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Інформатика і програмування

Лабораторна робота № 3

Тема: Керування ресурсами Azure за допомогою шаблонів Azure Resource
Manager

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Група ІІЗ-43

Дата: 10 жовтня 2025р.

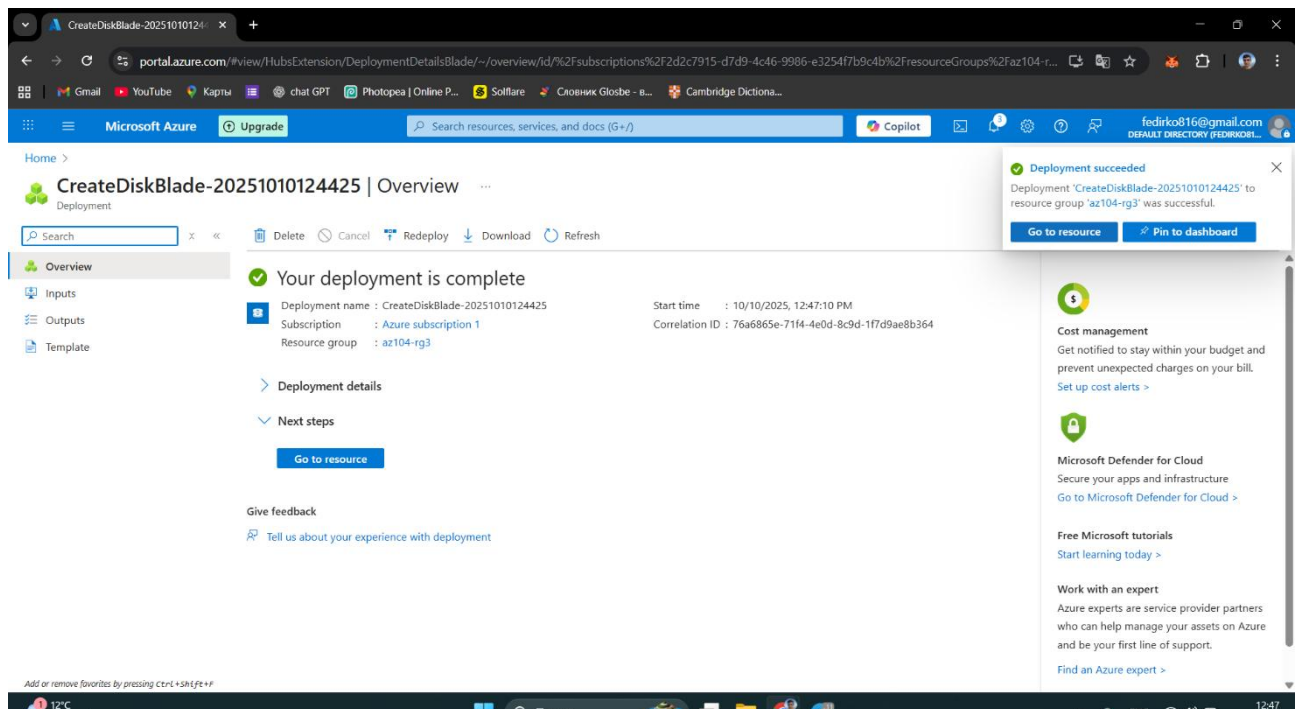
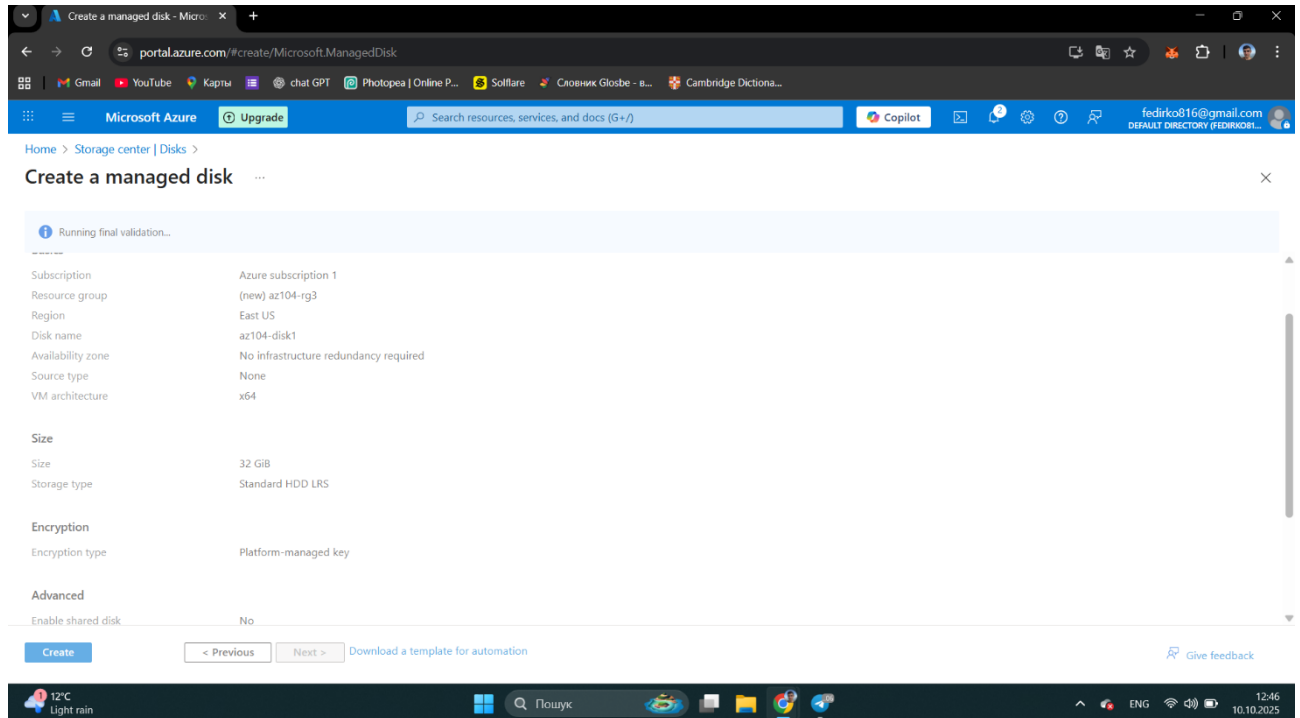
Викладач: Поварчук Д.Д

