ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

AWS S3 Tutorial

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Current Topics in Distributed Systems: Internet of Things and Cloud Computing,

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AWS S3 Fundamentals

- Amazon Simple Storage Service (S3) is a storage service,
- Stores and retrieves any amount of unstructured data from anywhere,
- Global services,
- Stores data as objects within buckets (containers for objects)
- Buckets help in Access Control, View Access Logs, Set Regions

AWS S3 Fundamentals (cont.)

- **Bucket**
  - ❖Such as “folder” in the local storage of our personal computers.
- **Object**
  - ❖Such as “file” in the local storage of our personal computers.

Create S3 Bucket

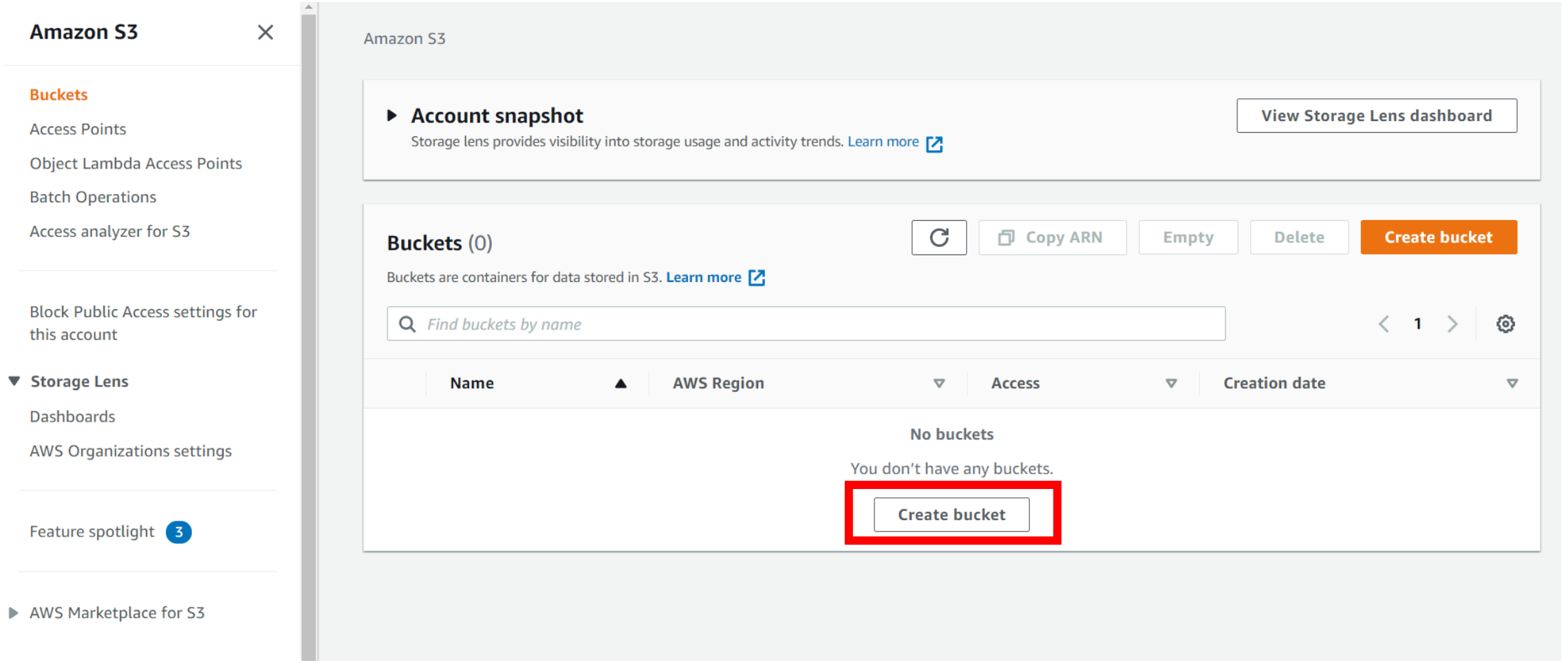
- https://aws.amazon.com/s3/

- To create a bucket, in the AWS console click on **S3**, and then click ***Create Bucket***.

