



**Cloud Development, 2021 fall.
Lab 7**

Report

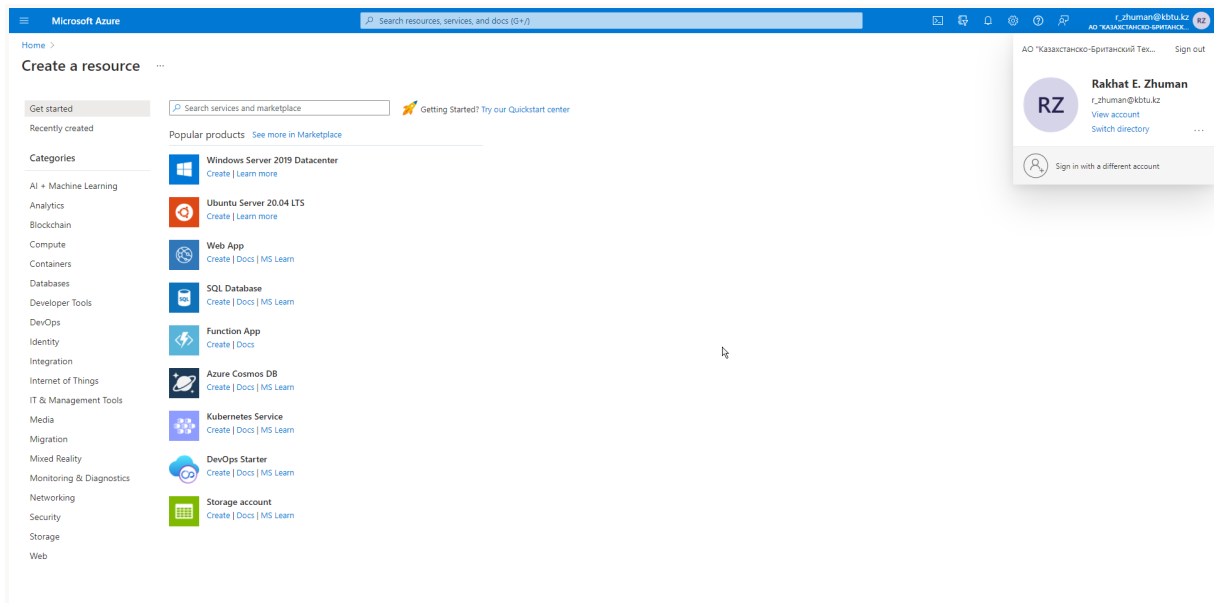
Access resource secrets more securely across services