Лабораторний сценарій

Ваша команда хоче знайти способи автоматизації та спрощення розгортання ресурсів. Ваша організація шукає способи зменшення адміністративних витрат, зменшення людських помилок та підвищення узгодженості.

Завдання 1: Створення шаблону Azure Resource Manager.

Створюємо керований диск



az104-disk1 - Microsoft Azure

portal.azure.com/#@fedirko816gmail.onmicrosoft.com/resource/subscriptions/2d2c7915-d7d9-4c46-9986-e3254f7b9c4b/resourcegroups/az104-rg3/providers/Mic...

Microsoft Azure Upgrade Search resources, services, and docs (G+/J) Copilot

Home > az104-disk1

az104-disk1 | Export template Generate and explain Terraform configuration for this resource. How can I manage this resource programmatically?

Search Download Copy content Deploy Feedback

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings Monitoring Automation CLI / PS Tasks **Export template** Help

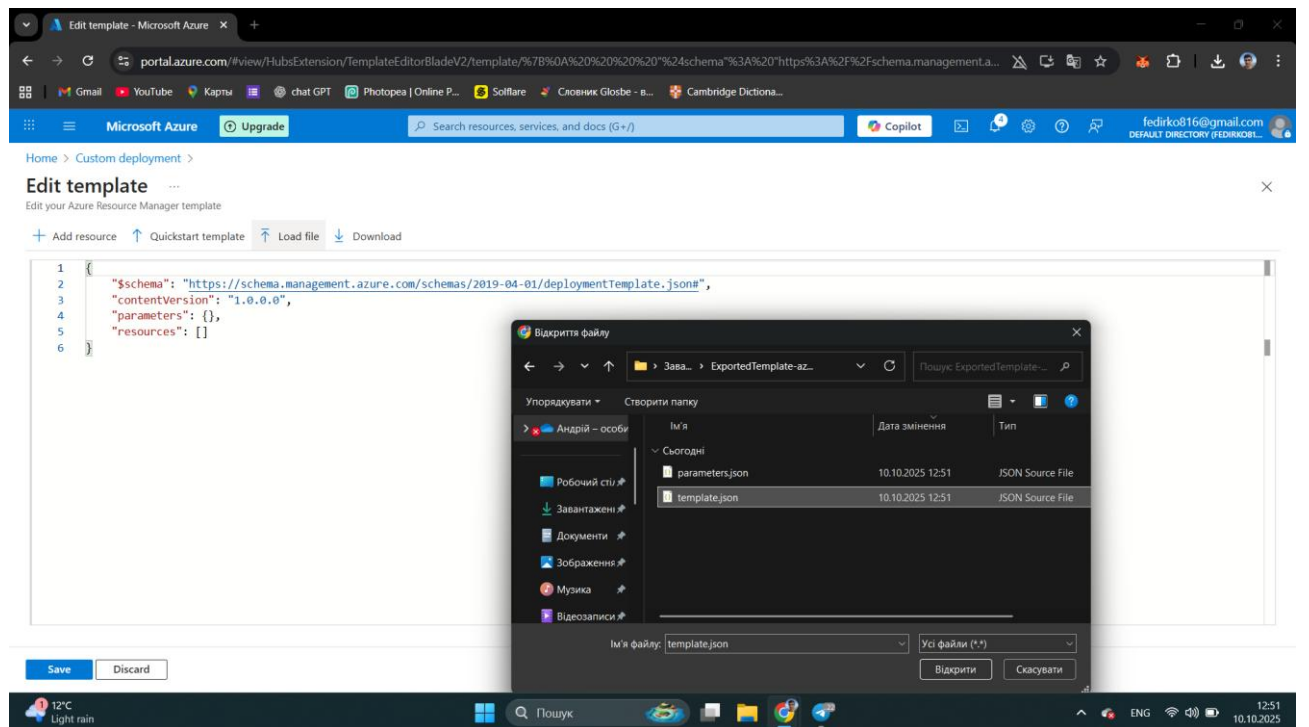
ARM Template Bicep Terraform

☒ Include parameters ⓘ

Template **Parameters**

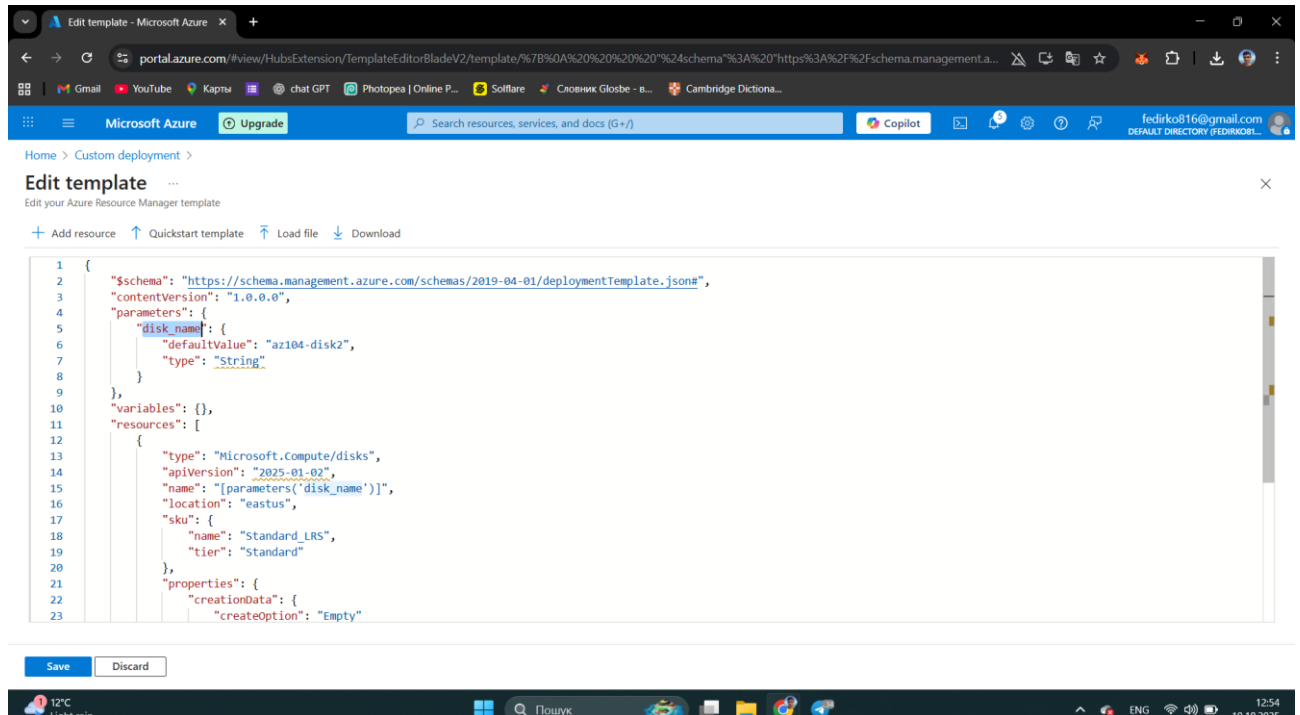
i To export all resources in this resource group, navigate to the "Export template" experience under "Automation" on the left menu of the resource group.

```
1 {
2   "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentParameters.json#",
3   "contentVersion": "1.0.0.0",
4   "parameters": {
5     "disks_az104_disk1_name": {
6       "value": null
7     }
8   }
9 }
```



Завдання 2 Редагування шаблону Azure Resource Manager, а потім повторне розгортання шаблону

Редагуємо шаблон та параметри



The screenshot shows the 'Edit template' page in the Azure Portal. The browser address bar indicates the URL is `portal.azure.com/#view/HubsExtension/TemplateEditorBladeV2/template/%7B%0A%20%20%20%20%24schema%3A%20%22https%3A%2F%2Fschema.management.azure.com%2Fschemas%2F2019-04-01%2FdeploymentTemplate.json%22%24contentVersion%3A%20%221.0.0.0%22%7D`. The page title is 'Edit template' and the subtitle is 'Edit your Azure Resource Manager template'. Below the title, there are links for 'Add resource', 'Quickstart template', 'Load file', and 'Download'. The main area contains a JSON template with the following structure:

```
1 {
2   "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3   "contentVersion": "1.0.0.0",
