



Cloud Development, 2021 fall. Homework 3

Report

Storages

made by Zhuman Rakhat

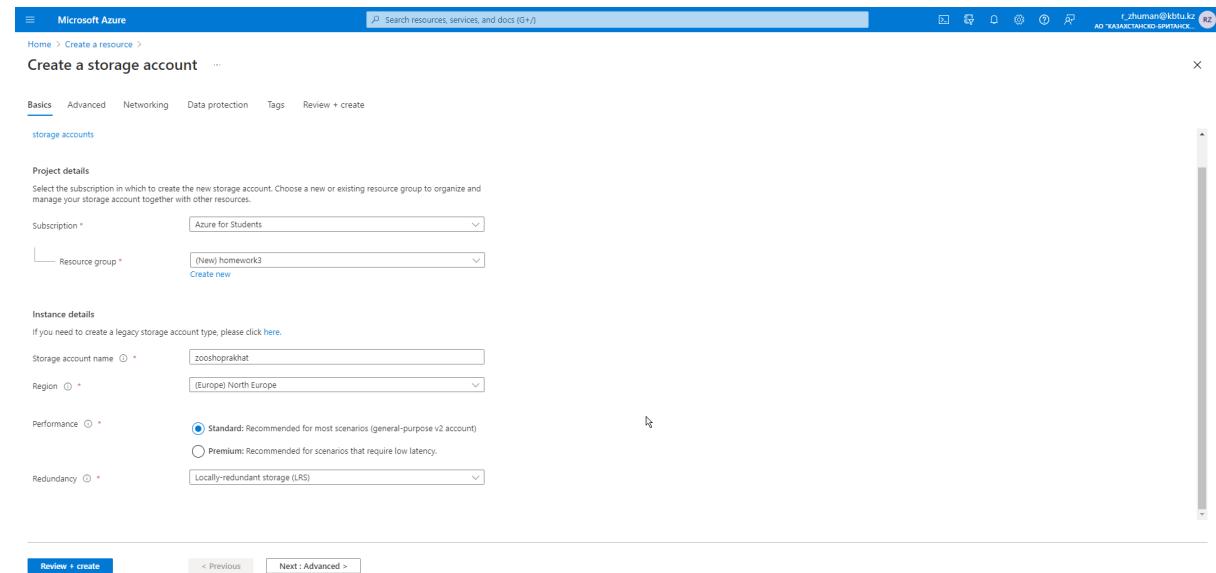
Almaty 2021

Task

You need to create a page for Zoo-shop, displaying information about all pets in the shop (if you will add a pet photo it will be even better). It has to let to edit, remove and add information. Please, make sure, that this page has to be published as Azure Web App, which is using Azure Cosmos DB for data storing and Azure Blob Storage as an images storage. As a report, please attach screenshots of the services used, as well as the code of your solution.

Report

Create Storage Account



Microsoft Azure

Home > Create a resource >

Create a storage account

Basics Advanced Networking Data protection Tags Review + create

storage accounts

Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription: Azure for Students

Resource group: (New) homework3

Create new

Instance details

If you need to create a legacy storage account type, please click here.

