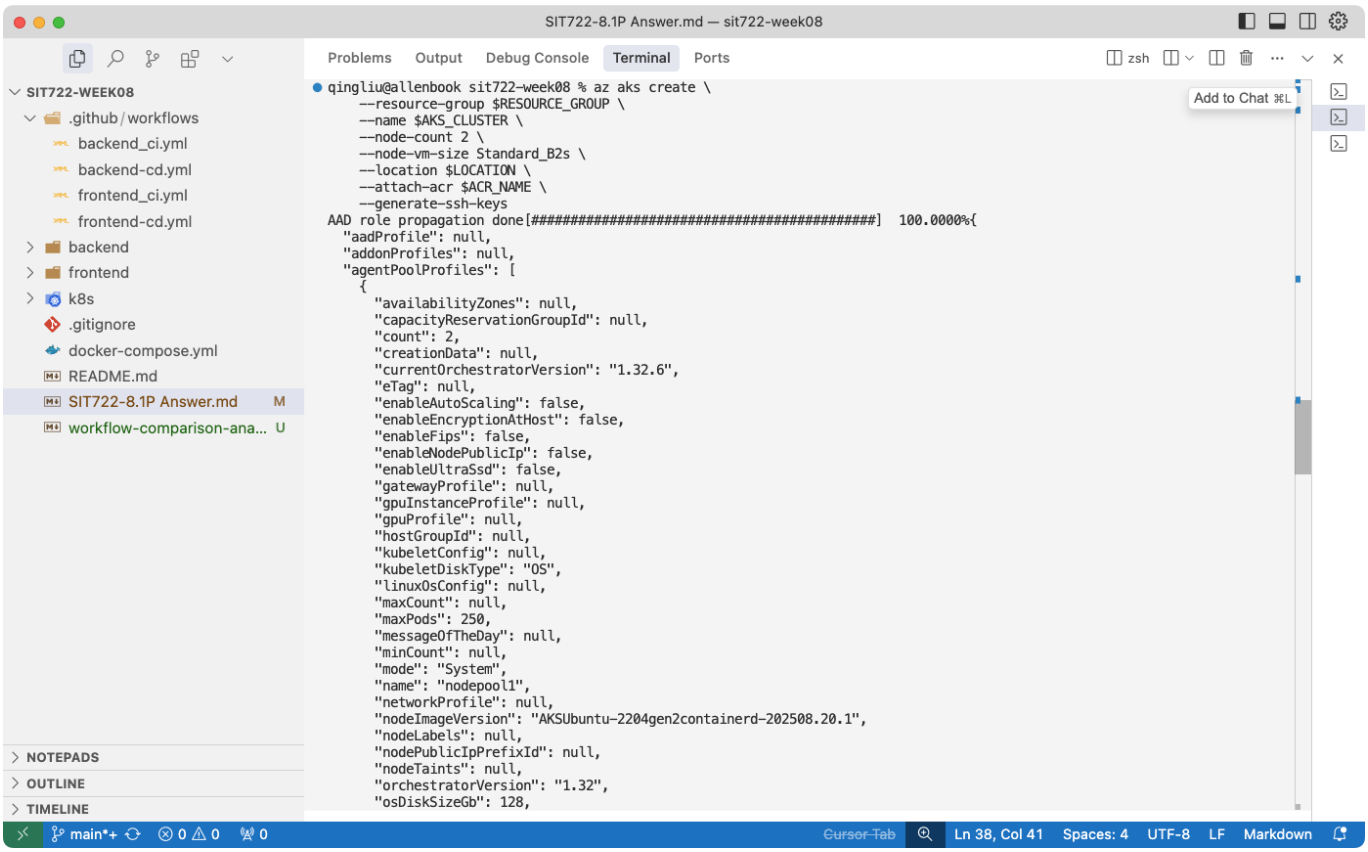
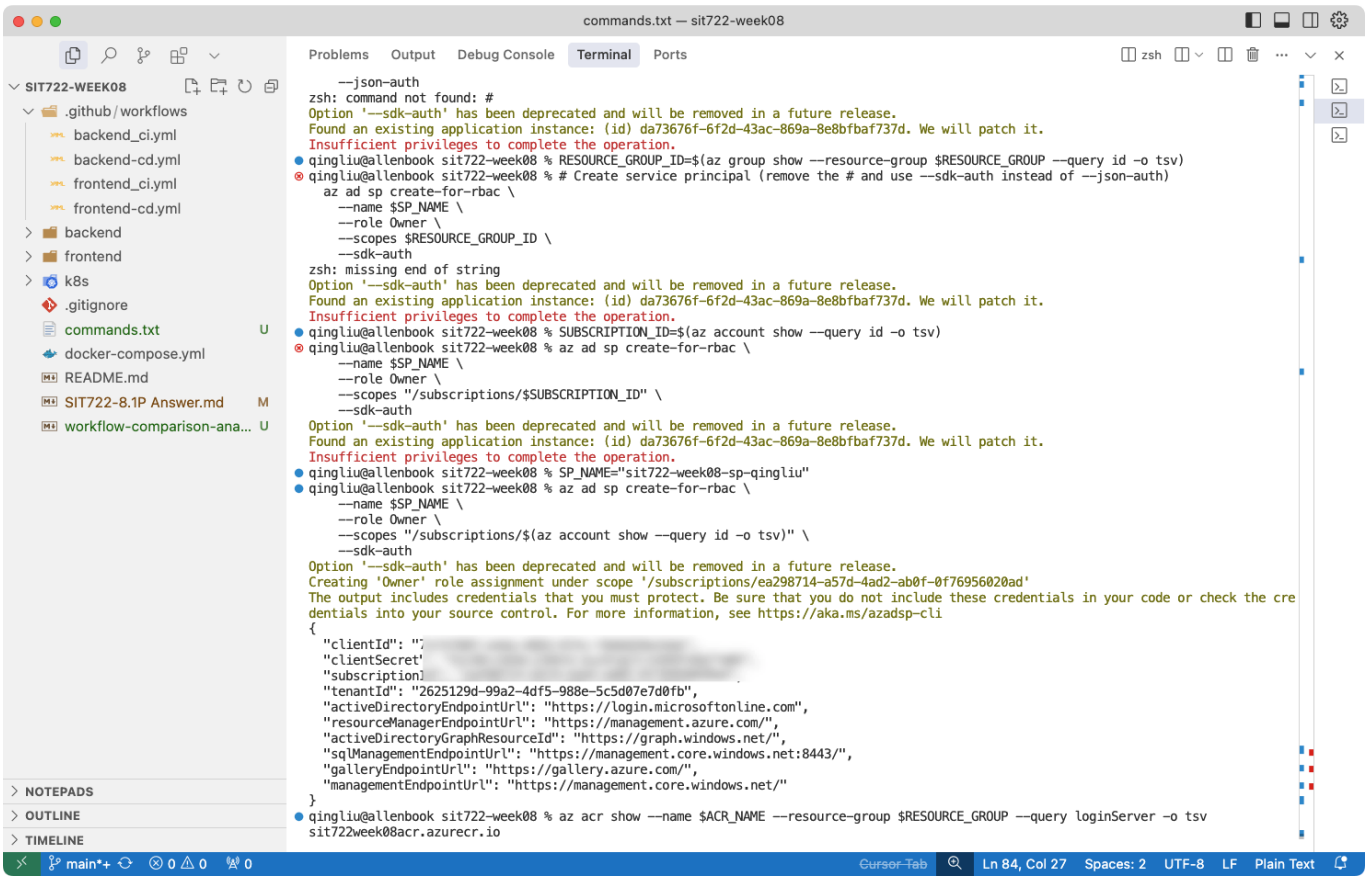
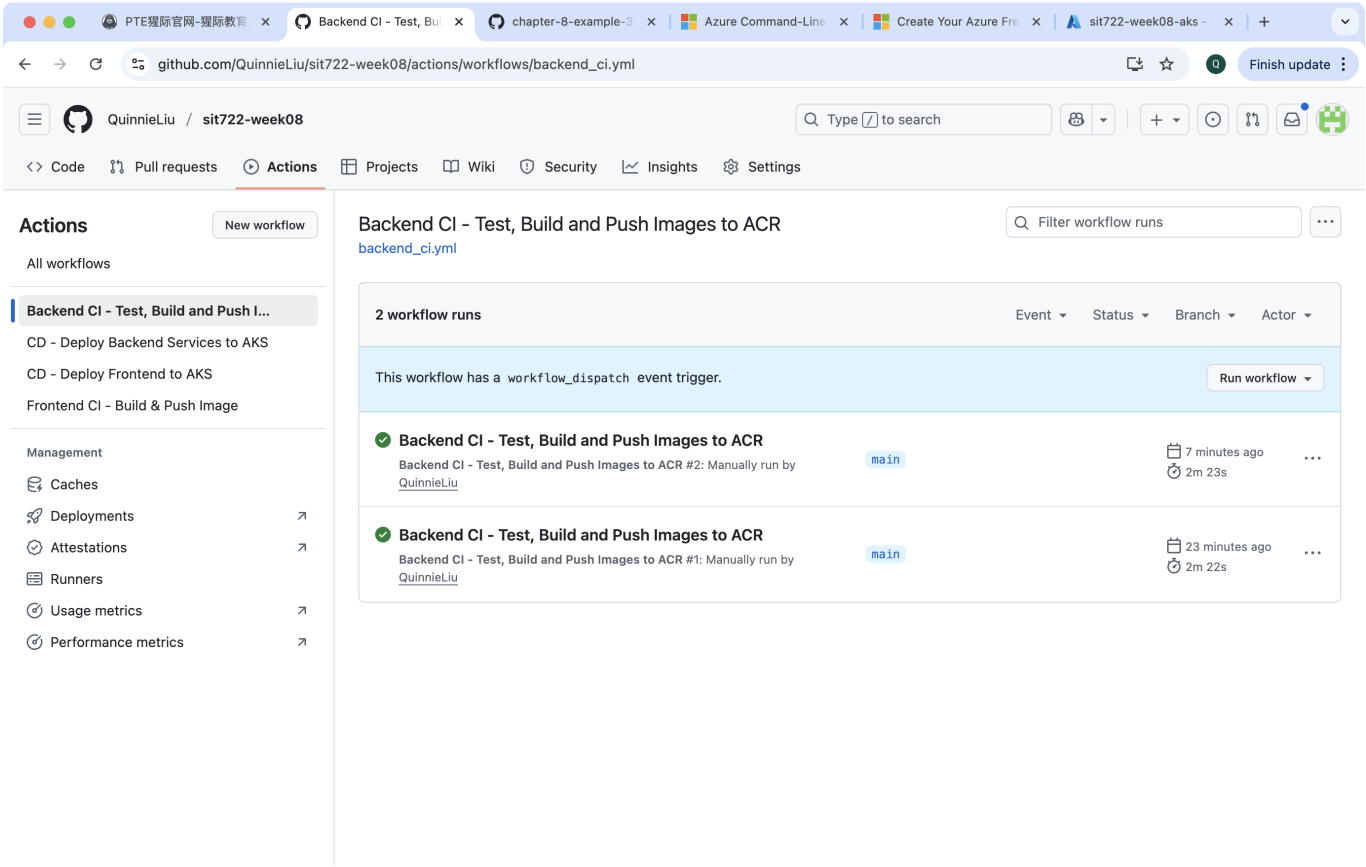
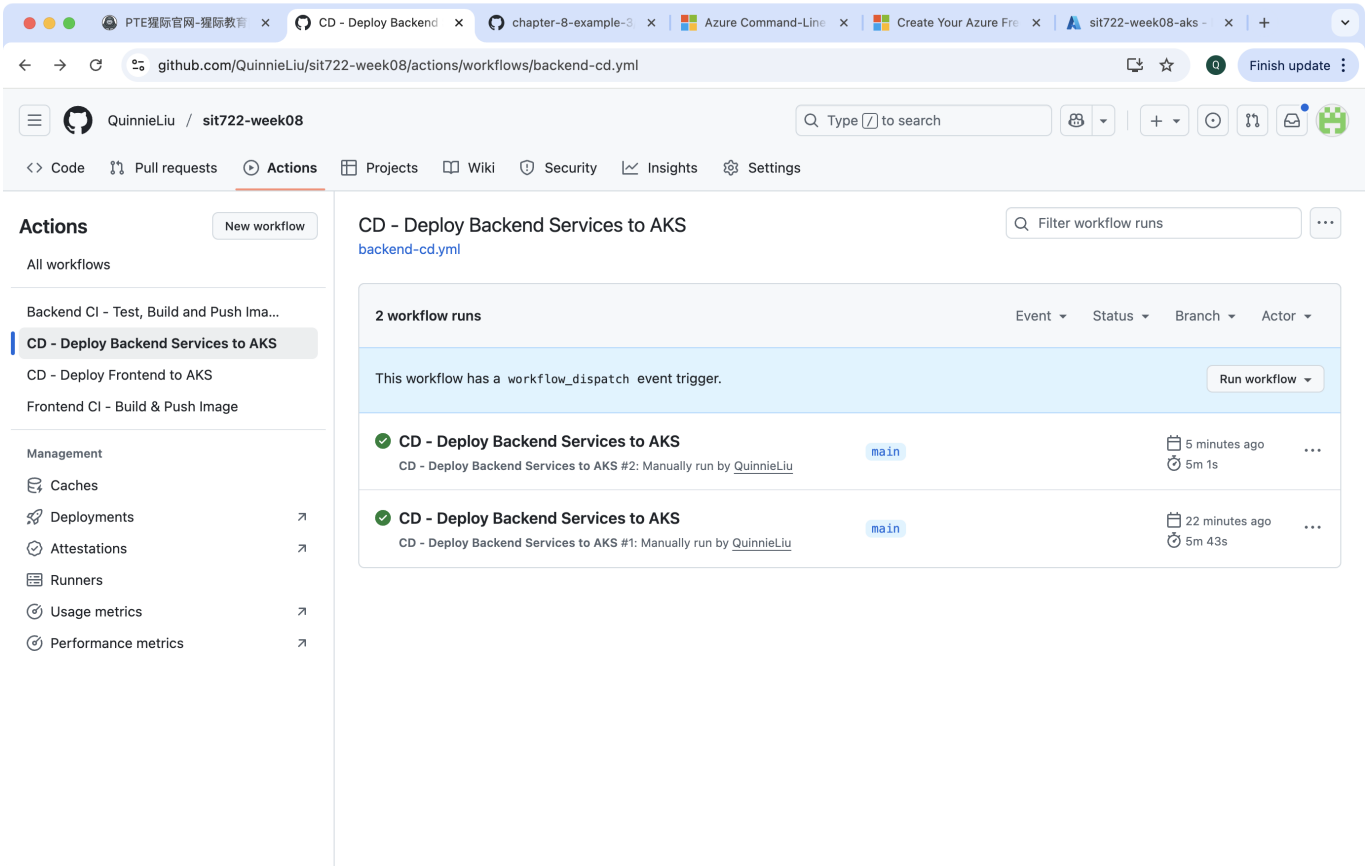
backend
frontend
k8s
.gitignore
docker-compose.yml
README.md
SIT722-8.1P Answer.md M
workflow-comparison-ana... U
NOTEPADS
OUTLINE
TIMELINE
}
qingliu@allenbook sit722-week08 % az acr create \
--resource-group $RESOURCE_GROUP \
--name $ACR_NAME \
--sku Basic \
--location $LOCATION
{
"adminUserEnabled": false,
"anonymousPullEnabled": false,
"autoGeneratedDomainNameLabelScope": "Unsecure",