4   "parameters": {
5     "disk_name": {
6       "defaultValue": "az104-disk2",
7       "type": "String"
8     }
9   },
10  "variables": {},
11  "resources": [
12    {
13      "type": "Microsoft.Compute/disks",
14      "apiVersion": "2025-01-02",
15      "name": "[parameters('disk_name')]",
16      "location": "eastus",
17      "sku": {
18        "name": "Standard_LRS",
19        "tier": "Standard"
20      },
21      "properties": {
22        "creationData": {
23          "createOption": "Empty"
24        }
25      }
26    }
27  ]
28 }
```

At the bottom of the editor, there are 'Save' and 'Discard' buttons. The Windows taskbar at the bottom shows the date as 10/10/2025 and the time as 12:54.

Edit parameters - Microsoft Azu

portal.azure.com/#create/Microsoft.Tem...

GmailYouTubeКартыchat GPTPhotopea | Online P...Solflare

Microsoft Azure

Search resources, services, and docs (G+/)

Copilot

Home >

Edit parameters

Load fileDownload

```
1 {
2   "$schema": "https://schema.management.azure.com/schemas/2015-01-01/
deploymentParameters.json#",
3   "contentVersion": "1.0.0.0",
4   "parameters": {
5     "disk_name": {
6       "value": null
7     }
8   }
9 }
```

Save

Discard

12°C
Light rain

Пошук

Деплоїмо кастомний диск

Custom deployment - Microsoft

portal.azure.com/#create/Microsoft.Tem...

Gmail YouTube Карты chat GPT Photopea | Online P... Solflare

Microsoft Azure Search resources, services, and docs (G+/) Copilot


[Home](#) >

Custom deployment

Deploy from a custom template

New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →

Template

 Customized template [↗](#)
1 resource

Edit template

Edit parameters

Visualize

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ

Azure subscription 1

Resource group * ⓘ

az104-rg3

[Create new](#)

Instance details

Region * ⓘ

(US) East US


Disk_name


az104-disk2 ✓

Previous

Next

Review + create

 1 Rainy days ahead
12°C

 Пошук

Результат:

The screenshot displays the Microsoft Azure portal interface. The browser address bar shows the URL: `portal.azure.com/#view/HubsExtension/DeploymentDetailsBlade/~/overview/id/%2Fsubscriptions%2F2d2c7915-d7d9-4c46-9986-e32547b9c4b%2FresourceGroups...`. The page title is "Microsoft.Template-20251010125714 | Overview".

