

MODULE 2 – LAB EXERCISES

The following lab exercises will help you in deep understanding and hands-on practice for Amazon Simple Storage Service (S3).

Before doing the lab you must be signed-in AWS Management Console as described in Module 1 lab:

The screenshot shows the AWS Management Console interface. At the top, there's a header bar with the AWS logo, a search bar containing 'Надежный' and the URL 'https://eu-central-1.console.aws.amazon.com/console/home?region=eu-central-1#', and user information 'a.polyanichko @ 6364-2164-4... Frankfurt Support'. Below the header is a navigation bar with 'Services' and 'Resource Groups' dropdowns, and icons for a bell and a user profile.

The main content area is divided into sections:

- AWS services**: A sidebar with a search bar and two collapsed sections: 'Recently visited services' and 'All services'. Under 'Compute', there are links to EC2, EC2 Container Service, Lightsail, Elastic Beanstalk, Lambda, and Batch. Under 'Storage', there are links to S3, EFS, Glacier, and Storage Gateway. Under 'Database', there is a link to RDS.
- Developer Tools**: Links to CodeStar, CodeCommit, CodeBuild, CodeDeploy, CodePipeline, and X-Ray.
- Internet of Things**: Links to AWS IoT and AWS Greengrass.
- Contact Center**: Links to Amazon Connect.
- Management Tools**: Links to CloudWatch, CloudFormation, CloudTrail, Config, OpsWorks, and Service Catalog.
- Game Development**: Link to Amazon GameLift.
- Mobile Services**: Links to Mobile Hub, Cognito, and Device Farm.

Helpful tips section on the right side:

- Manage your costs**: Describes real-time billing alerts based on cost and usage budgets. Includes a 'Start now' button.
- Create an organization**: Describes AWS Organizations for policy-based management of multiple AWS accounts. Includes a 'Start now' button.

Explore AWS section at the bottom right:

- Amazon Relational Database Service (RDS)**: Describes RDS managing and scaling databases for Aurora, MySQL, PostgreSQL, MariaDB, Oracle, and SQL Server. Includes a 'Learn more' button.

1. Create AWS S3 Bucket

Please find the link to S3 service on AWS Management Console main page or use search bar below the top menu.

	<p>It is quite well approach to use search bar to find something you need in AWS Console or Dashboards, because not all services or items can be found directly on the page. Using search bar allows you to avoid wasting time when you are looking for something specific.</p>
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Click on S3 link will open AWS S3 Dashboard:

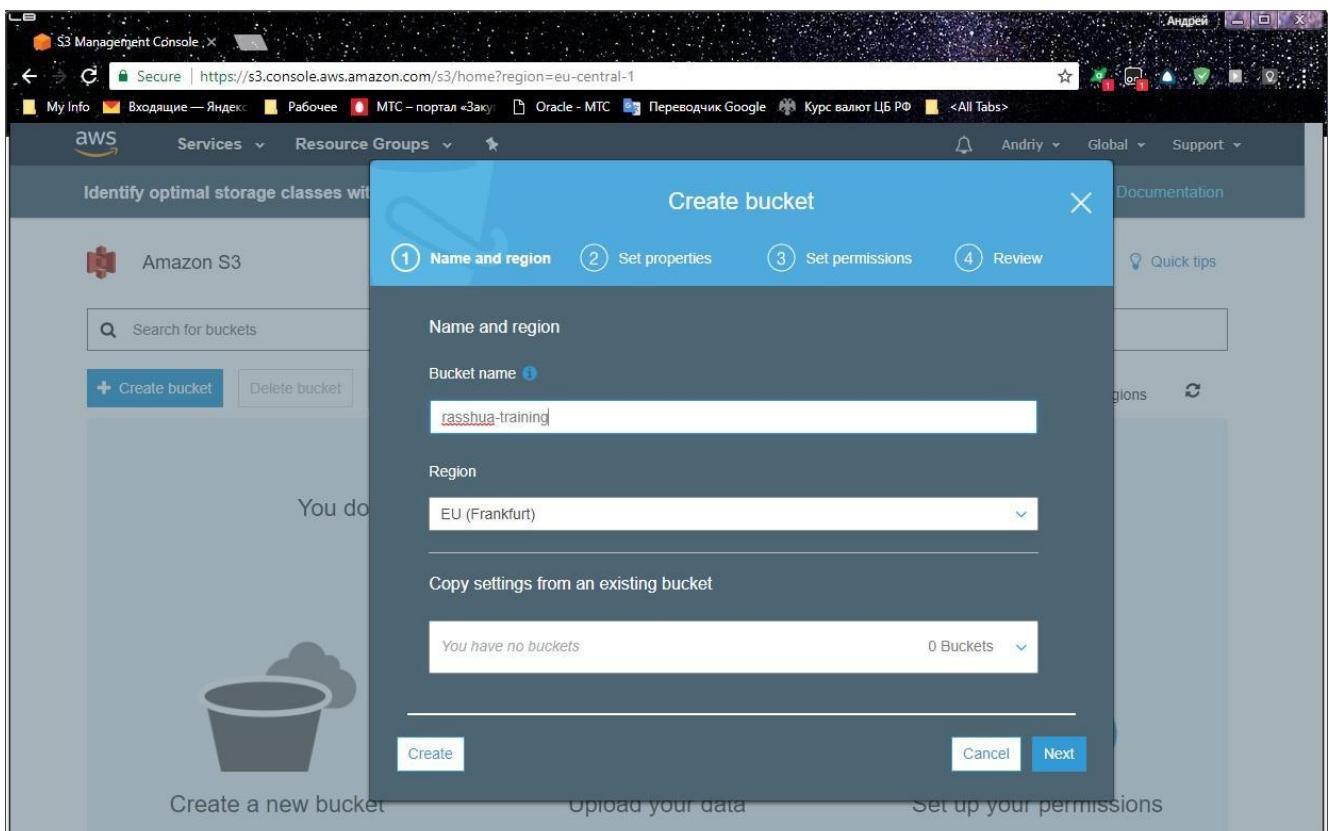
The screenshot shows the AWS S3 Management Console dashboard. At the top, there's a header with the AWS logo, navigation links for Services and Resource Groups, and account information like 'Andriy' and 'Global'. Below the header, a banner reads 'Identify optimal storage classes with S3 Analytics - Storage Class Analysis. Learn More ». On the left, there's a sidebar with the 'Amazon S3' icon and a search bar labeled 'Search for buckets'. In the center, it displays '0 Buckets' and '0 Regions'. Below this, a message says 'You do not have any buckets. Here is how to get started with Amazon S3.' It features three icons: a bucket for 'Create a new bucket', a bucket with an upload arrow for 'Upload your data', and two user silhouettes for 'Set up your permissions'. The URL in the browser is https://s3.console.aws.amazon.com/s3/#.

Normally your training account does not contain any bucket at this stage.