- Enter a **Bucket Name** and choose the **region**: **US East (N. Virginia)**.

- Click **Create** to save your bucket.

Create S3 Bucket (cont.)



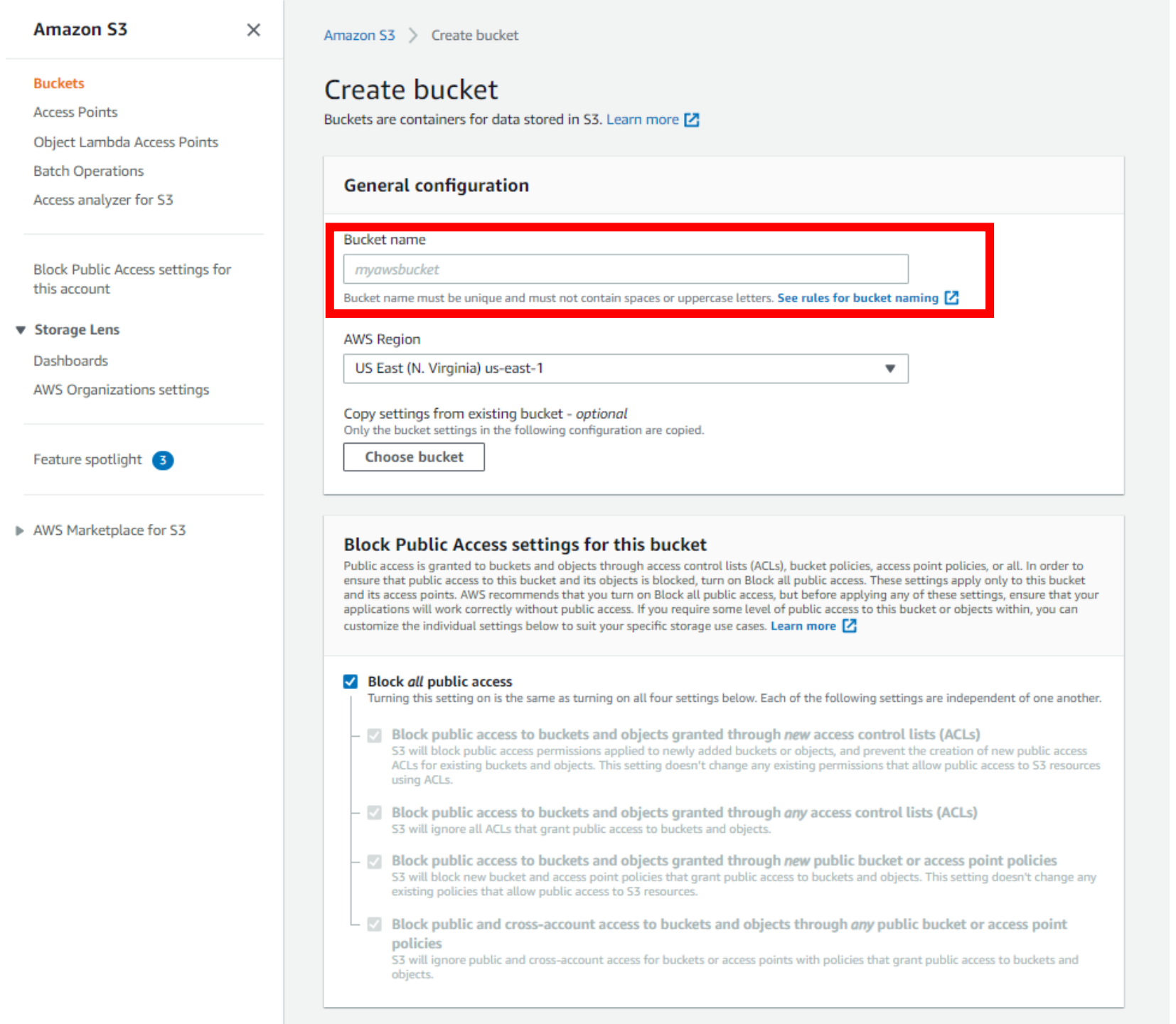
Create S3 Bucket (cont.)