On the left sidebar, the "Overview" tab is selected. The main content area features a green checkmark icon and the message "Your deployment is complete". Below this, the deployment details are listed:

- Deployment name : Microsoft.Template-20251010125714
- Subscription : Azure subscription 1
- Resource group : az104-rg3

Additional information includes the start time (10/10/2025, 12:57:25 PM) and correlation ID (ab919af8-5790-44ef-8f0c-b71998f9bcc2). A "Next steps" section contains a "Go to resource" button. A "Give feedback" link is also present.

On the right sidebar, there are three promotional cards:

- Cost management**: Get notified to stay within your budget and prevent unexpected charges on your bill. [Set up cost alerts >](#)
- Microsoft Defender for Cloud**: Secure your apps and infrastructure. [Go to Microsoft Defender for Cloud >](#)
- Free Microsoft tutorials**: [Start learning today >](#)

The bottom of the screen shows a Windows taskbar with the date and time (12:57, 10.10.2025) and system icons.

Тут бачимо що в групі ресурсів є два диски

The screenshot shows the Microsoft Azure portal interface. The browser address bar displays the URL `portal.azure.com/#@fedirko816gmail.o...`. The page title is `az104-rg3 - Microsoft Azure`. The main content area shows the `az104-rg3` resource group overview. The left sidebar contains a navigation menu with options like Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Deployments, Security, Deployment stacks, Policies, Properties, Locks, Cost Management, Monitoring, and Automation. The 'Resources' tab is selected, showing a table of resources. The table has columns for Name, Type, and Location. Two resources are listed: `az104-disk1` and `az104-disk2`, both of type `Disk` and located in `East US`. The bottom of the screen shows a Windows taskbar with a weather widget indicating 'Rainy days ahead' and '12°C', and a search bar with the text 'Пошук'.

Home > Microsoft.Template-20251010125714 | Overview >

az104-rg3
Resource group

Search

Create Manage view Group by none

Essentials JSON View

Resources Recommendations

Filter for any field...

Type equals all Location equals all Add filter

	Name ↑	Type	Location
	az104-disk1	Disk	East US
	az104-disk2	Disk	East US

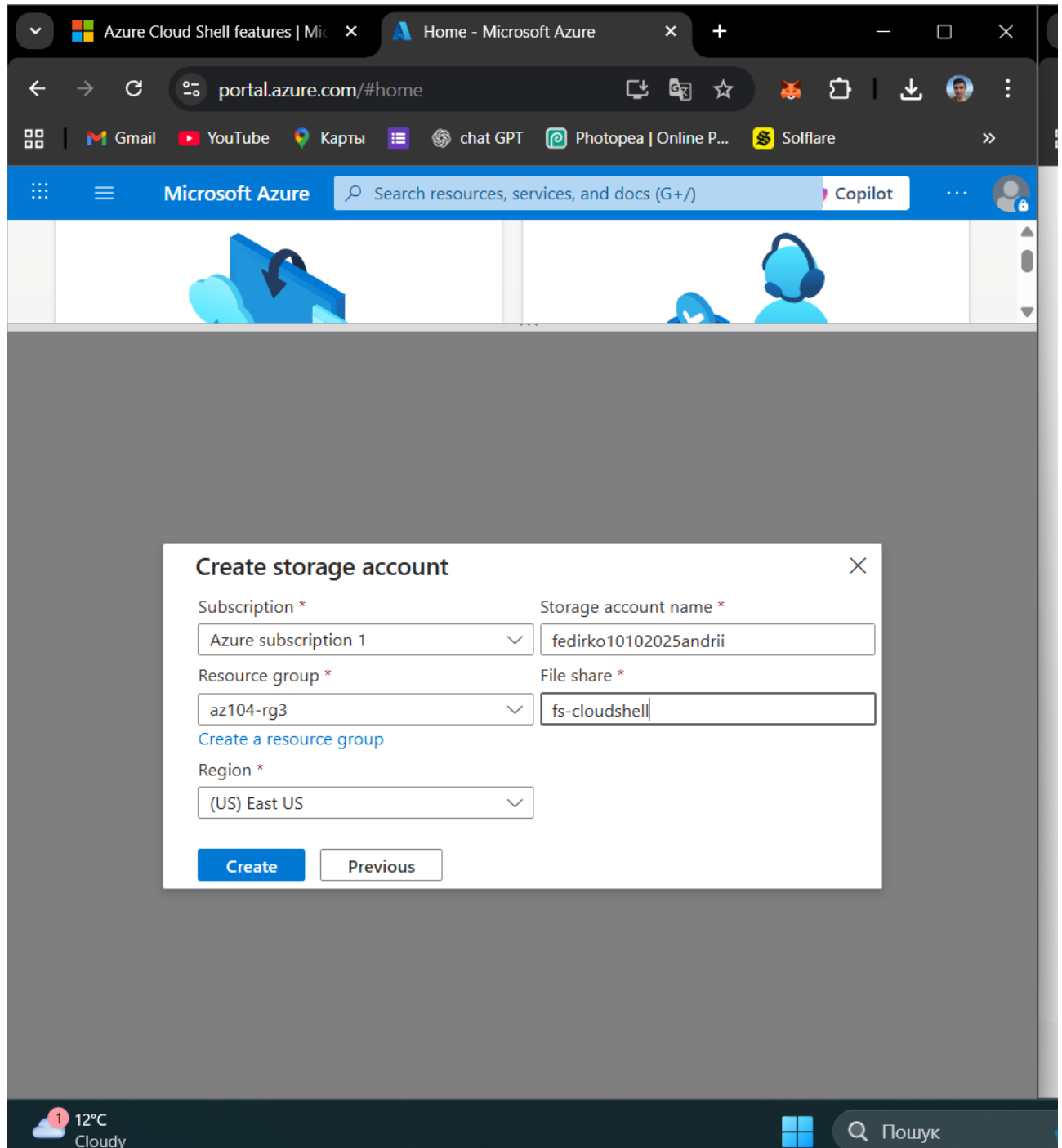
https://portal.azure.com/#@fedirko816gmail.onmicrosoft.com/resource/subscriptions/2d2c7915-d7d9-4c46-9986-e3254f7b9c4b/resou...ck