Storage account name: zooshoprakhat

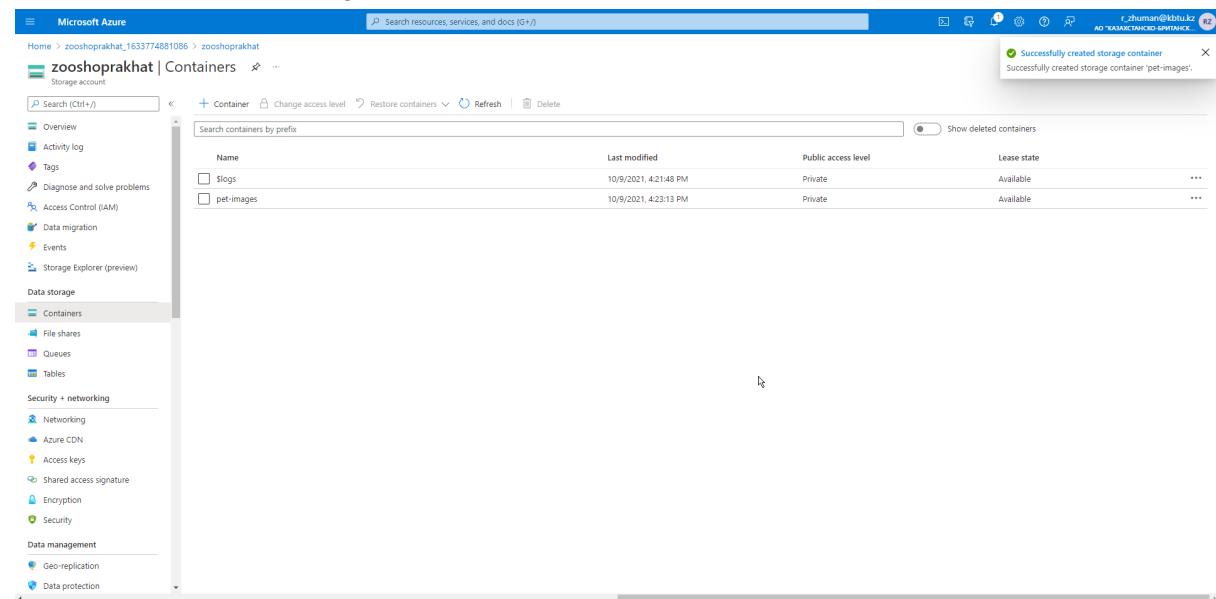
Region: (Europe) North Europe

Performance: Standard: Recommended for most scenarios (general-purpose v2 account)

Redundancy: Locally-redundant storage (LRS)

Review + create < Previous Next : Advanced >

Create Container pet-images



Microsoft Azure

Home > zooshoprakhat_1633774881086 > zooshoprakhat

zooshoprakhat | Containers

Storage account

Search (Ctrl+ /) Container Change access level Restore containers Refresh Delete

Search containers by prefix

Name	Last modified	Public access level	Lease state
Logs	10/9/2021, 4:21:48 PM	Private	Available
pet-images	10/9/2021, 4:23:13 PM	Private	Available

Overview Activity log Tags Diagnose and solve problems Access Control (IAM) Data migration Events Storage Explorer (preview)

Data storage

Containers File shares Queues Tables

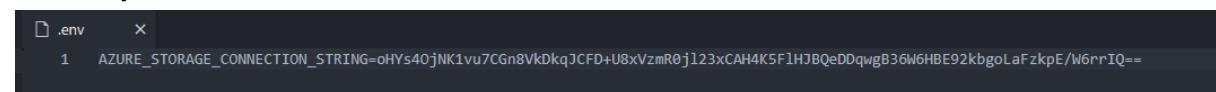
Security + networking Networking Azure CDN Access keys Shared access signature Encryption Security

Data management Geo-replication Data protection

Successfully created storage container

Successfully created storage container 'pet-images'

Store key to .env file



```
.env
1 AZURE_STORAGE_CONNECTION_STRING=oHYs40jNK1vu7CGn8VkDkjCFD+U8xVzmR0j123xCAH4K5f1HJBQeDDqwgB36W6HBE92kbgoLaFzkpE/W6rrIQ==
```

Upload images

The screenshot shows the Microsoft Azure Storage Explorer interface. On the left, there's a sidebar with options like Overview, Diagnose and solve problems, Access Control (IAM), Settings, Shared access tokens, Access policy, Properties, and Metadata. The main area displays a table of blobs:

Name	Modified	Access tier	Blob type
dog1.jpg	10/9/2021, 4:28:33 PM	Hot (Inferred)	Block blob
dog2.jpg	10/9/2021, 4:28:19 PM	Hot (Inferred)	Block blob

To the right, a modal window titled "Upload Completed for dog1.jpg" shows the file details: 101.53 KiB | zooshoprakhat. It includes a "Select a file" input field, a checkbox for "Overwrite if files already exist", and an "Upload" button.