AWS provides naming standards when naming an AWS bucket.

- The bucket name can be between 3 and 63 characters long, and can contain only lower-case characters, numbers, periods, and dashes.
- Each label in the bucket name must start with a lowercase letter or number.
- The bucket name cannot contain underscores, end with a dash, have consecutive periods, or use dashes adjacent to periods.
- The bucket name cannot be formatted as an IP address (198.51.100.24).

https://docs.aws.amazon.com/awscloudtrail/latest/userguide/cloudtrail-s3-bucket-naming-requirements.html

Create S3 Bucket (cont.)



AWS free usage tier

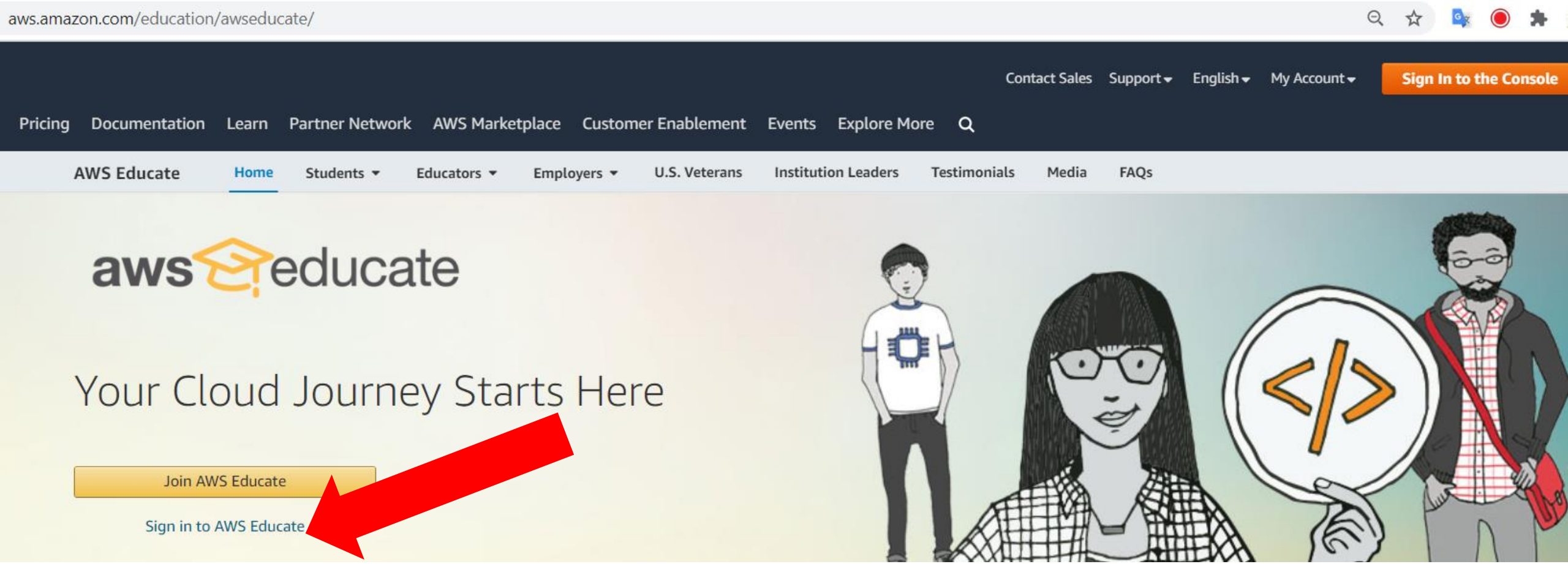
- As part of the AWS Free Usage Tier, you can get started with Amazon S3 for free. Upon sign-up, new AWS customers receive 5GB of Amazon S3 storage in the S3 Standard storage class; 20,000 GET Requests; 2,000 PUT, COPY, POST, or LIST Requests; and 15GB of Data Transfer-out each month for one year.
- Your usage for the free tier is calculated each month across all AWS Regions except the AWS GovCloud (US) and automatically applied to your bill; unused monthly usage will not roll over.
- See offer terms for more details.