"creationDate": "2025-09-12T08:44:27.050029+00:00",
"dataEndpointEnabled": false,
"dataEndpointHostNames": [],
"encryption": {
"keyVaultProperties": null,
"status": "disabled"
},
"id": "/subscriptions/ea298714-a57d-4ad2-ab0f-0f76956020ad/resourceGroups/sit722-week08-rg/providers/Microsoft.ContainerR
egistry/registries/sit722week08acr",
"identity": null,
"location": "australiaeast",
"loginServer": "sit722week08acr.azurecr.io",
"metadataSearch": "Disabled",
"name": "sit722week08acr",
"networkRuleBypassOptions": "AzureServices",
"networkRuleSet": null,
"policies": {
"azureAdAuthenticationAsArmPolicy": {
"status": "enabled"
},
"exportPolicy": {
"status": "enabled"
},
"quarantinePolicy": {
"status": "disabled"
},
"retentionPolicy": {
"days": 7,
"lastUpdatedTime": "2025-09-12T08:44:34.533143+00:00",
"status": "disabled"
},
"softDeletePolicy": {
"lastUpdatedTime": "2025-09-12T08:44:34.533189+00:00",
"retentionDays": 7,
main*+ 0 0 0
Cursor Tab
Ln 38, Col 41 Spaces: 4 UTF-8 LF Markdown





5 Run Backend CI and CD