Create Node JS app and design site with bootstrap

The screenshot shows a code editor with several files open:

- `env`: Environment variables.
- `JS index.js`: Node.js code for a BlobServiceClient.
- `CSS index.css`: CSS styles.
- `HTML index.ejs`: EJS template for displaying a list of blobs.
- `HTML add.ejs`: EJS template for adding a new blob.

The `index.ejs` template contains the following code:

```

<form method="POST" action="deleted" name="delete">
  <% for(let i=0; i < data.length; i++) { %>
    <div class="container">
      <div class="row row-cols-1 row-cols-md-3">
        <div class="col mb-4">
          <div class="card">
            
            <div class="card-body">
              <input hidden name="id" value="12345"/>
              <h5 class="card-title" name="name">Pet info</h5>
              <p class="card-text">This is a longer card with supporting text below as a natural lead-in to additional content. This content is a little bit longer.</p>
              <a href="/edit" class="btn btn-info">Edit</a>
              <button type="SUBMIT" class="btn btn-danger">Delete</button>
            </div>
          </div>
        </div>
      </div>
    <% } %>
  </form>

```

And result

The screenshot shows a web browser displaying a website titled "Pet Playlists". The page features a header with the title and some decorative icons. Below the header is a section with several cartoon-style animal illustrations (a dog, a cat, a bird, etc.). The main content area has a heading "Pet Playlists". At the bottom, there's a footer with the text "Hello!" and "This is a Cloud Development Homework 3 project Zoo-Shop web site by Zhuhan-Baihat".

A modal window is open, showing a card for a pet named "Pet info". The card includes a thumbnail image of a dog, the name "Pet info", a description ("This is a longer card with supporting text below as a natural lead-in to additional content. The content is a little bit longer."), and two buttons: "View" and "Delete".

Create Cosmos DB Account

Validation Success

Basics Global Distribution Networking Backup Policy Encryption Tags Review + create

Creation Time

Estimated Account Creation Time (in minutes) 2

The estimated creation time is calculated based on the location you have selected

Basics

Subscription: Azure for Students
Resource Group: homework3
Location: North Europe
Account Name: (new) zooshopdatastorage
API: Core (SQL)
Capacity mode: Provisioned throughput
Geo-Redundancy: Disable
Multi-region Writes: Disable
Availability Zones: Disable

Backup Policy

Backup policy: Periodic
Backup storage redundancy: Geo-redundant backup storage

Networking

Connectivity method: All networks

Create Previous Next Download a template for automation

Create a new container

zooshopdatastorage | Data Explorer

Welcome to Cosmos DB

Globally distributed, multi-model database service for any scale

Start with Sample

New Container

New Container

Container id: zooshopcontainer

Partition key: /categories

Unique keys

Add unique key

Analytical store: On, Off

OK

Create a new items

zooshopdatastorage | Data Explorer

Items

SELECT * FROM c

zooshopdatastorage

zooshopcontainer

Items

id

category

Load more

1

2

3

4

5

6

7

8

9

10

11

New Item

Update

Discard

Delete

Upload Item

>> npm i @azure/cosmos

```
D:\Source\NodeJS\Azure\Node>npm i @azure/cosmos
npm WARN homework-2@1.0.0 No repository field.

+ @azure/cosmos@3.14.1
added 28 packages from 8 contributors and audited 121 packages in 10.837s
found 0 vulnerabilities
```

Get creds from project

The screenshot shows the Microsoft Azure portal interface. At the top, there's a search bar and a navigation bar with the user 'r_zhuman@ktbu.kz' and the text 'АО "КАЗАХСТАНСКО-БРИТАНСК...". Below the search bar, the URL 'Home > Microsoft.Azure.CosmosDB-20211009165248 > zooshopdatastorage' is visible. The main content area is titled 'zooshopdatastorage | Keys' and shows 'Azure Cosmos DB account'. It has two tabs: 'Read-write Keys' (selected) and 'Read-only Keys'. Under 'Read-write Keys', there's a 'URI' field containing 'https://zooshopdatastorage.documents.azure.com:443/' and a 'PRIMARY KEY' field containing a long string of characters. On the left, a sidebar lists 'Features' like 'Replicate data globally', 'Default consistency', 'Backup & Restore', and 'Firewall and virtual networks'. At the bottom, there's a code editor window showing environment variables (env) with values for storage connection strings and other parameters.