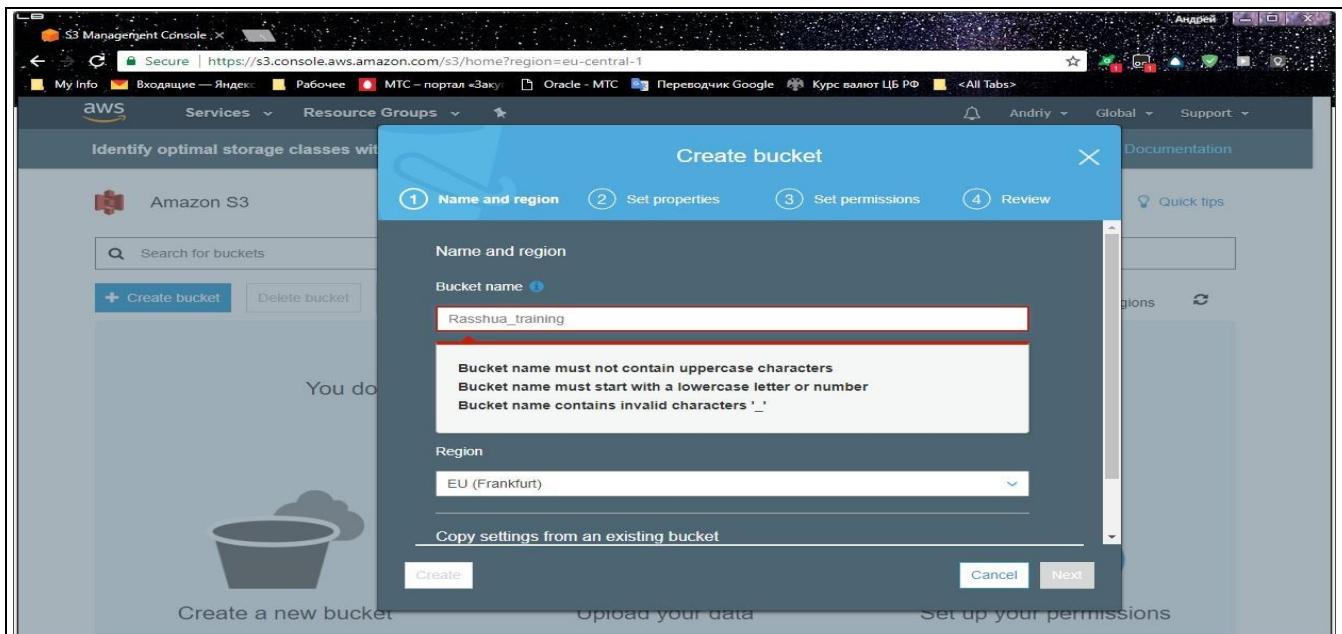
Start creation the bucket by clicking on appropriate button:

This screenshot shows the same AWS S3 dashboard as above, but with a red box highlighting the 'Create bucket' button. This indicates where the user should click to start creating a new bucket.

Define the name and region for new bucket:

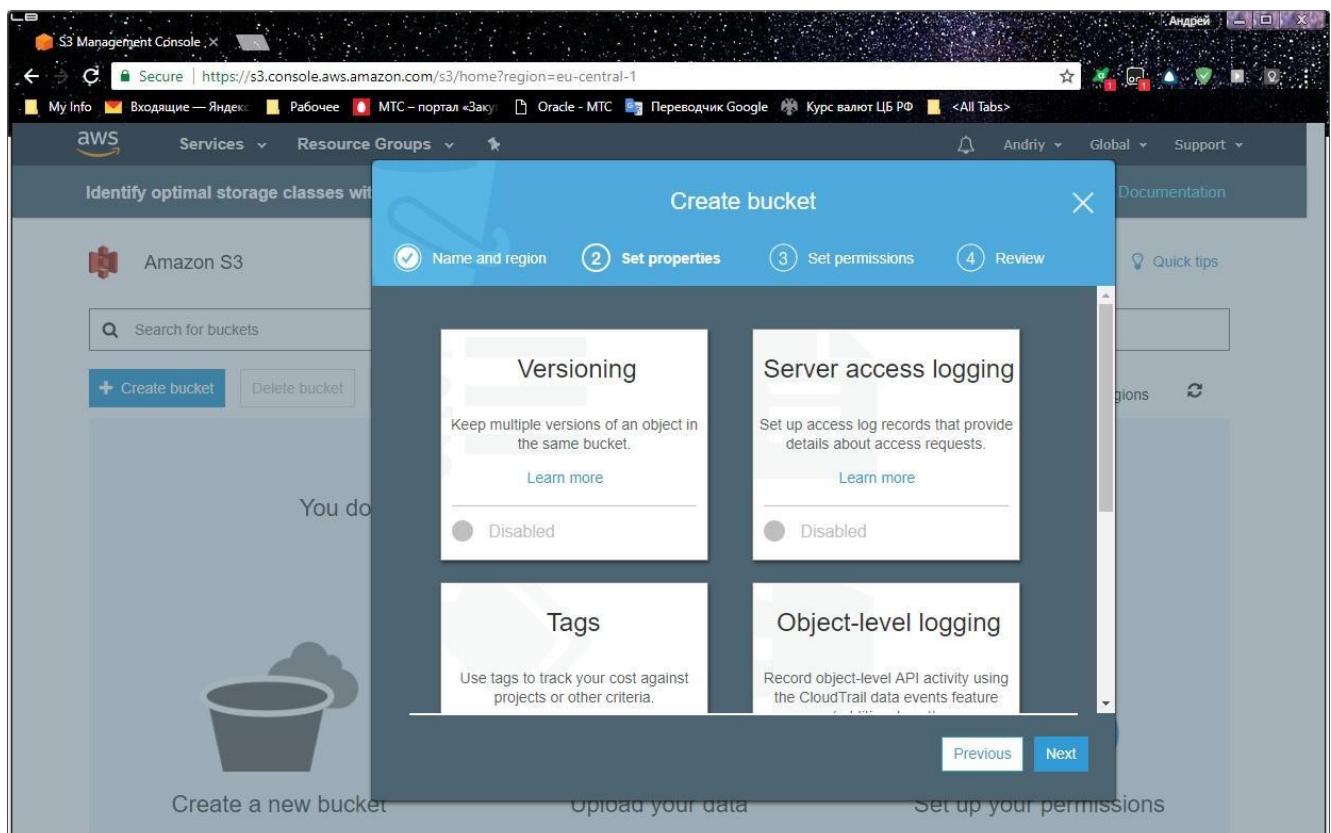


	Please take in account that bucket name must be unique across all bucket names in Amazon S3.
	You must take in account some restrictions on S3 bucket names; you can found them in MODULE 2 training manual. The system may help you in some mistakes:



Click on “Next” button at the bottom.

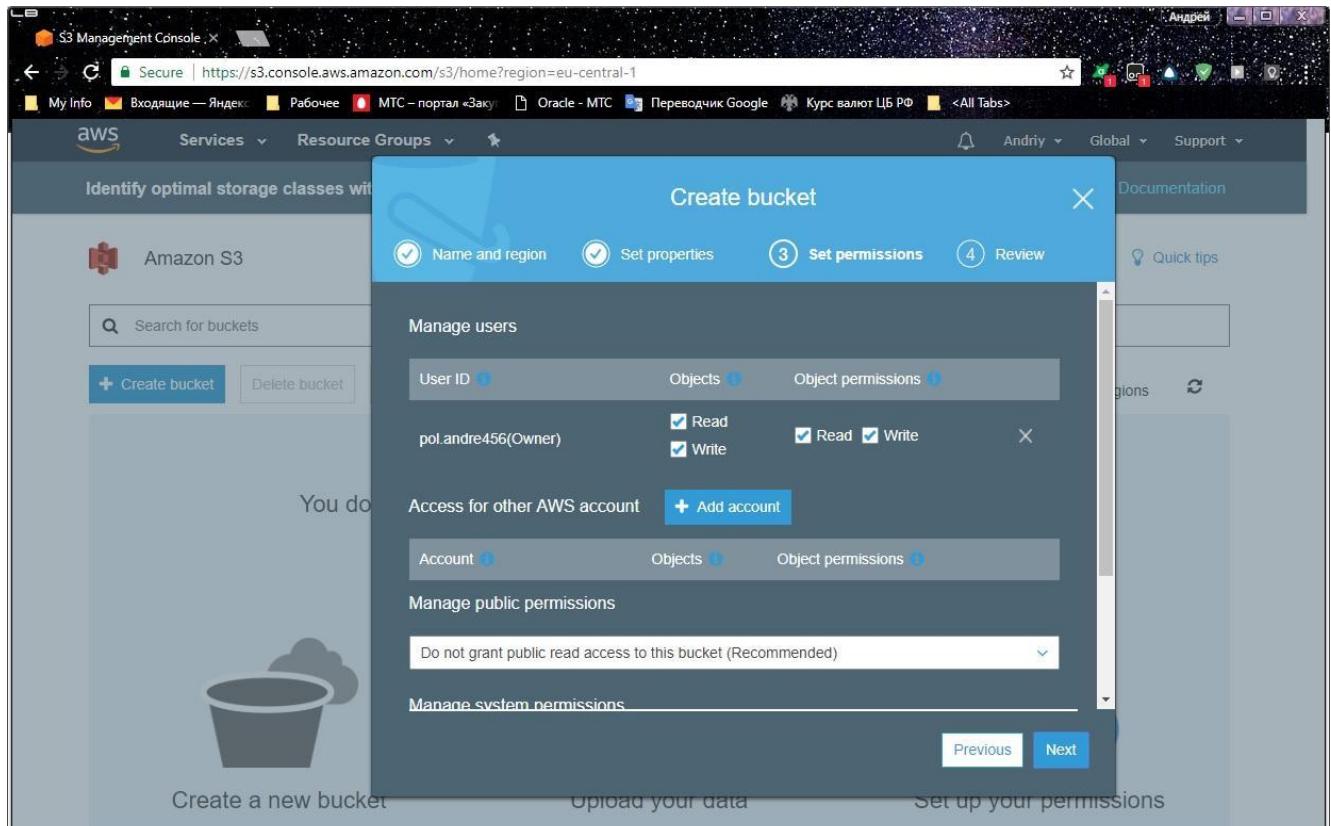
On the next page you may define bucket properties:



Please explore and identify all kinds of bucket properties here. Finally please leave all properties in default state for training purpose.

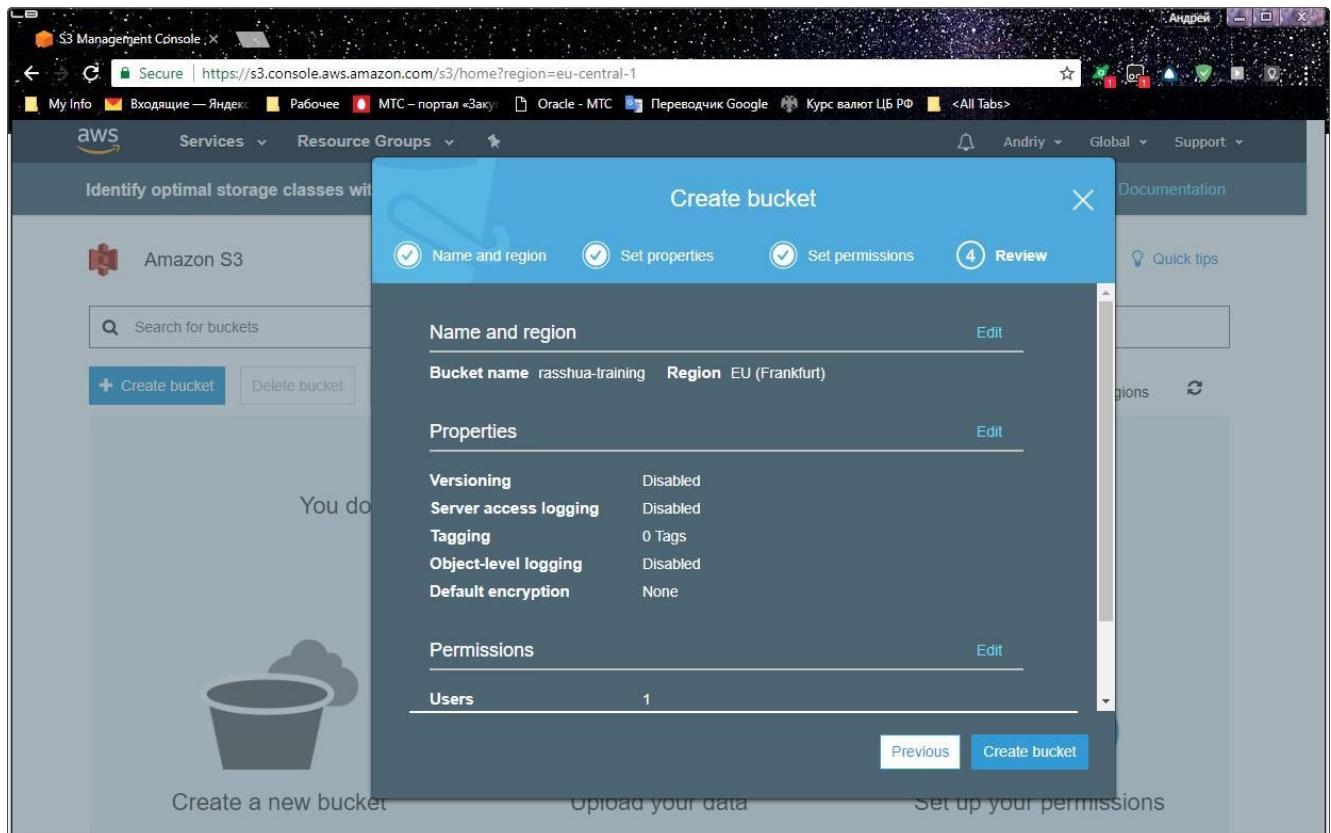
Click on “Next” button at the bottom.