made by Zhuman Rakhat

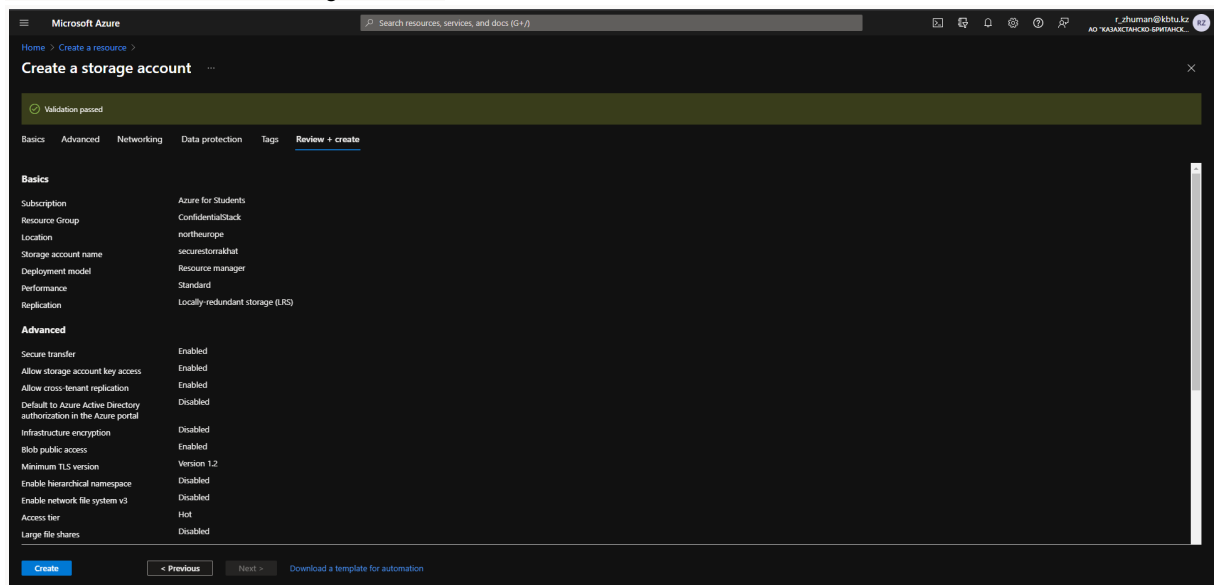
Almaty 2021

Exercise 1: Create an Azure AD application registration

Task 1: Open the Azure portal



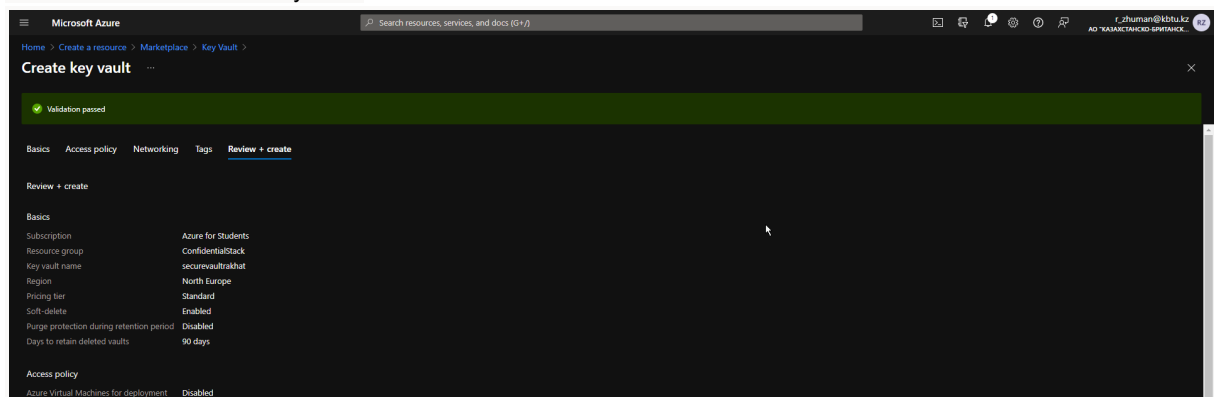
Task 2: Create an Azure Storage account



Connection string -

DefaultEndpointsProtocol=https;AccountName=securestorakhat;AccountKey=bDib9BGslggpKOKQiZo5atDqW8A3hx7JJ2+7EsQuiQ+B2EYxndg+B59SFL62S/viWFYC6asgIT8c2W7TejplBg==;EndpointSuffix=core.windows.net

Task 3: Create an Azure key vault



Task 4: Create an Azure Functions app

Microsoft Azure

Search resources, services, and docs (G+)

Home > Create a resource >

Create Function App

Basics Hosting Networking (preview) Monitoring Tags **Review + create**

Summary

Function App
by Microsoft

Details

Subscription	685e37ba-b439-43a1-a8a8-4812e242b2f9
Resource Group	ConfidentialStack
Name	securefuncrakhat
Runtime stack	.NET 3.1

Hosting

Storage	
Storage account	securestorakhat

Plan (New)

Plan type	Consumption (Serverless)
Name	ASP-ConfidentialStack-90ef
Operating System	Linux
Region	North Europe
SKU	Dynamic

Monitoring (New)