Long development period

/Add

The screenshot shows a code editor with a dark theme. It displays the implementation of the '/add' route. The code uses Node.js syntax with async/await. It handles file uploads, creates a pet object with the uploaded image, and returns a response. There are several blank lines in the code, indicating a long development period.

```
app.get('/add', async function(req,res) {
  res.render('add')
});

app.post('/add', singleFileUpload.single('img'), async function(req,res, next) {
  const image = req.file;
  const name = req.body.name;
  const category = req.body.category;
  const facts = req.body.facts;

  try{
    await uploadImage(image)
    await createPet(category, name, image.originalname, facts)
  } catch (err){
    console.log("Error occurred when uploading: ", err)
    res.status(400).send("Error occurred when uploading: ", err)
  }
  res.render('add')
});
```

Blob storage create

The screenshot shows a code editor with a dark theme. It displays logic for uploading an image to a blob storage container. The code uses Node.js and the Azure Storage SDK. It gets a container client, creates a blob client, and then uploads a stream of the image.

```
async function uploadImage(image){
  const containerClient = await getContainer()

  const blobName = image.originalname;
  const stream = getStream(image.buffer);
  const streamLength = image.size;
  const contentType = image.mimetype;
  const blockBlobClient = containerClient.getBlockBlobClient(blobName);
  blockBlobClient.uploadStream(stream,streamLength)
  console.log('Image was uploaded')
}
```

Cosmos create

The screenshot shows a code editor with a dark theme. It displays the 'createPet' function, which takes category, name, image, and facts as parameters, and then creates a pet item in a database.

```
async function createPet(category, name, image, facts){
  const pet = {
    categories: category,
    name: name,
    image: image,
    facts: facts
  }
  return await client.database(databaseId).container(containerId).items.create(pet);
}
```

Below the code editor, there's a screenshot of a browser window titled 'Zoo-Shop'. The page has a header with 'Home', 'Add', 'Categories', and 'Buy'. A large button labeled 'Add image' is centered. Below it, a note says 'This url is to add image'. To the right, there's a file selection dialog titled 'Открытие' (Open) showing several image files: 'cat1.jpg', 'cat2.jpg', 'cat3.jpg', 'dog1.jpg', 'dog2.jpg', 'dog3.jpg', and 'header.jpg'. At the bottom, there's a form with fields for 'Category' (set to 'dog'), 'Name' (set to 'Dog 1'), and a 'Facts' text area containing a paragraph about dog smell detection. A large blue 'Add Pet' button is at the bottom right.

Items

SELECT * FROM c

Edit Filter

id	/partitionKey
712207b2-a433-340...	

Load more

```

1  "categories": "dog",
2   "name": "Dog 1",
3   "image": "dog1.jpg",
4   "facts": "The area of cells in the brain that detect different smells is around 40 times larger in dogs than humans. This means that your dog",
5   "id": "712207b2-a433-340c-e023-db1ce609645b",
6   "rid": "MYKA7TIBIsLAAAAAAA=",
7   "self": "dbs/MYKA7TIBIsLAAAAAAA=/colls/ZMYKA7TIBIsLAAAAAAA=/docs/ZMYKA7TIBIsLAAAAAAA=/",
8   "etag": "'65000496-0000-0000-6161cde70000'",
9   "attachments": "attachments/",
10  "_ts": 1633799655
11
12

```

Microsoft Azure

Home > zooshoprakhat > pet-images >

pet-images Container

Search (Ctrl+)

Upload Change access level ...