Amazon S3 pricing

- You pay for storing objects in your S3 buckets.
- https://aws.amazon.com/s3/pricing/

First 50 TB / Month	$0.0245 per GB
Next 450 TB / Month	$0.0235 per GB
Over 500 TB / Month	$0.0225 per GB

You have an AWS Educate account?



awseducate.com/student/s/awssite

aws educate

Portfolio Career Pathways Badges Jobs AWS Account

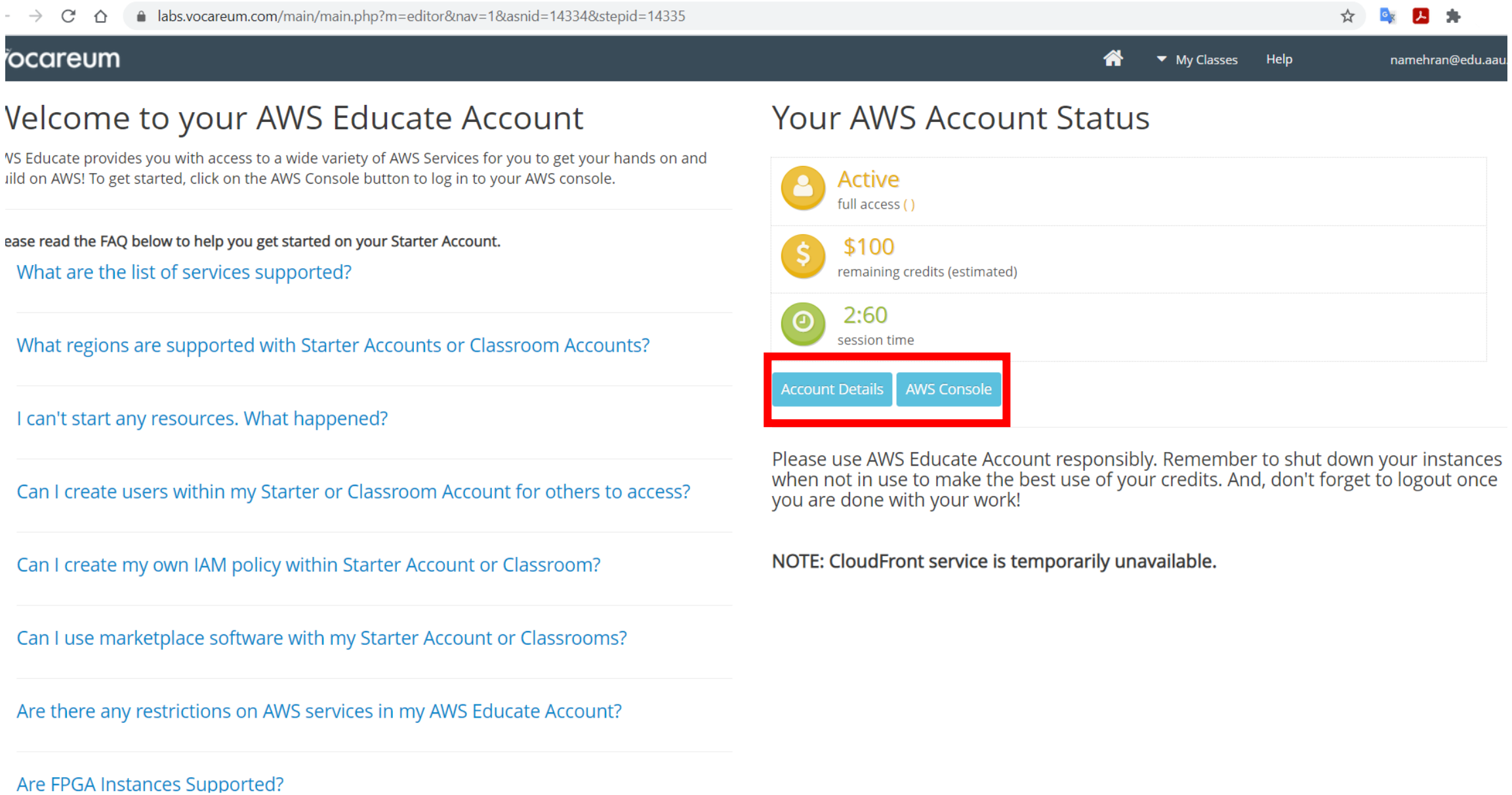
AWS Educate Starter Account

Your cloud journey has only just begun. Use your AWS Educate Starter Account to access the AWS Console and resources, and start building in the cloud!

AWS Educate Starter Account

Your account has an estimated **100** credits remaining and access will end on **Nov 2, 2021**.

Note: Clicking this button will take you to a third party site managed by Vocareum, Inc. ("Third Party Servicer"). In addition to the AWS Educate terms of service, your use of the AWS Educate Starter Account is governed by the Third Party Servicer's terms, including its Privacy Policy. AWS assumes no responsibility or liability and makes no representations or warranties regarding services provided by a Third Party Servicer.


labs.vocareum.com/main/main.php?m=editor&nav=1&asnid=14334&stepid=14335
ocareum
My Classes
Help
namehran@edu.aau
Welcome to your AWS Educate Account
VS Educate provides you with access to a wide variety of AWS Services for you to get your hands on and uild on AWS! To get started, click on the AWS Console button to log in to your AWS console.
ease read the FAQ below to help you get started on your Starter Account.
What are the list of services supported?
What regions are supported with Starter Accounts or Classroom Accounts?
I can't start any resources. What happened?
Can I create users within my Starter or Classroom Account for others to access?
Can I create my own IAM policy within Starter Account or Classroom?
Can I use marketplace software with my Starter Account or Classrooms?
Are there any restrictions on AWS services in my AWS Educate Account?
Are FPGA Instances Supported?
Your AWS Account Status
Active
full access ( )
$100
remaining credits (estimated)
2:60
session time
Account Details
AWS Console