Application Insights	Enabled
Name	securefuncrakhat
Region	North Europe

Create < Previous Next > Download a template for automation

Exercise 2: Configure secrets and identities

Task 1: Configure a system-assigned managed service identity

Microsoft Azure

Search resources, services, and docs (G+)

Home > securefuncrakhat

securefuncrakhat
Function App

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Security Events (preview) Functions App keys App files Proxies

System assigned User assigned

A system assigned managed identity is restricted to one per resource and is tied to the lifecycle of this resource. You can grant permissions to the managed identity by using Azure role-based access control (Azure RBAC). The managed identity is authenticated with Azure AD, so you don't have to store any credentials in code. [Learn more about Managed identities.](#)

Save Discard Refresh Got feedback?

Status: ☒ Off ☒ On

Object (principal) ID: d31a4602-97f4-4615-bec9-335706a8eece

Permissions: [Azure role assignments](#)

This resource is registered with Azure Active Directory. The managed identity can be configured to allow access to other resources. Be careful when making changes to the access settings for the managed identity because it can result in failures. [Learn more](#)

Task 2: Create a Key Vault secret

<https://securevaultrakhat.vault.azure.net/secrets/storagecredentials/a9a72251a85a40c6b453d0048a4b1206>

Microsoft Azure

Search resources, services, and docs (G+)

Home > Resource groups > ConfidentialStack > securevaultrakhat >

Create a secret

Upload options: Manual

Name: storagecredentials

Value: [Long alphanumeric string]

Content type (optional):

Set activation date: ☐

Set expiration date: ☐

Enabled: Yes

Tags: 0 tags

Task 3: Configure a Key Vault access policy

Microsoft Azure

Search resources, services, and docs (G+)

Home > Resource groups > ConfidentialStack > securevaultrakhat >

Add access policy

Add access policy

Configure from template (optional):

Key permissions: 0 selected

Secret permissions: Get

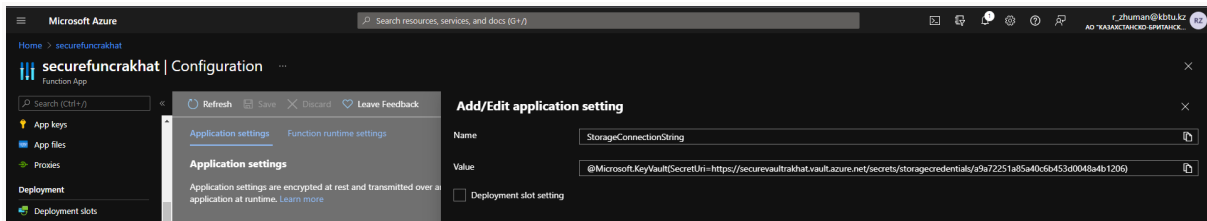
Certificate permissions: 0 selected

Select principal: securefuncrakhat
Object ID: d31a4602-97f4-4615-bec9-335706a8eece