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

Location: pet-images

Show deleted blobs

Add filter

Name

dog1.jpg

... Blob

Save Discard Download Refresh Delete Change tier Acquire lease Break lease

Overview Version Snapshots Edit Generate SAS

Properties

URL <https://zooshoprakhat...>

LAST MODIFIED 10/9/2021 11:14:12 PM

CREATION TIME 10/9/2021, 11:14:12 PM

VERSION ID -

TYPE Block blob

SIZE 101.53 kB

ACCESS TIER Hot (Inferred)

ACCESS TIER LAST MODIFIED N/A

SERVER ENCRYPTED true

ETAG 0xd984837268CEO

VERSION-LEVEL IMMUTABILITY POLICY Disabled

CONTENT-TYPE application/octet-stream

CONTENT-MD5 -

LEASE STATUS Unlocked

LEASE STATE Available

LEASE DURATION -

COPY STATUS -

COPY COMPLETION TIME -

Undelete

Metadata

Key	Value

Blob index tags

Hello!

This is a Cloud Development Homework 3 project Zoo-Shop web-site by Zhuman Rakhat

Code powered by Node JS, Bootstrap and cloud technologies Azure like Cosmos DB and Blob Storage

[My github page](#)

Dog 1

The area of cells in the brain that detect different smells is around 40 times larger in dogs than humans. This means that your dog can pick up on way more smells than we ever could. This is why dogs are often used to sniff out people, drugs and even money!

[View details](#)

/Edit

```

app.post('/edit', async function(req,res) {
  console.log('Edit ',req.body)
  const id = req.body.id
  const name = req.body.name
  const facts = req.body.facts
  const category = req.body.category
  const imagename = req.body.imagename
  const method = req.body.method

  if(method === 'edit'){
    await updatePet(id, name, facts, category, imagename)
    res.render('edited')
  } else if (method === 'delete'){
    const deleted = await deletePet(id)
    await deleteImage(imagename)
    console.log(deleted)
    res.render('deleted')
  } else{
    res.status(400).render('index')
  }
}

```

```

39  async function updatePet(id, name, facts, category, imagename){
40    const doc = {}
41    doc.id = id
42    doc.name = name
43    doc.facts = facts
44    doc.category = category
45    doc.imagename = imagename
46    const { result: results } = await client.database(databaseId).container(containerId).item(id).replace(doc)
47    return results
48  }

```



Category: dog

Name: Dog 1 edited

Facts: Dogs rely a lot on their sense of smell to find food, potential dangers, and friends, so needless to say they sniff a lot. Their noses are designed so smells can stay in their nose while air can move in and out of their lungs at the same time, which means they can breathe freely and still work out what that smell is!

Edit Pet

Delete Pet

Items

SELECT * FROM c

Edit Filter

id	_partitionKey
712207b2-a433-340...	

Load more

```

1  {
2    "id": "712207b2-a433-340c-e023-db1ce609645b",
3    "name": "Dog 1 edited",
4    "facts": "Dogs rely a lot on their sense of smell to find food, potential dangers, and friends, so needless to say they sniff a lot. Their no",
5    "category": "dog",
6    "imagename": "dog1.jpg",
7    "_rid": "ZMYkA7IBIsLAAAAAAA==",
8    "_self": "dbs/ZMYkA7IBIsL/colls/ZMYkA7IBIsL/docs/ZMYkA7IBIsLAAAAAAA==/",
9    "_etag": "\"6300b796-0000-0000-6161cec0000\"",
10   "_attachments": "attachments",
11   "_ts": 1633799883
12 }

```

Hello!

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[My github page](#)



Dog 1 edited

Dogs rely a lot on their sense of smell to find food, potential dangers, and friends, so needless to say they sniff a lot. Their noses are designed so smells can stay in their nose while air can move in and out of their lungs at the same time, which means they can breathe freely and still work out what that smell is!