github.com/QuinnieLiu/sit722-week08/actions/workflows/backend_ci.yml
QuinnieLiu / sit722-week08
Code
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Actions
New workflow
All workflows
Backend CI - Test, Build and Push I...
CD - Deploy Backend Services to AKS
CD - Deploy Frontend to AKS
Frontend CI - Build & Push Image
Management
Caches
Deployments
Attestations
Runners
Usage metrics
Performance metrics
Backend CI - Test, Build and Push Images to ACR
backend_ci.yml
Filter workflow runs
2 workflow runs
Event
Status
Branch
Actor
This workflow has a workflow_dispatch event trigger.
Run workflow
Backend CI - Test, Build and Push Images to ACR
Backend CI - Test, Build and Push Images to ACR #2: Manually run by QuinnieLiu
main
7 minutes ago
2m 23s
Backend CI - Test, Build and Push Images to ACR
Backend CI - Test, Build and Push Images to ACR #1: Manually run by QuinnieLiu
main
23 minutes ago
2m 22s


github.com/QuinnieLiu/sit722-week08/actions/workflows/backend-cd.yml
QuinnieLiu / sit722-week08
Code
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Actions
New workflow
All workflows
Backend CI - Test, Build and Push Ima...
CD - Deploy Backend Services to AKS
CD - Deploy Frontend to AKS
Frontend CI - Build & Push Image
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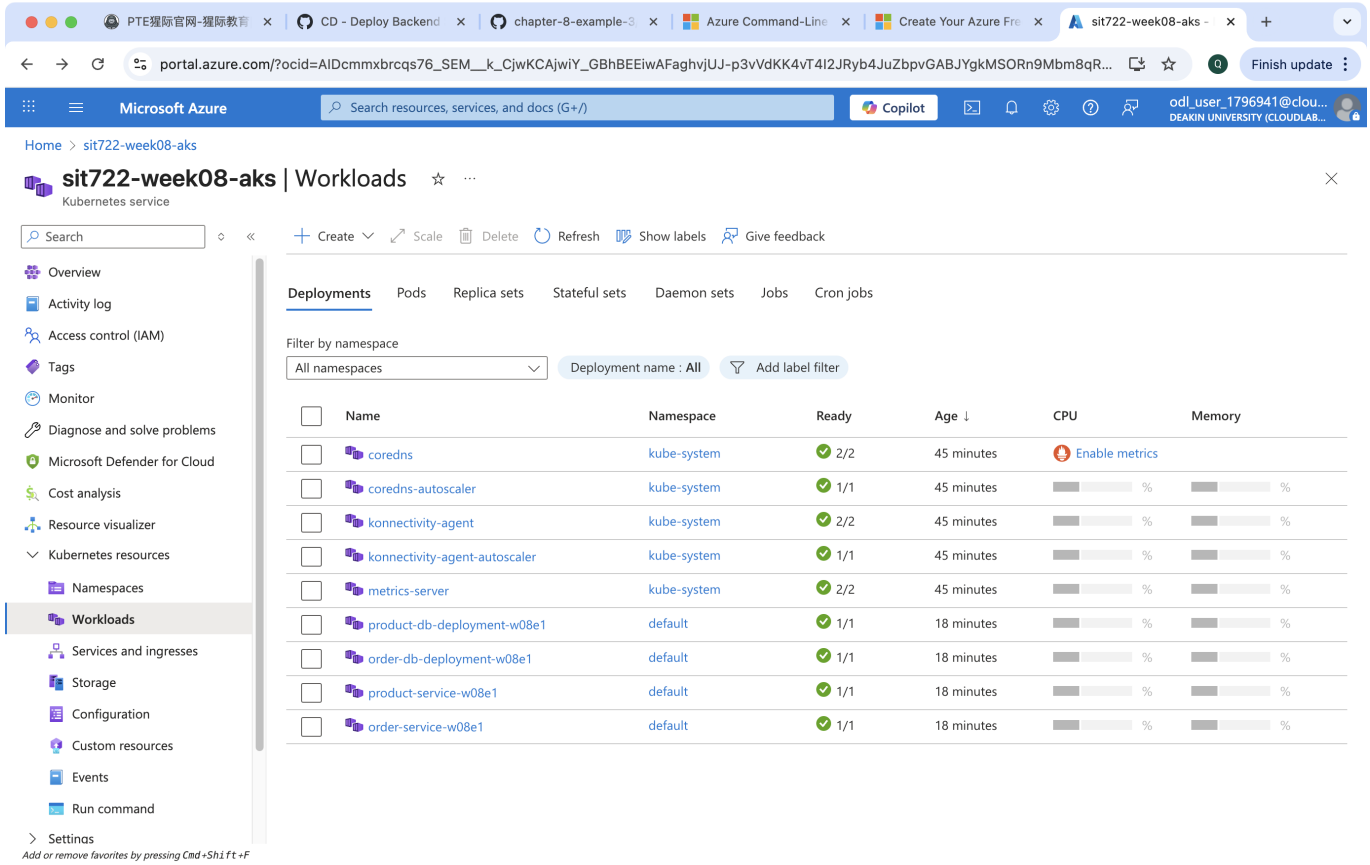
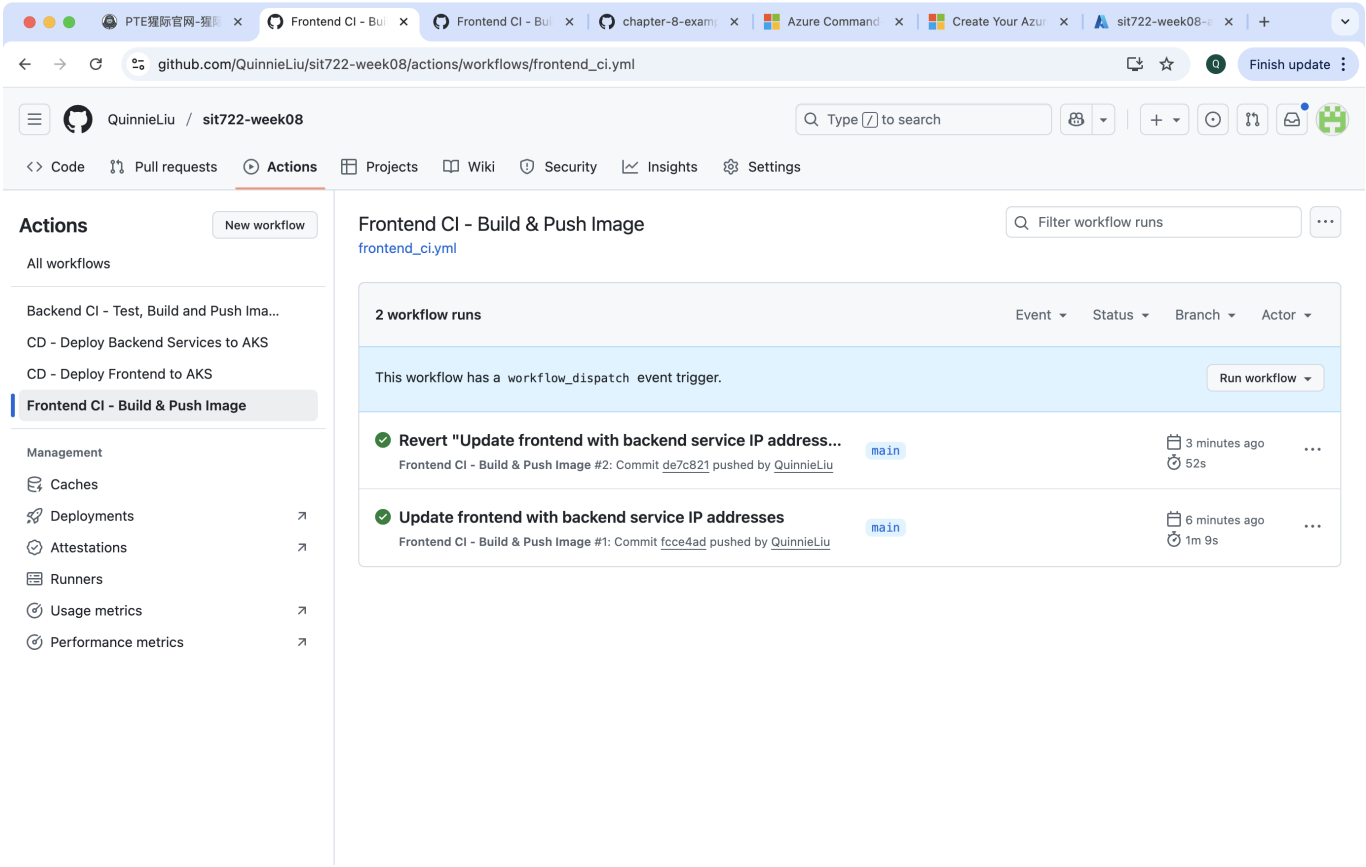
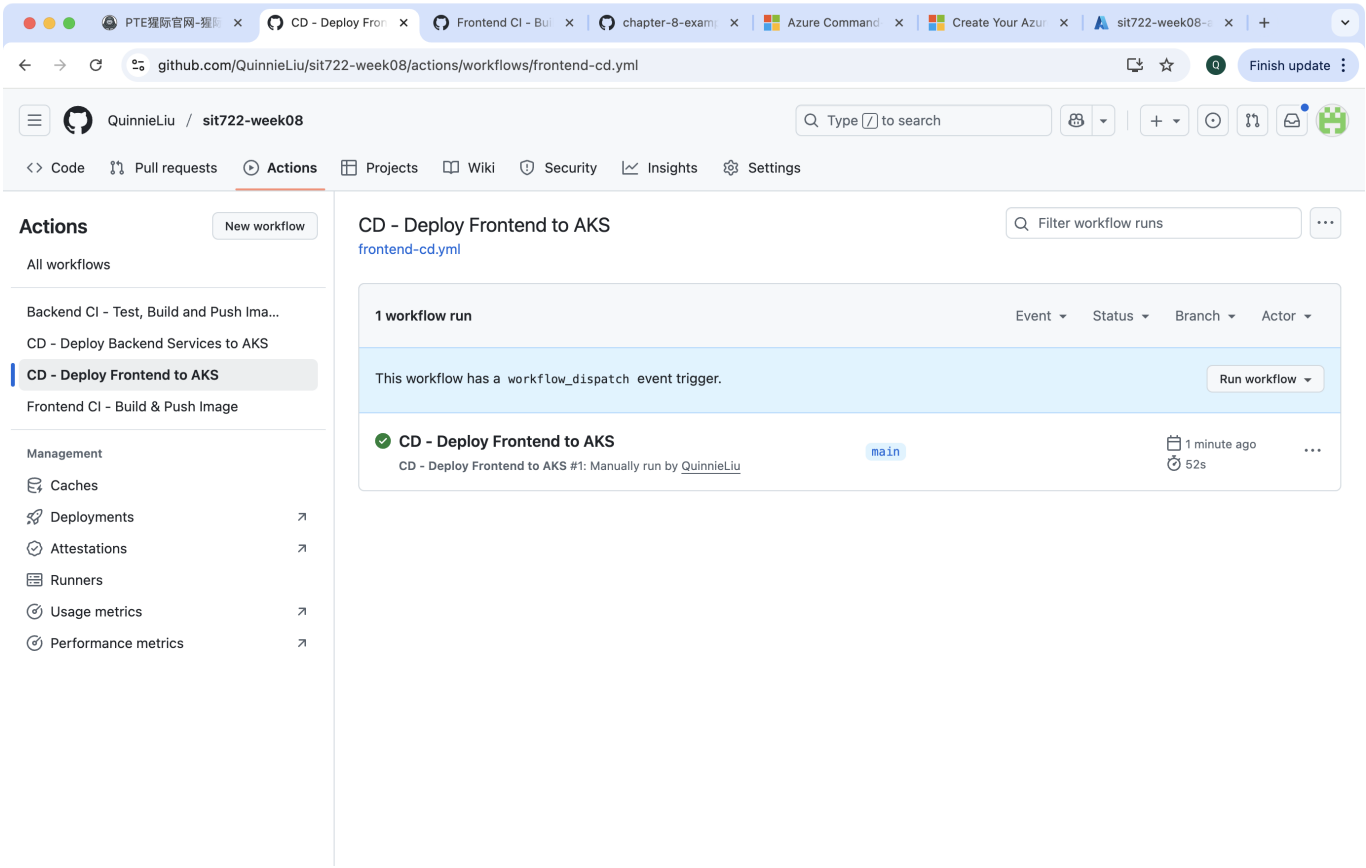
Usage metrics
Performance metrics
CD - Deploy Backend Services to AKS
backend-cd.yml
Filter workflow runs
2 workflow runs
Event
Status
Branch
Actor
This workflow has a workflow_dispatch event trigger.