Rainy days ahead
12°C

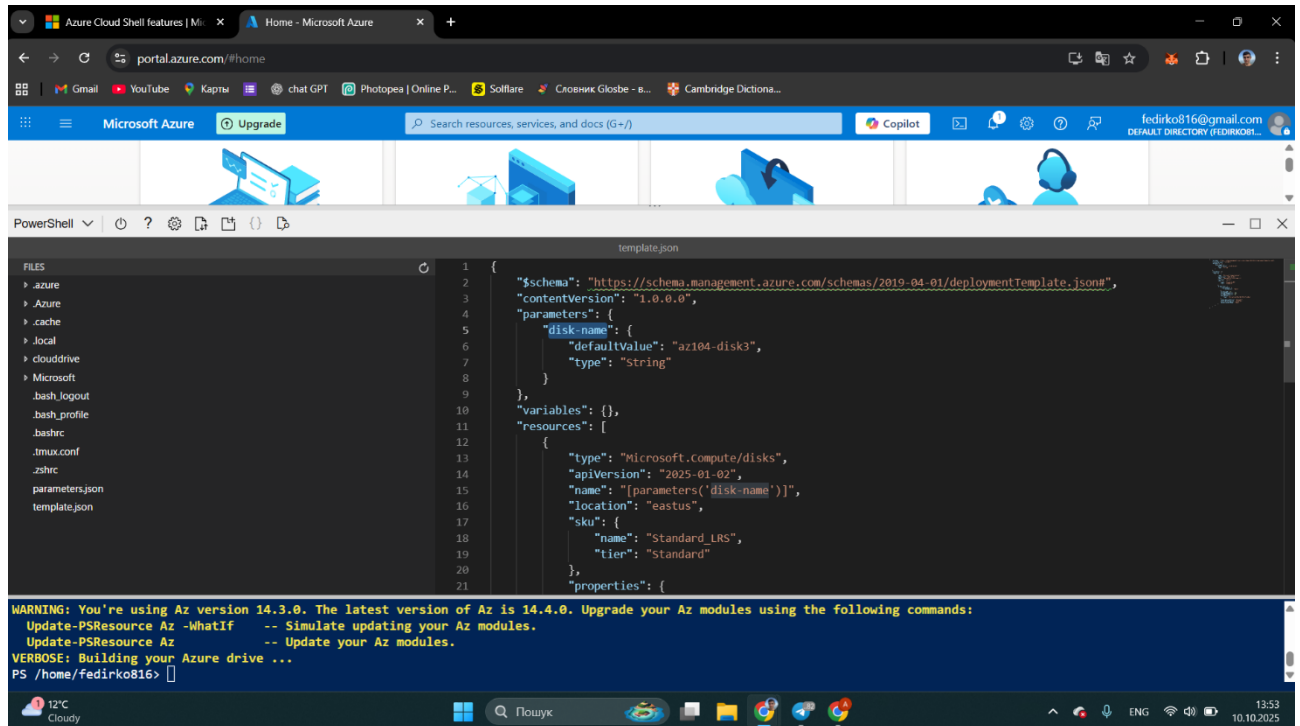
Пошук

Завдання 3 Налаштування Cloud Shell та розгортання шаблону за допомогою PowerShell