[View details](#)

/Remove

```

34  async function deletePet(id){
35    const { result: results } = await client.database(databaseId).container(containerId).item(id).delete();
36    return results
37  }

```

```

14 app.post('/edit', async function(req,res) {
15   console.log('Edit ',req.body)
16   const id = req.body.id
17   const name = req.body.name
18   const facts = req.body.facts
19   const category = req.body.category
20   const imagename = req.body.imagename
21   const method = req.body.method
22
23   if(method==='edit'){
24     await updatePet(id, name, facts, category, imagename)
25     res.render('edited')
26   } else if (method === 'delete'){
27     const deleted = await deletePet(id)
28     await deleteImage(imagename)
29     console.log(deleted)
30     res.render('deleted')
31   } else{
32     res.status(400).render('index')
33   }
34
35   async function deleteImage(image){
36     const containerClient = await getContainer()
37     try{
38       containerClient.deleteBlob(image)
39     } catch {
40       console.log("Can not find image by blob name ", image)
41     }
42   }

```



Category

Name	Dog 1 edited
Facts	Dogs rely a lot on their sense of smell to find food, potential dangers, and friends, so needless to say they sniff a lot. Their noses are designed so smells can stay in their nose while air can move in and out of their lungs at the same time, which means they can breathe freely and still

Edit Pet

Delete Pet



Hello!

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Code powered by Node JS, Bootstrap and cloud technologies Azure like Cosmos DB and Blob Storage

[My github page](#)

In blob storage deleted

Also in cosmos db

Dockerfile

```

1  FROM node:14-alpine
2
3  WORKDIR /usr/src/app
4
5  COPY . /usr/src/app
6
7  RUN npm install
8
9  EXPOSE 3000
10
11 CMD [ "npm", "start" ]

```

I am going to publish in Docker Hub, so ignore .env file

```

D:\env  X  JS cosmos.js  JS index.js  < JS index.ejs  Dockerfile
1  AZURE_STORAGE_CONNECTION_STRING=ohYs40jNK1vu7Cn8VkbkaJCFD+U8xVzmR0j123xCAH4K5f1HJBQeD0qwgB36W6HBE92kbgLaFzkpE/W6rrIQ==
2  COSMOS_ENDPOINT=https://zooshopdatastorage.documents.azure.com:443/
3  COSMOS_KEY=Lmcs0eUPLPsf0lyyhAqoElVkcwqKL51TSB5RH02R1XjzCtCMUhd81Qn0QIH1lUnlzDOL6kTjb58uC083RqA==
4  COSMOS_DATABASE_ID=zooshopdb
5  COSMOS_CONTAINER_ID=zooshopcontainer

```

Build & push

```

D:\Source\NodeJS\Azure\4\3>docker build -t zooshop:latest .
[+] Building 11.5s (10/10) FINISHED
--> [internal] load build definition from Dockerfile
--> [internal] transfering dockerfile: 31B
--> [internal] load .dockerignore
--> [internal] transfering context: 34B
--> [internal] load metadata for docker.io/library/node:14-alpine
--> [auth] docker.io/library@sha256:6e52e03bedfb494496488514d18bee7ff583f4e44289ea012ad92f8f41a312
--> [internal] resolve docker.io/library/node:14-alpine@sha256:6e52e03bedfb494496488514d18bee7ff583f4e44289ea012ad92f8f41a312
--> [internal] load build context
--> [internal] transfering context: 10.69kB
--> [internal] CACHED [2/4] WORKDIR /usr/src/app
--> [3/4] COPY . /usr/src/app
--> [4/4] RUN npm install
--> exporting to image
--> exporting layers
--> writing image sha256:02ae388c74d1b83ca2100bc954dc472bd5e89d56984755905ea44a9ec83bb8
--> mailing to docker.io/library/zooshop:latest

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

D:\Source\NodeJS\Azure\4\3>docker tag zooshop:latest zethuman/zooshop:latest

```

docker-compose

```

version: "3.0"
services:
  app:
    image: zethuman/zooshop:latest
    ports:
      - 3000:3000
    environment:
      AZURE_STORAGE_CONNECTION_STRING: ohYs40jNK1vu7Cn8VkbkaJCFD+U8xVzmR0j123xCAH4K5f1HJBQeD0qwgB36W6HBE92kbgLaFzkpE/W6rrIQ==
      COSMOS_ENDPOINT: https://zooshopdatastorage.documents.azure.com:443/
      COSMOS_KEY: Lmcs0eUPLPsf0lyyhAqoElVkcwqKL51TSB5RH02R1XjzCtCMUhd81Qn0QIH1lUnlzDOL6kTjb58uC083RqA==
      COSMOS_DATABASE_ID: zooshopdb
      COSMOS_CONTAINER_ID: zooshopcontainer