Authorized application: None selected

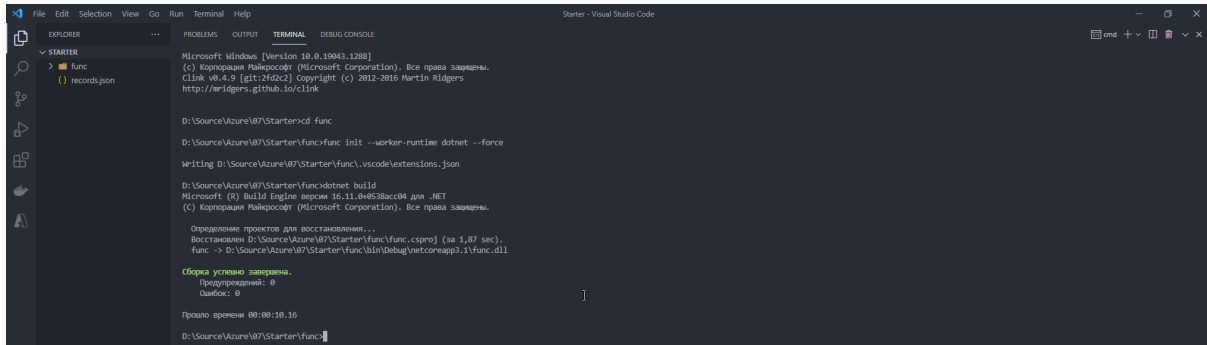
Add

Task 4: Create a Key Vault-derived application setting

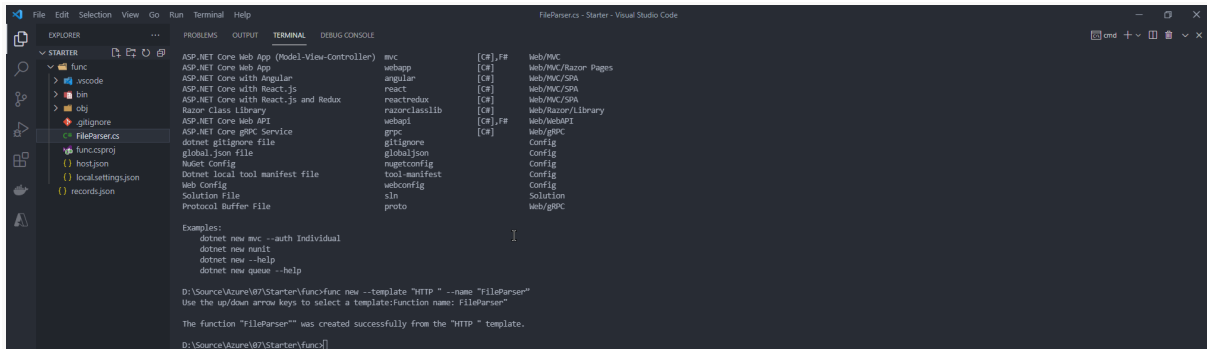


Exercise 3: Build an Azure Functions app

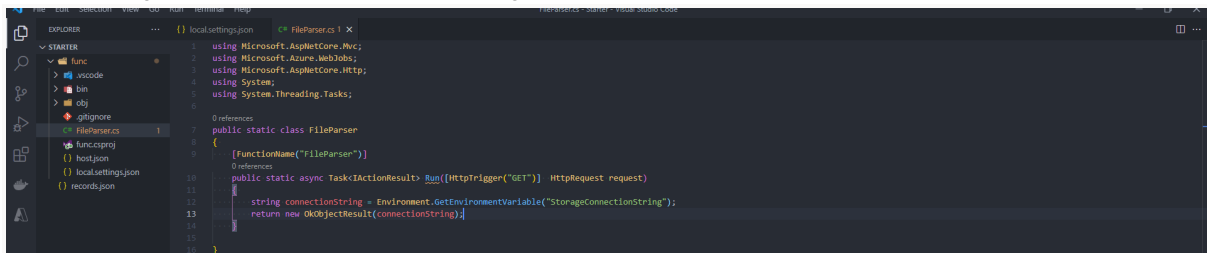
Task 1: Initialize a function project



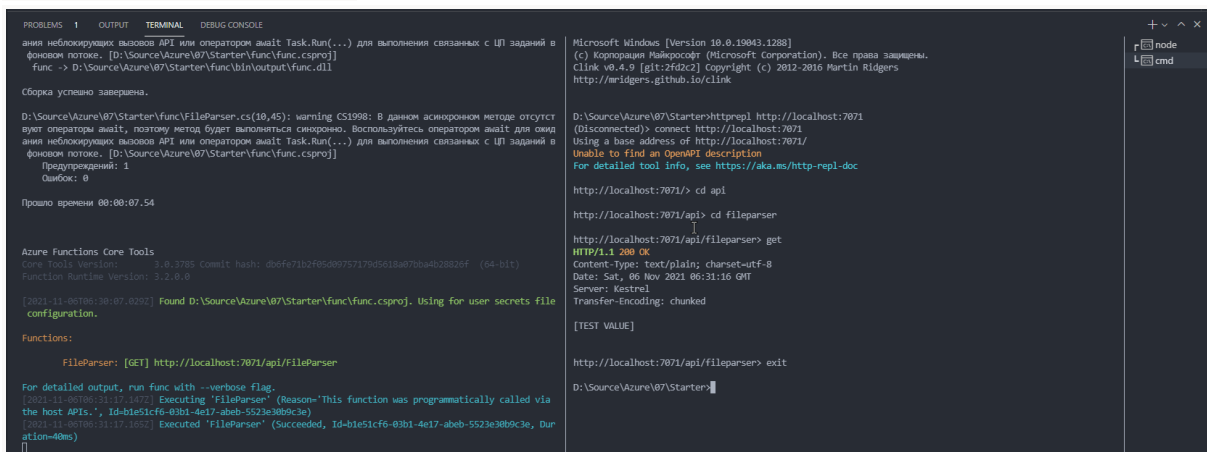
Task 2: Create an HTTP-triggered function



Task 3: Configure and read an application setting



Task 4: Validate the local function



Task 5: Deploy using the Azure Functions Core Tools

```
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

"users": {
  "name": "r_zhuman@kbtu.kz",
  "type": "user"
}
}

D:\Source\Azure\07\Starter\func>func azure functionapp publish securefuncrakhat
Microsoft (R) Build Engine версии 16.11.0+8538acc04 для .NET
(C) Корпорация Майкрософт (Microsoft Corporation). Все права защищены.

Определение проектов для восстановления...
Все проекты обновлены для восстановления.
func -> D:\Source\Azure\07\Starter\func\bin\publish\func.dll

Сборка успешно завершена.
Предупреждений: 0
Ошибок: 0

Прошло времени 00:00:07.03

Getting site publishing info...
Uploading package...
Uploading 2,3 MB [#####]
Upload completed successfully.
Deployment completed successfully.
Syncing triggers...
Functions in securefuncrakhat:
FileParser - [httpTrigger]