Створюємо аккаунт сховища



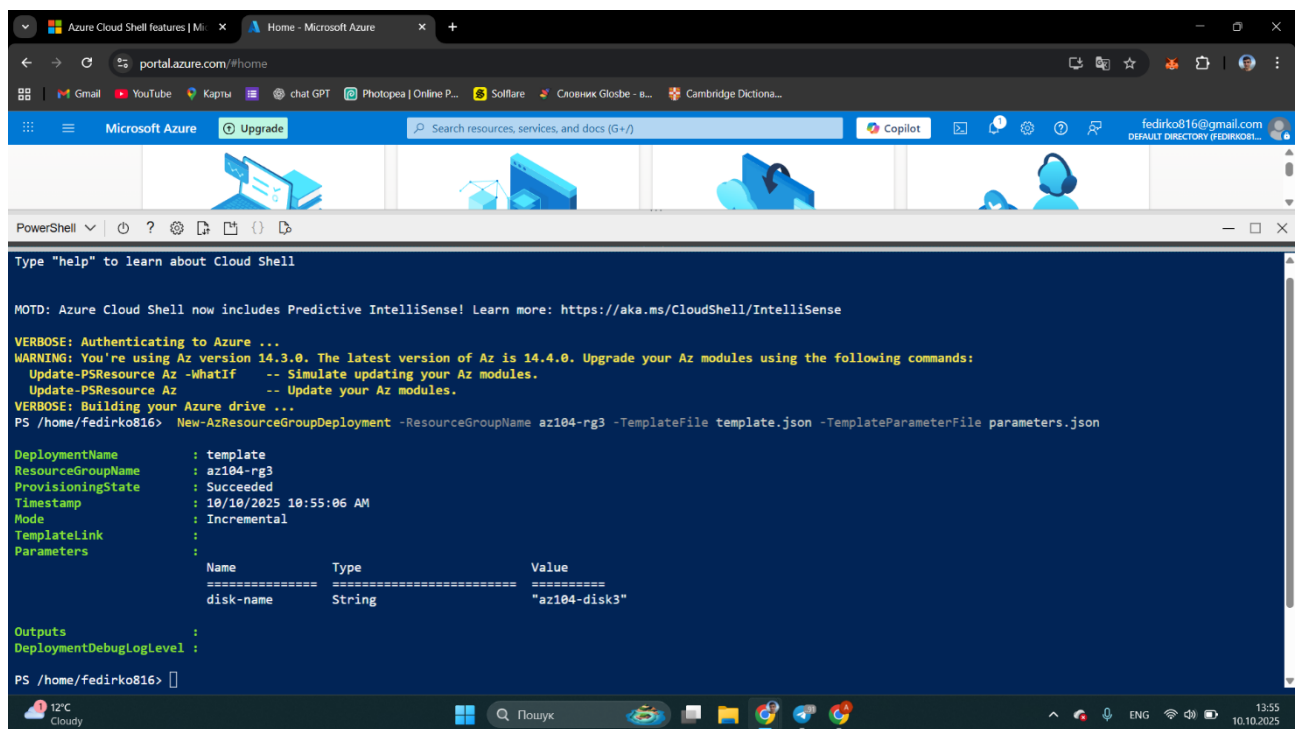
Редагуємо шаблон через Cloud shell щоб задеплоїти третій диск



```
template.json
1 {
2   "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3   "contentVersion": "1.0.0.0",
4   "parameters": {
5     "disk-name": {
6       "defaultValue": "az104-disk3",
7       "type": "String"
8     }
9   },
10  "variables": {},
11  "resources": [
12    {
13      "type": "Microsoft.Compute/disks",
14      "apiVersion": "2025-01-02",
15      "name": "[parameters('disk-name')]",
16      "location": "eastus",
17      "sku": {
18        "name": "Standard_LRS",
19        "tier": "Standard"
20      },
21      "properties": {
```

WARNING: You're using Az version 14.3.0. The latest version of Az is 14.4.0. Upgrade your Az modules using the following commands:
Update-PSResource Az -Whatif -- Simulate updating your Az modules.
Update-PSResource Az -- Update your Az modules.
VERBOSE: Building your Azure drive ...
PS /home/fedirko816>