On the next page you may define bucket permissions:

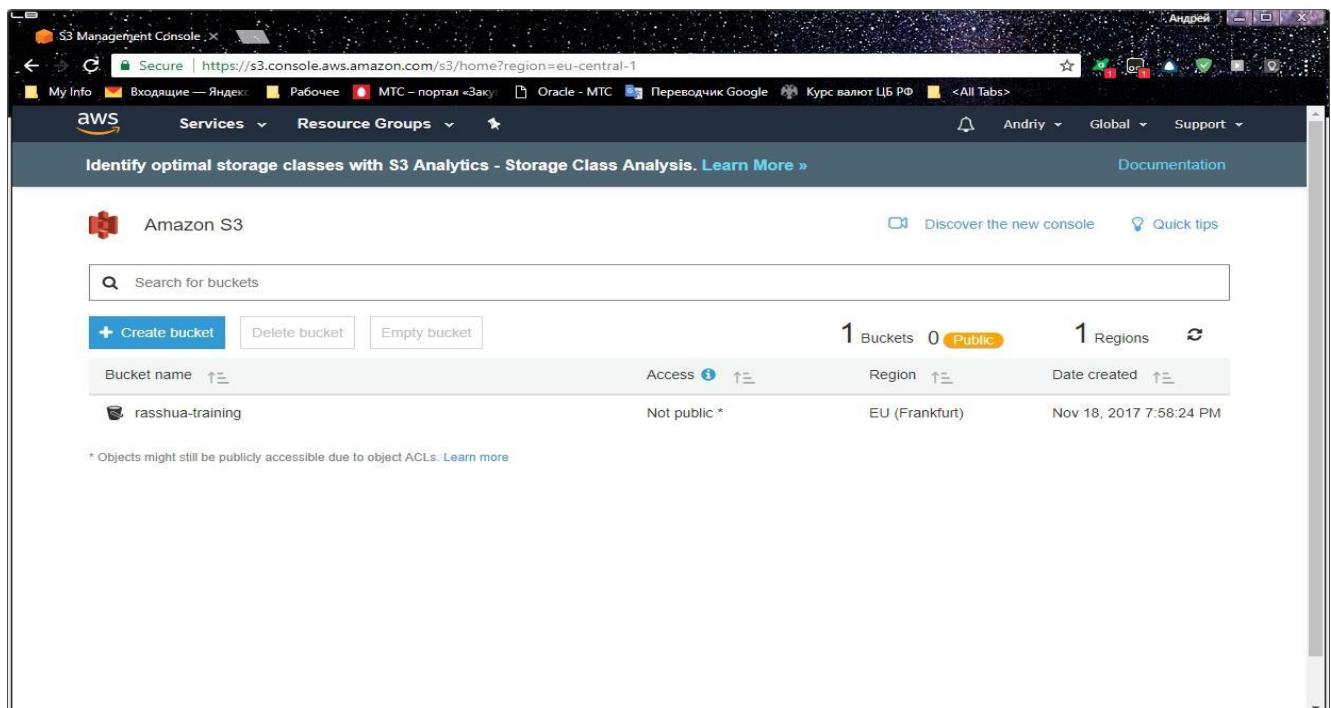


Please explore all items on page and finally leave permission unchanged for training purpose.