Please use AWS Educate Account responsibly. Remember to shut down your instances when not in use to make the best use of your credits. And, don't forget to logout once you are done with your work!
NOTE: CloudFront service is temporarily unavailable.

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My Classes Help

Welcome

AWS Educate provide
build on AWS! To get

Please read the FAQ b

- What are the
- What regions
- Are there any

Credentials

AWS Access

Session started at: 2021-02-15T00:36:13-0800
Session to end at: 2021-02-15T03:36:13-0800
Remaining session time: 2h58m10s

AWS Starter account

Term: 260 days 02:14:49

AWS CLI: Show

AWS CLI:

Copy and paste the following into ~/.aws/credentials

```
[default]
aws_access_key_id=[redacted]
aws_secret_access_key=[redacted]
aws_session_token=[redacted]
```

Amazon SDK for Python

https://boto3.amazonaws.com/v1/documentation/api/latest/guide/s3-examples.html

- **Examples on S3**
  - Amazon S3 buckets
  - Uploading files
  - Downloading files
  - File transfer configuration
  - Presigned URLs
  - Bucket policies
  - Access permissions
  - Using an Amazon S3 bucket as a static web host
  - Bucket CORS configuration
  - AWS PrivateLink for Amazon S3

```python
import logging
import boto3
from botocore.exceptions import ClientError
import configparser
import os
def create_bucket(bucket_name):

    aws_profile = "default"
    config = configparser.ConfigParser()
    config.read(os.path.expanduser("C:\\Users\\narmehran\\.aws\\credentials"))
    aws_access_key_id = config.get(aws_profile, "aws_access_key_id")
    aws_secret_access_key = config.get(aws_profile, "aws_secret_access_key")
    aws_session_token=config.get(aws_profile, "aws_session_token")
    s3_client = boto3.client(
        's3',
        aws_access_key_id=aws_access_key_id,
        aws_secret_access_key=aws_secret_access_key,
        aws_session_token=aws_session_token)

    # Create bucket
    try:
        s3_client.create_bucket(Bucket=bucket_name)
    except ClientError as e:
        logging.error(e)
        return False
    return True

print(create_bucket("namebucket2021"))
```