Ну і показ що все ок



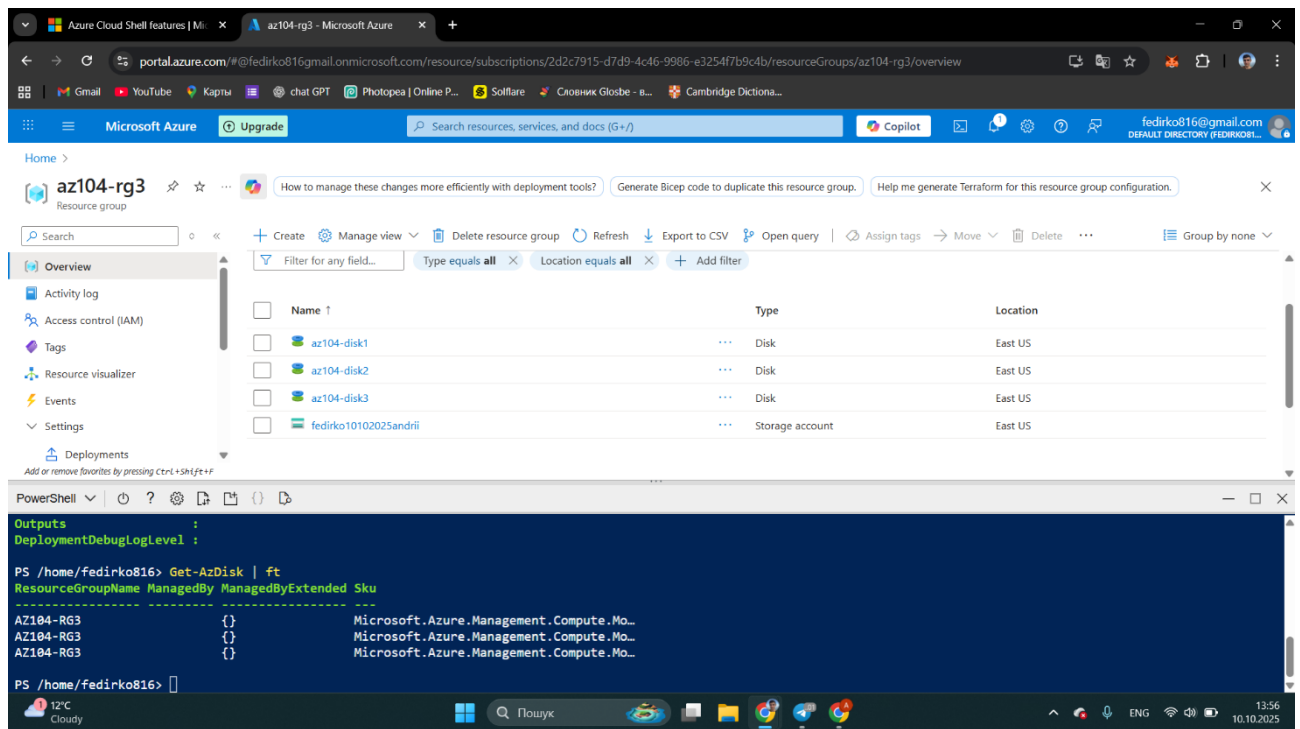
```
Type "help" to learn about Cloud Shell

MOTD: Azure Cloud Shell now includes Predictive IntelliSense! Learn more: https://aka.ms/CloudShell/IntelliSense

VERBOSE: Authenticating to Azure ...
WARNING: You're using Az version 14.3.0. The latest version of Az is 14.4.0. Upgrade your Az modules using the following commands:
Update-PSResource Az -Whatif -- Simulate updating your Az modules.
Update-PSResource Az -- Update your Az modules.
VERBOSE: Building your Azure drive ...
PS /home/fedirko816> New-AzResourceGroupDeployment -ResourceGroupName az104-rg3 -TemplateFile template.json -TemplateParameterFile parameters.json

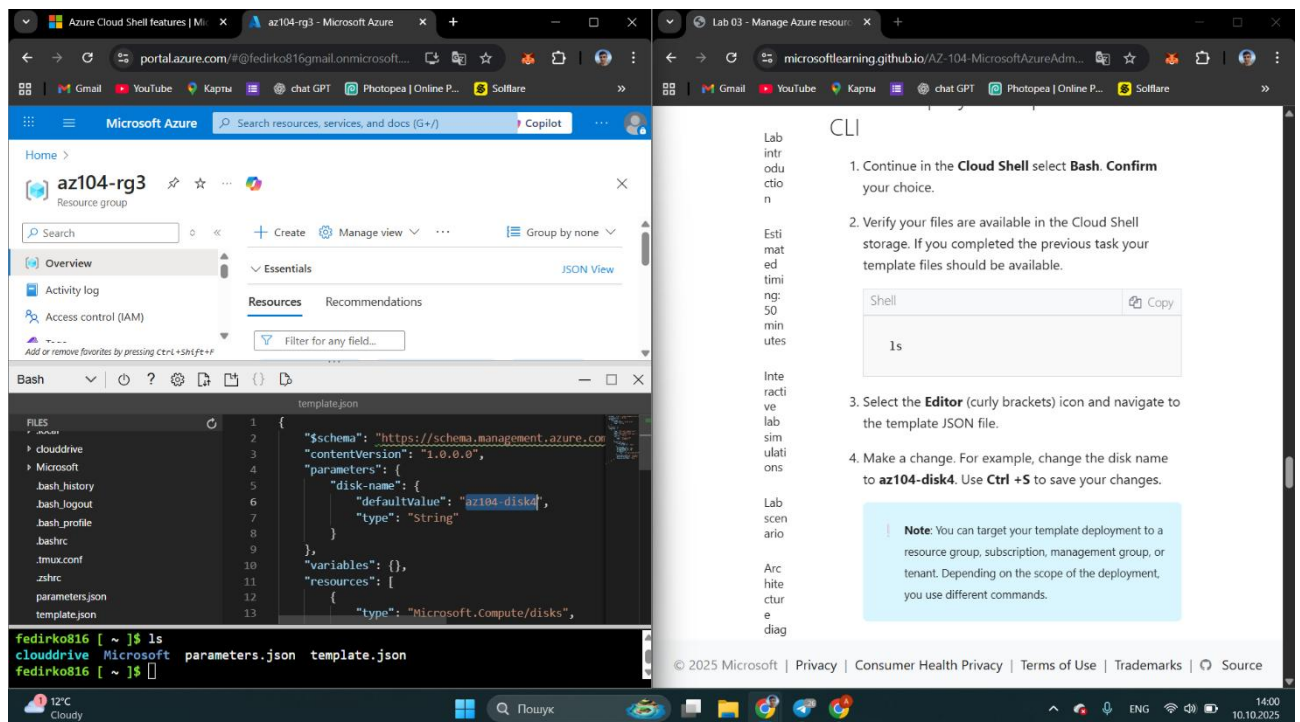
DeploymentName      : template
ResourceGroupName   : az104-rg3
ProvisioningState    : Succeeded
Timestamp           : 10/10/2025 10:55:06 AM
Mode                : Incremental
TemplateLink         :
Parameters          :
=====
Name                Type                Value
-----
disk-name           String              "az104-disk3"

Outputs             :
DeploymentDebugLogLevel :
```



Завдання 4, Розгортання шаблону за допомогою CLI (Bash)

Знову редагуємо шаблон



Ну і показ того що диск створився

```
Bash
"templateHash": "10614644774798140750",
"templateLink": null,
"timestamp": "2025-10-10T11:00:54.692933+00:00",
"validatedResources": null,
"validationLevel": null
},
"resourceGroup": "az104-rg3",
"tags": null,
"type": "Microsoft.Resources/deployments"
}
fedirko816 [ ~ ]$ az disk list --output table
Name                                ResourceGroup Location Zones Sku           SizeGb ProvisioningState
-----                                -
az104-disk1                          AZ104-RG3     eastus      Standard_LRS 32         Succeeded
az104-disk2                          AZ104-RG3     eastus      Standard_LRS 32         Succeeded
az104-disk3                          AZ104-RG3     eastus      Standard_LRS 32         Succeeded
az104-disk4                          AZ104-RG3     eastus      Standard_LRS 32         Succeeded
fedirko816 [ ~ ]$
```

Завдання 5.