Click on “Next” button at the bottom and review the new bucket before creation:



Finally click on “Create bucket” button at the bottom and find your new bucket on S3 Dashboard page:



2. Upload the file

Click on bucket name to navigate it:

This bucket is empty. Upload new objects to get started.

Upload an object
Buckets are globally unique containers for everything that you store in Amazon S3.

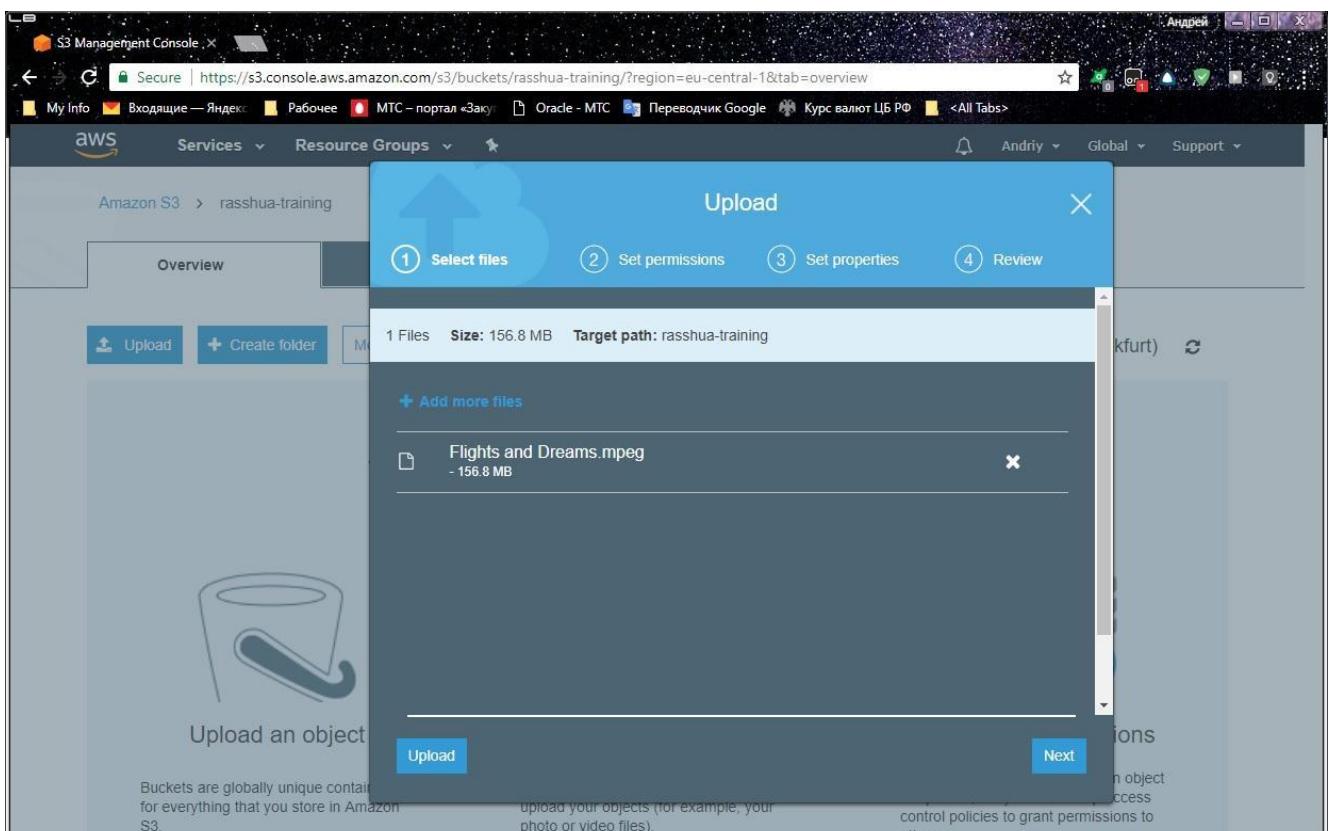