```

Create Web App

Create Web App

Platform to perform infrastructure maintenance. [Learn more](#)

Project Details

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

Subscription *

Resource Group *

Instance Details

Need a database? Try the new [Web + Database experience](#).

Name * .azurewebsites.net

Publish * Code Docker Container

Operating System * Linux Windows

Region *

App Service Plan

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app. [Learn more](#)

App Service Plan (North Europe) *

Sku and size * Free F1
1 GB memory

Review + create < Previous Next : Docker >

Create Web App

Basics Docker Monitoring Tags Review + create

Pull container images from Azure Container Registry, Docker Hub or a private Docker repository. App Service will deploy the containerized app with your preferred dependencies to production in seconds.

Options

Image Source

Docker hub options

Access Type *

Configuration File

Configuration

version: "3.0"
services:
 app:
 image: zethuman/zooshop:latest
 ports:
 - 3000:3000

Review + create < Previous Next : Monitoring >

zooshop App Service

Search (Ctrl+)

Overview

Activity log Access control (IAM) Tags Diagnose and solve problems Security Events (preview)

Resource group (change) : homework3 Status : Running Location : North Europe Subscription (change) : Azure for Students Subscription ID : 685e3fba-0430-43a1-a8a8-4812e242b2f9 Tags (change) : Click here to add tags

URL : <https://zooshop.azurewebsites.net>
App Service Plan : ASP-homework3-blfd5 (F1: Free)
FTP/deployment username : No FTP/deployment user set
FTP hostname : <http://waws-prod-db3-199.ftp.azurewebsites.windows.net/site/wwwroot>
FTPS hostname : <ftps://waws-prod-db3-199.ftp.azurewebsites.windows.net/site/wwwroot>

Essentials

Diagnose and solve problems Our self-service diagnostic and troubleshooting experience helps you identify and resolve issues with your web app.

App Service Advisor App Service Advisor provides insights for improving app experience on the App Service platform. Recommendations are sorted by health priority and impact to your app.

Deployment

Quickstart Deployment credentials Deployment slots Deployment Center

Settings

Configuration Authentication Application Insights Identity Backups Custom domains TLS/SSL settings Networking Scale up (App Service plan) Scale out (App Service plan)