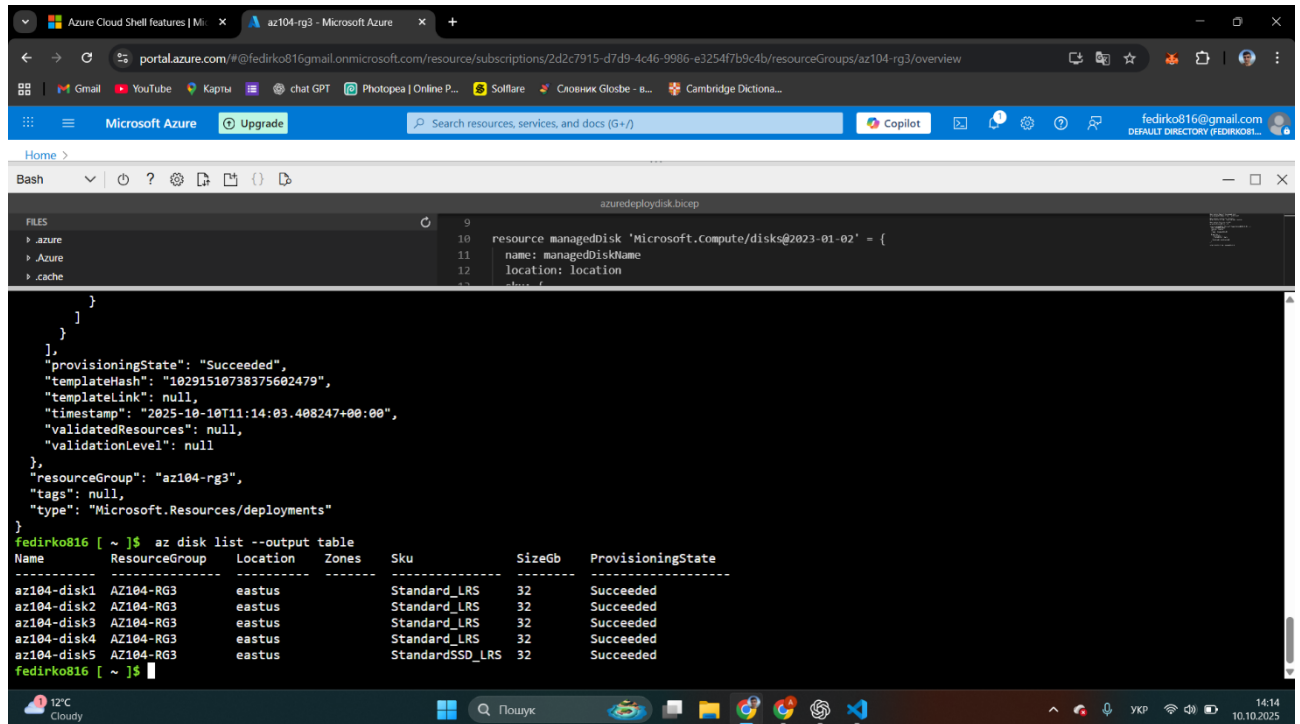
Тут треба сказати що я не знайшов вісер файл тому довелось імпровізувати і файл все-таки знайшовся

```
Home >
Bash
FILES
> azure
> Azure
> .cache
> .local
> cloudrive
> Microsoft
  .bash_history
  .bash_logout
  .bash_profile
  .bashrc
  .tmux.conf
  .zshrc
  azuredeploydisk.bicep
  parameters.json
  template.json

1  @description('Name of the managed disk')
2  param managedDiskName string = 'az104-disk5'
3
4  @description('Location for the disk')
5  param location string = resourceGroup().location
6
7  @description('Disk size in GiB')
8  param diskSizeInGiB int = 32
9
10 resource managedDisk 'Microsoft.compute/disks@2023-01-02' = (
11   name: managedDiskName
12   location: location
13   sku: {
14     name: 'StandardSSD_LRS'
15   }
16   properties: {
17     creationData: {
18       createOption: 'Empty'
19     }
20     diskSizeGB: diskSizeInGiB
21   }
22 )
23
24 output disk5Id string = managedDisk.id

fedirko816 [ ~/cloudrive ]$ ls -la
. . .
fedirko816 [ ~/cloudrive ]$ cd ../
fedirko816 [ ~ ]$ ls -la
. . . azure .Azure .bash_history .bash_logout .bash_profile .bashrc .cache cloudrive .local Microsoft parameters.json template.json .tmux.conf .zshrc
fedirko816 [ ~ ]$
```

Скрін що все ок і диск створився



The screenshot shows an Azure Cloud Shell session. The terminal window displays the output of an `az deployment sub` command, which successfully deployed a managed disk. The output is a JSON object with the following key fields:

```
{
  "provisioningState": "Succeeded",
  "templateHash": "10291510738375602479",
  "templateLink": null,
  "timestamp": "2025-10-10T11:14:03.408247+00:00",
  "validatedResources": null,
  "validationLevel": null
}
```

Following this, the user runs the command `az disk list --output table`, which returns a table of disks in the resource group `az104-rg3`.

Name	ResourceGroup	Location	Zones	Sku	SizeGb	ProvisioningState
az104-disk1	AZ104-RG3	eastus		Standard_LRS	32	Succeeded
az104-disk2	AZ104-RG3	eastus		Standard_LRS	32	Succeeded
az104-disk3	AZ104-RG3	eastus		Standard_LRS	32	Succeeded
az104-disk4	AZ104-RG3	eastus		Standard_LRS	32	Succeeded
az104-disk5	AZ104-RG3	eastus		StandardSSD_LRS	32	Succeeded

Ну і видалення групи (за кадром все мінує)