Launch a public website by AWS S3 ?

Amazon Route 53

- *Amazon Route 53* is a highly available and scalable *Domain Name System (DNS)* web service.
- Route 53 is used for three main functions in any combination:

  - ✓ domain registration,
  - ✓ DNS routing, and
  - ✓ health checking

Amazon Route 53

You can use Amazon Route 53 to register new domains, transfer existing domains, route traffic for your domains to your AWS and external resources, and monitor the health of your resources.

For registering a domain name

DNS management

If you already have a domain name, such as example.com, Route 53 can tell the Domain Name System (DNS) where on the Internet to find web servers, mail servers, and other resources for your domain.
Learn More

Get started now

Traffic management

Route 53 traffic flow provides a visual tool that you can use to create and update sophisticated routing policies to route end users to multiple endpoints for your application.
Learn More

Get started now

Availability monitoring

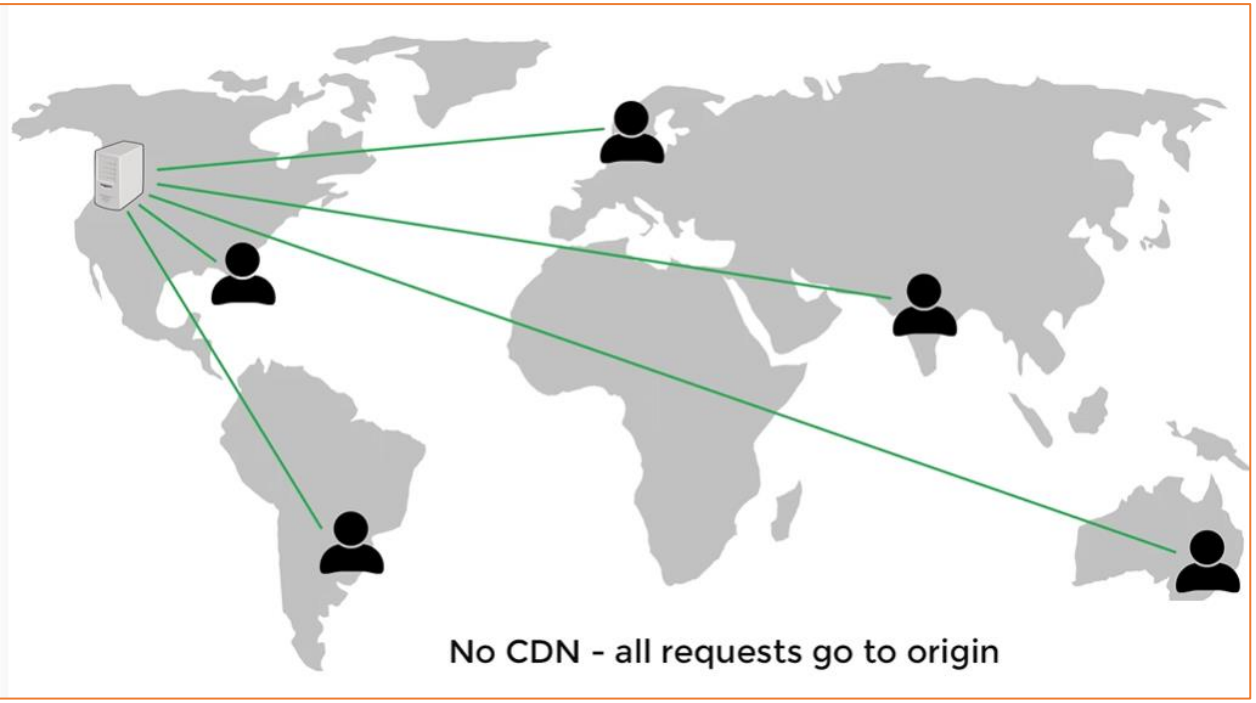
Route 53 can monitor the health and performance of your application as well as your web servers and other resources. Route 53 can also redirect traffic to healthy resources.
Learn More