Run workflow
CD - Deploy Backend Services to AKS
CD - Deploy Backend Services to AKS #2: Manually run by QuinnieLiu
main
5 minutes ago
5m 1s
CD - Deploy Backend Services to AKS
CD - Deploy Backend Services to AKS #1: Manually run by QuinnieLiu
main
22 minutes ago
5m 43s



6 Update IP address of each service in frontent via Actions


github.com/QuinnieLiu/sit722-week08/actions/workflows/frontend_ci.yml
Finish update
QuinnieLiu / sit722-week08
Type / to search
Code
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Actions
New workflow
All workflows
Backend CI - Test, Build and Push Ima...
CD - Deploy Backend Services to AKS
CD - Deploy Frontend to AKS
Frontend CI - Build & Push Image
Management
Caches
Deployments
Attestations
Runners
Usage metrics
Performance metrics
Frontend CI - Build & Push Image
frontend_ci.yml
Filter workflow runs
2 workflow runs
Event
Status
Branch
Actor
This workflow has a workflow_dispatch event trigger.
Run workflow
Revert "Update frontend with backend service IP address...
Frontend CI - Build & Push Image #2: Commit de7c821 pushed by QuinnieLiu
main
3 minutes ago
52s
Update frontend with backend service IP addresses
Frontend CI - Build & Push Image #1: Commit fcce4ad pushed by QuinnieLiu
main
6 minutes ago
1m 9s


github.com/QuinnieLiu/sit722-week08/actions/workflows/frontend-cd.yml
Finish update
QuinnieLiu / sit722-week08
Type / to search
Code
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Actions
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Actions
New workflow
All workflows
Backend CI - Test, Build and Push Ima...
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Attestations
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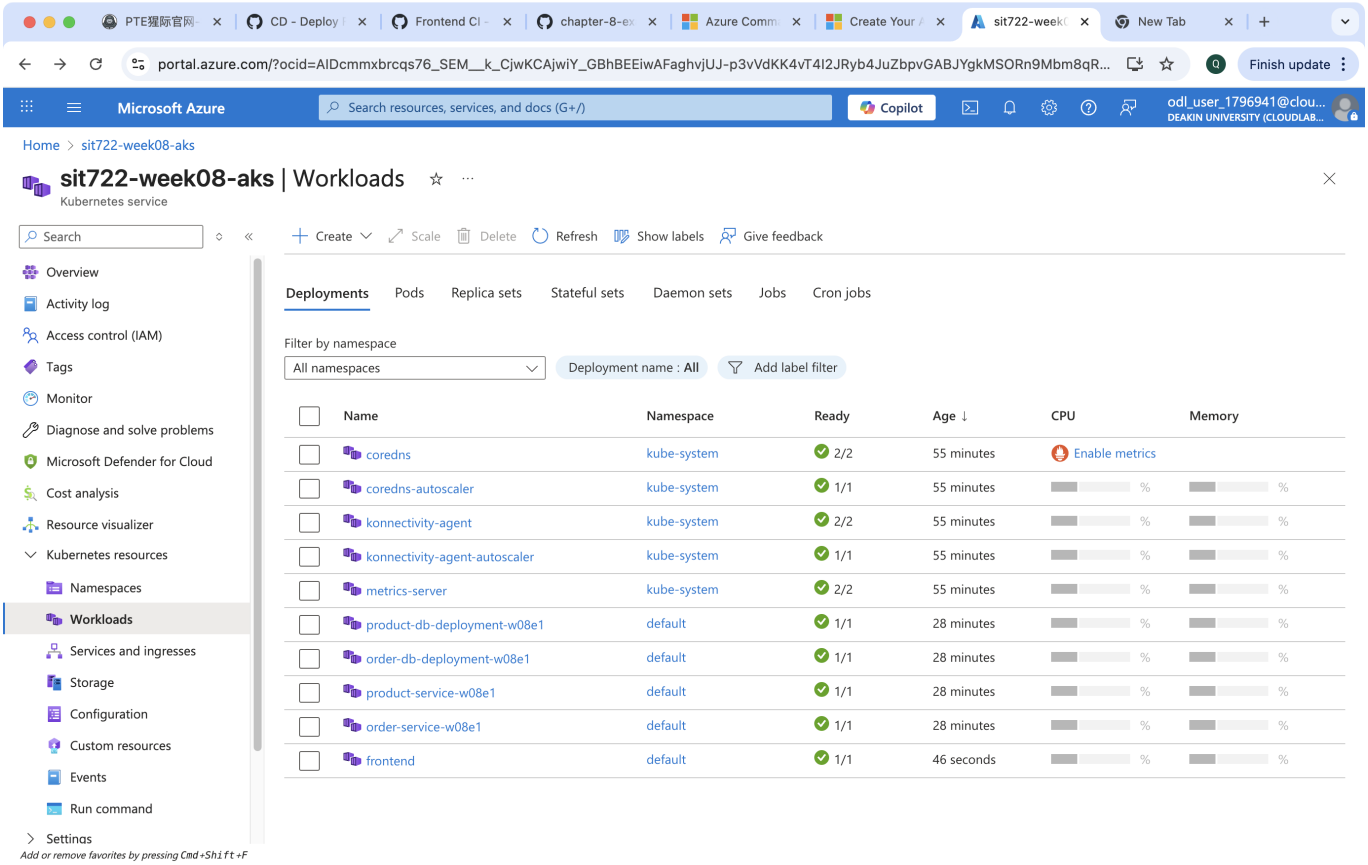
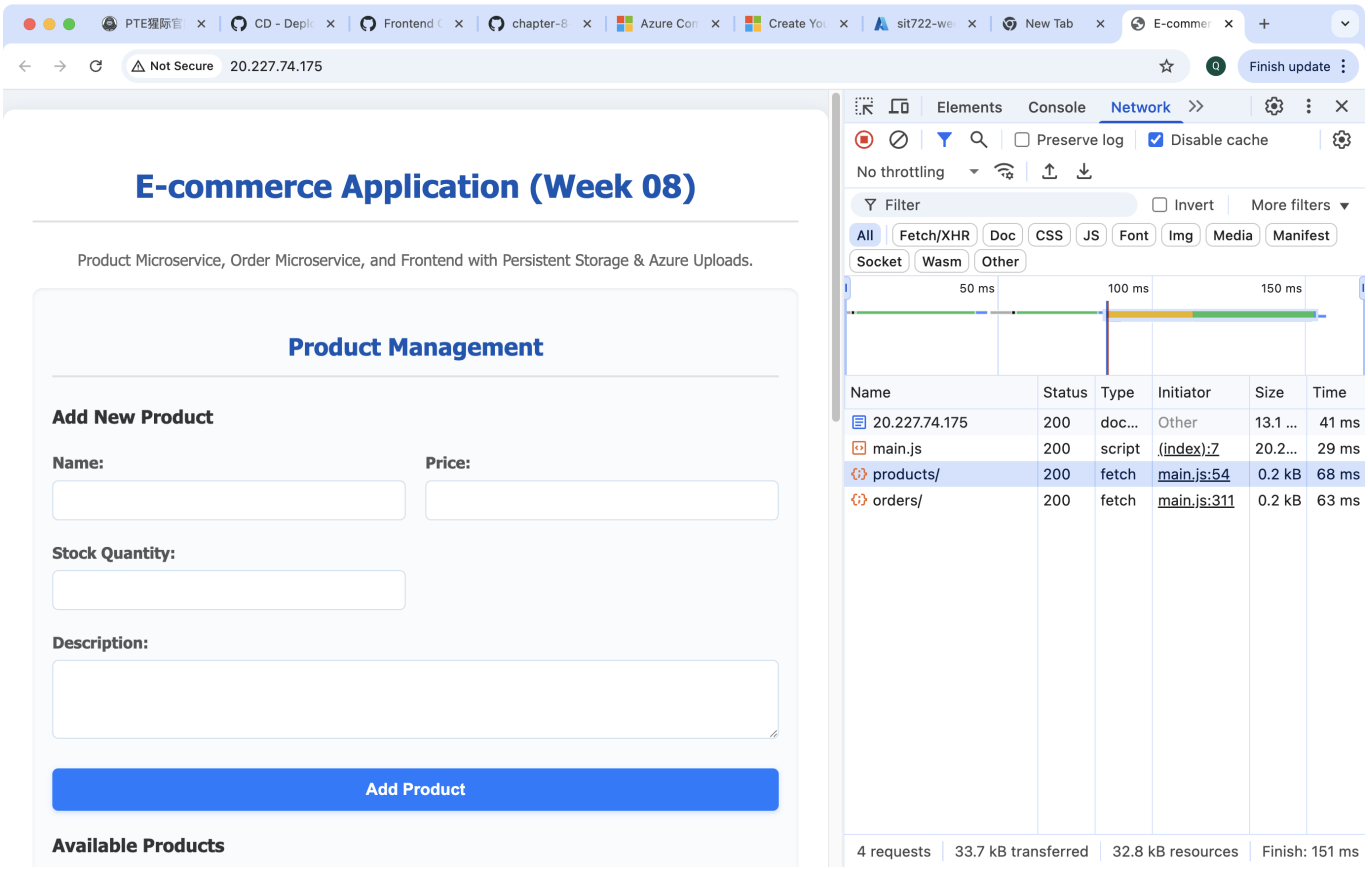
Usage metrics
Performance metrics
CD - Deploy Frontend to AKS
frontend-cd.yml
Filter workflow runs
1 workflow run
Event
Status
Branch
Actor
This workflow has a workflow_dispatch event trigger.
Run workflow
CD - Deploy Frontend to AKS
CD - Deploy Frontend to AKS #1: Manually run by QuinnieLiu
main
1 minute ago
52s



7 Run and test completely



8 Delete all resources

All Azure resources created for this task has been cleaned up.