Invoke url: https://securefuncrakhat.azurewebsites.net/api/FileParser?code=Jt6aaYkZQKc0f0etjpaJ1MvPvD1jJujYzG4z10x90u/ef1q52d&g=

D:\Source\Azure\07\Starter\func>
```

Task 6: Test the Key Vault-derived application setting

Microsoft Azure

Home > securefuncrakhat > FileParser

FileParser | Code + Test

Function

Search (Ctrl+F)

Save Discard Refresh Test/Run Upload Get function URL

Overview

Developer

Code + Test

Integration

Monitor

Function Keys

Editing functions in the portal is not supported for Linux Consumption Function Apps.

securefuncrakhat \ FileParser \ function.json

```
1 {
2   "generatedBy": "Microsoft.NET.Sdk.Functions-3.0.11",
3   "configurationSource": "attributes",
4   "bindings": [
5     {
6       "type": "httpTrigger",
7       "methods": [
8         "GET"
9       ],
10      "authLevel": "function",
11      "name": "request"
12    }
13  ],
14  "disabled": false,
15  "scriptFile": "..\\bin\\func.dll",
16  "entryPoint": "FileParser.Run"
17 }
```

Input Output

HTTP response code

200 OK

HTTP response content

```
@Microsoft.KeyVault(SecretUri=DefaultEndpointsProtocol=https;AccountName=secureorakhat;AccountKey=b0b9B6g9g9K0K3z0SatDqW8A3h7J12+7EzQuiQ+B2EYndg+B595FL625/vWfYCGasgT8c2W7TepjB9=;EndpointSuffix=core.windows.net)
```

Exercise 4: Access Azure Blob Storage data

Task 1: Upload a sample Storage blob

Microsoft Azure

Home > securestorakhat

securestorakhat | Containers

Storage account

Search (Ctrl+F)