Get started now

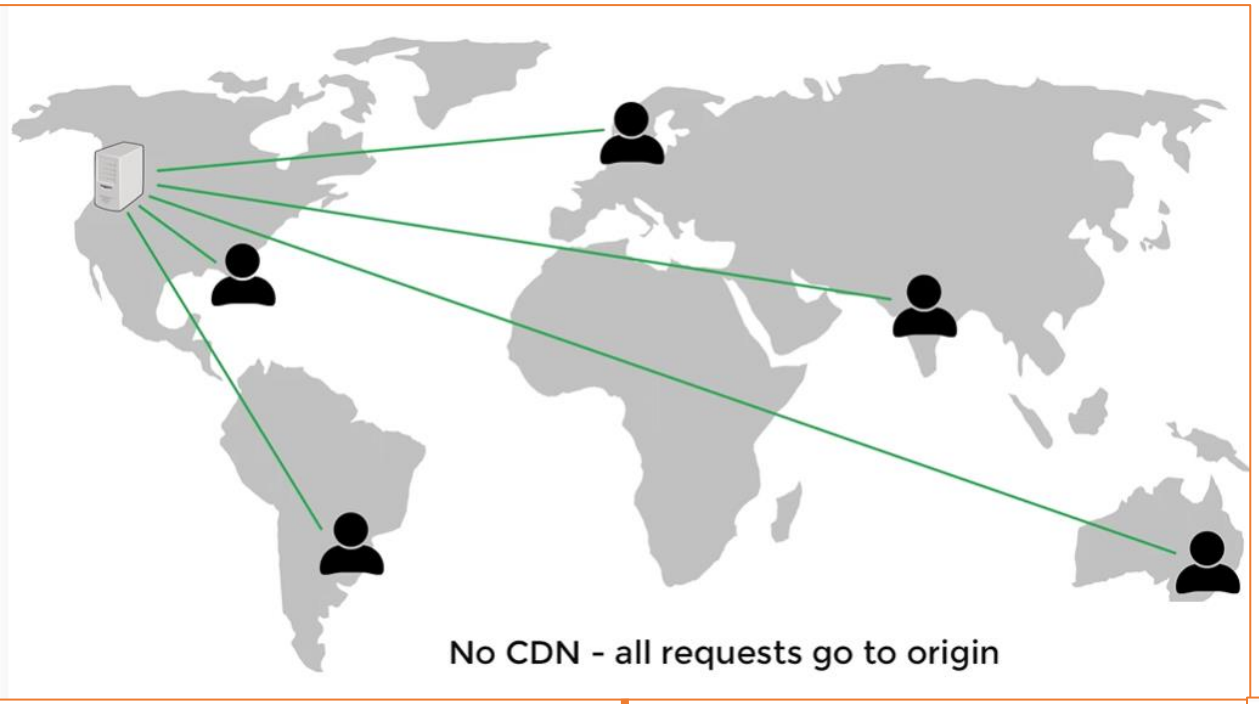
Domain registration

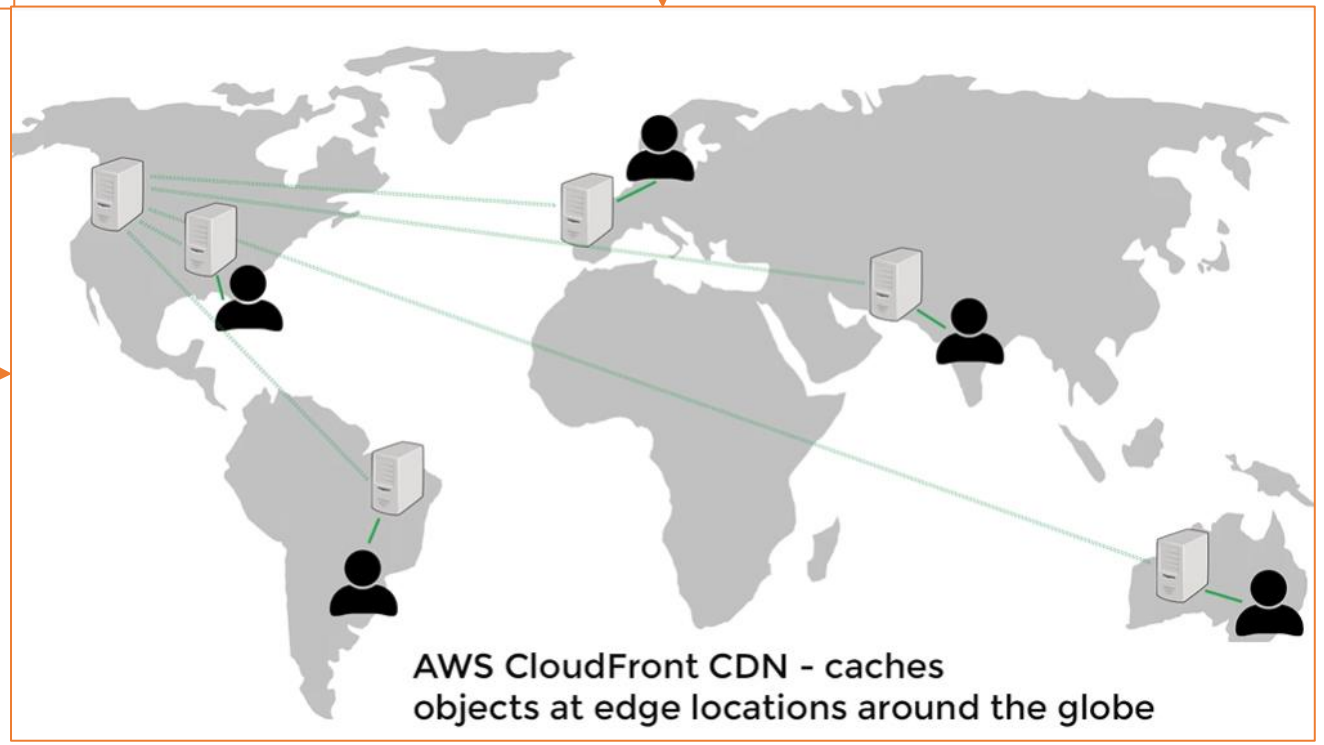
If you need a domain name, you can find an available name and register it by using Route 53. You can also make Route 53 the registrar for existing domains that you registered with other registrars.
Learn More

Get started now


No CDN - all requests go to origin

AWS CloudFront





Frontend Developing with Amazon Web Services

- Storing the website in S3
- Providing DNS by Route 53
- Providing CDN by CloudFront

Policy for public access?

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
       "Effect": "Allow",
       "Principal": "*",
       "Action": "s3:GetObject",
       "Resource": "arn:aws:s3:::[YOUR_BUCKET_NAME]/*"
  } ]
}
```

Assignment 12

1) In assignment 5.2, you were supposed to read a data file *(csv file)* from a website. So firstly, such as that assignment, download the file. http://iot.ee.surrey.ac.uk:8080/datasets/traffic/traffic_feb_june/index.html

2) Then count the number of vehicles every day passing through the road by using the columns: vehicleCount. But this time, please utilize the methods of Apache Spark.

3) Finally, upload the counted data to S3 bucket as an *index.html* file and Brower it. Just please manually configure policies of the static website.

Thanks for your attention