Http Sxx

Code	Count
100	0
90	0
80	0
70	0
60	0
50	0
40	0
30	0
20	0
10	0
5	0
0	100

10:45 PM 11 PM 11:15 PM 11:30 PM UTC+06:00

Data In

Code	Count
100	0
90	0
80	0
70	0
60	0
50	0
40	0
30	0
20	0
10	0
5	0
0	100

10:45 PM 11 PM 11:15 PM 11:30 PM UTC+06:00

Data Out

Code	Count
100	0
90	0
80	0
70	0
60	0
50	0
40	0
30	0
20	0
10	0
5	0
0	100

10:45 PM 11 PM 11:15 PM 11:30 PM UTC+06:00

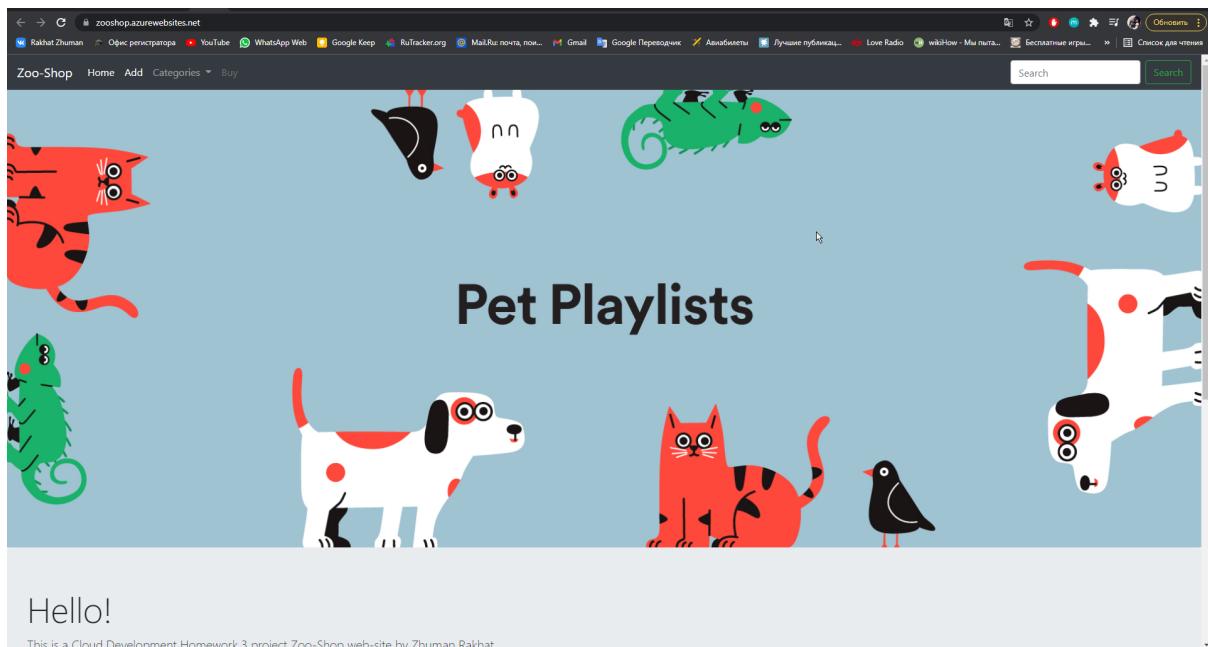
Logs

Http Server Errors [Sum] zooshop 0

Data In [Sum] zooshop 0

Data Out [Sum] zooshop 0

Result



Check from phone

The image contains two side-by-side screenshots of the Zoo-Shop website on a mobile device. Both screenshots show the same layout as the desktop version, featuring a top navigation bar with links like 'Home', 'Add', 'Categories', and 'Buy'. The main content area displays a 'Cat 1' card with a black and white cat photo, a 'Dog 1' card with a puppy photo, and a 'Dog 2' card with another puppy photo. Each card includes a 'View details' button. The mobile screenshots also show the device's status bar with battery level (73%) and signal strength.

The image shows two side-by-side screenshots of a mobile application interface.

Left Screenshot: The title is "Edit image". Below it is the text "This url is to edit image". A large thumbnail image of a black and white cat is displayed. Below the thumbnail are input fields: "Category" set to "cat", "Name" set to "Cat 2 edited", and "Facts" containing the text "Cats' claws all curve downward, which means that they can't climb down head-first. Instead, they have to back down the trunk.". At the bottom are two buttons: a blue "Edit Pet" button and a red "Delete Pet" button.

Right Screenshot: The title is "Cat 2 edited". Below it is a detailed description: "Cats' claws all curve downward, which means that they can't climb down head-first. Instead, they have to back down the trunk.". A "View details" button is below the description. A thumbnail image of an orange and white cat is shown. The status bar at the top indicates "23:57", "4,0 KB/c", signal strength, battery level at 73%, and a red notification icon.

Cleaning up workspace

A screenshot of an Azure Cloud Shell terminal window. The terminal is running Bash. The session starts with "Requesting a Cloud Shell... Succeeded. Connecting terminal...". It then displays a welcome message: "Welcome to Azure Cloud Shell! Type \"az\" to use Azure CLI. Type \"help\" to learn about Cloud Shell." Finally, a command is run: "rakesh@Azure:~\$ az group delete --name homeworks --yes". The terminal window has a dark background with light-colored text and standard terminal icons at the top.