Container Change access level Refresh Delete

Search containers by prefix

Show deleted containers

Name	Last modified	Public access level	Lease state
<input type="checkbox"/> blobs	11/6/2021, 12:03:48 PM	Private	Available
<input type="checkbox"/> azure-webjobs-hosts	11/6/2021, 12:09:18 PM	Private	Available
<input type="checkbox"/> azure-webjobs-secrets	11/6/2021, 12:09:42 PM	Private	Available
<input type="checkbox"/> drop	11/6/2021, 12:41:27 PM	Blob	Available
<input type="checkbox"/> function-releases	11/6/2021, 12:32:52 PM	Private	Available
<input type="checkbox"/> scm-releases	11/6/2021, 12:08:47 PM	Private	Available

Successfully created storage container

Successfully created storage container 'drop'.

drop

Container

Search (Ctrl+F)

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot

Authentication method: Access key (Switch to Azure AD User Account)

Location: drop

Search blobs by prefix (case-sensitive)

Show deleted

Add filter

Name	Modified	Access tier	Blob type
<input type="checkbox"/> records.json	11/6/2021, 12:42:26 PM	Hot (inferred)	Block blob

Upload Completed for records.json

10.67 KB | securestorakhat

Select a file

Overwrite if files already exist

Advanced

Upload

Current uploads

Dismiss: Completed All

records.json

11 KB / 11 KB


```
D:\Source\Azure\07\Starter\func>func azure functionapp publish securefuncrakhat
Microsoft (R) Build Engine версии 16.11.0+8538acc04 для .NET
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Определение проектов для восстановления...
Все проекты обновлены для восстановления.
func -> D:\Source\Azure\07\Starter\func\bin\publish\func.dll

Сборка успешно завершена.
Предупреждений: 0
Ошибок: 0

Прошло времени 00:00:00.47

Getting site publishing info...
Uploading package...
Uploading 3.05 MB [#####]
Upload completed successfully.
Deployment completed successfully.
Syncing triggers...
Functions in securefuncrakhat:
FileParser - [httpTrigger]
    Invoke url: https://securefuncrakhat.azurewebsites.net/api/FileParser?code=Jt6aaYKZQeC0UetIpaJ1MwPvFDjjuYzG4z10x90u/ef1qh52dkg==

D:\Source\Azure\07\Starter\func>
```

```
PROBLEMS 1 OUTPUT TERMINAL DEBUG CONSOLE

Сборка успешно завершена.
Предупреждений: 0
Ошибок: 0

Прошло времени 00:00:05.97

Azure Functions Core Tools
Core Tools version: 3.0.3785 Commit hash: dbefe71b2f85d89757179d5618a07bbw4b28826f (64-bit)
Function Runtime Version: 3.2.0.0

[2021-11-08T08:58:41.582Z] Found D:\Source\Azure\07\Starter\func\func.csproj. Using for user secrets file
configuration.

Functions:
    FileParser: [GET] http://localhost:7071/api/FileParser

For detailed output, run func with --verbose flag.
[2021-11-08T08:59:06.240Z] Executing 'FileParser' (Reason: 'This function was programmatically called via
the host APIs.', Id=b933aa9d-8808-48c5-bef9-7501d8f67ed3)
[2021-11-08T08:59:07.107Z] Executed 'FileParser' (Succeeded, Id=b933aa9d-8808-48c5-bef9-7501d8f67ed3, Dur
ation=1151ms)
[]

"amet",
"magnum",
"pariatum",
"aliqua"
},
"friends": [
  {
    "id": 0,
    "name": "Cooke Lee"
  },
  {
    "id": 1,
    "name": "Phillips Case"
  },
  {
    "id": 2,
    "name": "Juanita Sloan"
  }
],
"greeting": "Hello, Guy French! You have 6 unread messages.",
"favoritefruit": "banana"
}

http://localhost:7071/api/fileparser>
```

Exercise 5: Clean up your subscription

Task 2: Delete a resource group

```
Bash
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

rakhat@Azure:~$ az group delete --name ConfidentialStack --no-wait --yes
rakhat@Azure:~$
```