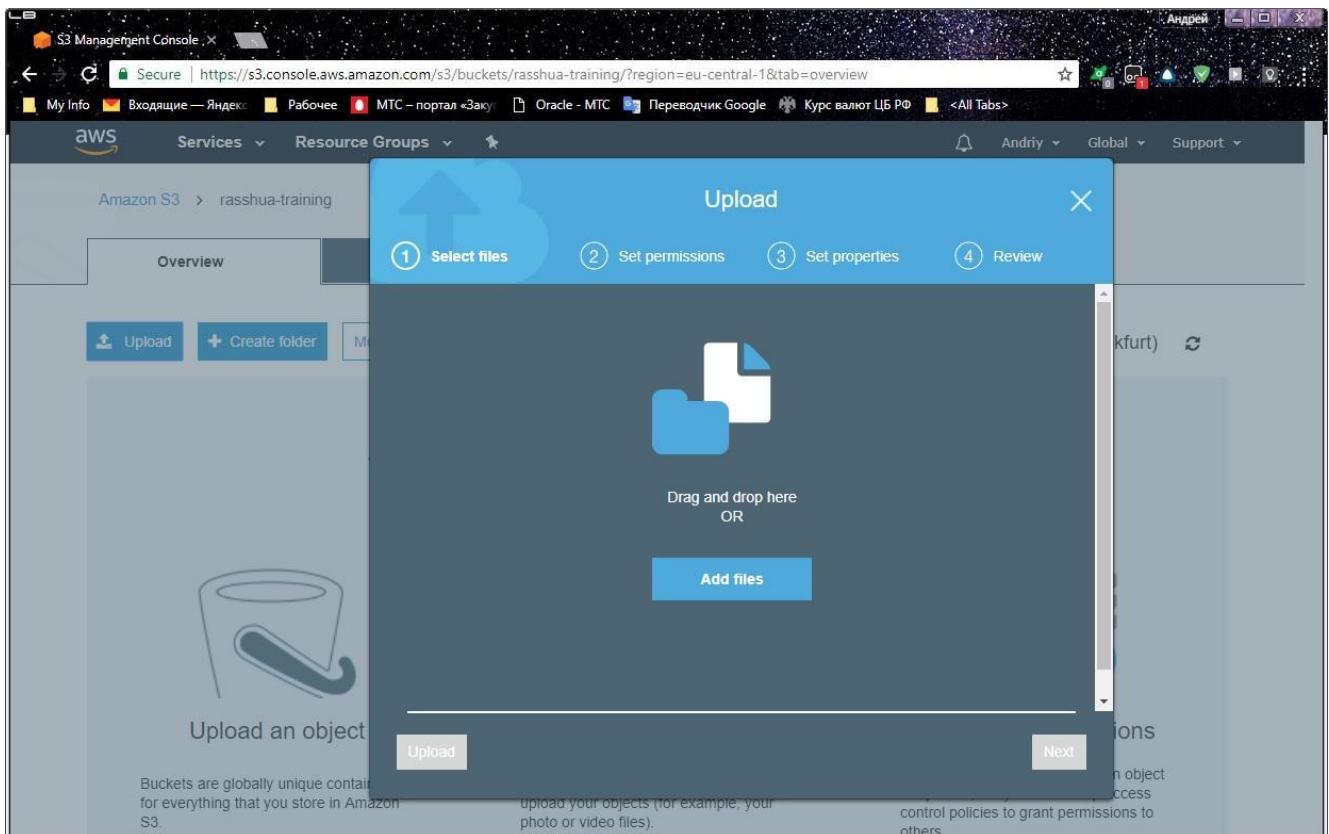
Set object properties
After you create a bucket, you can upload your objects (for example, your photo or video files).

Set object permissions
By default, the permissions on an object are private, but you can set up access control policies to grant permissions to others.

As you can see, you may upload the file or create “folder” in the bucket. Please refer to MODULE 2 training manual for bucket structuring details.

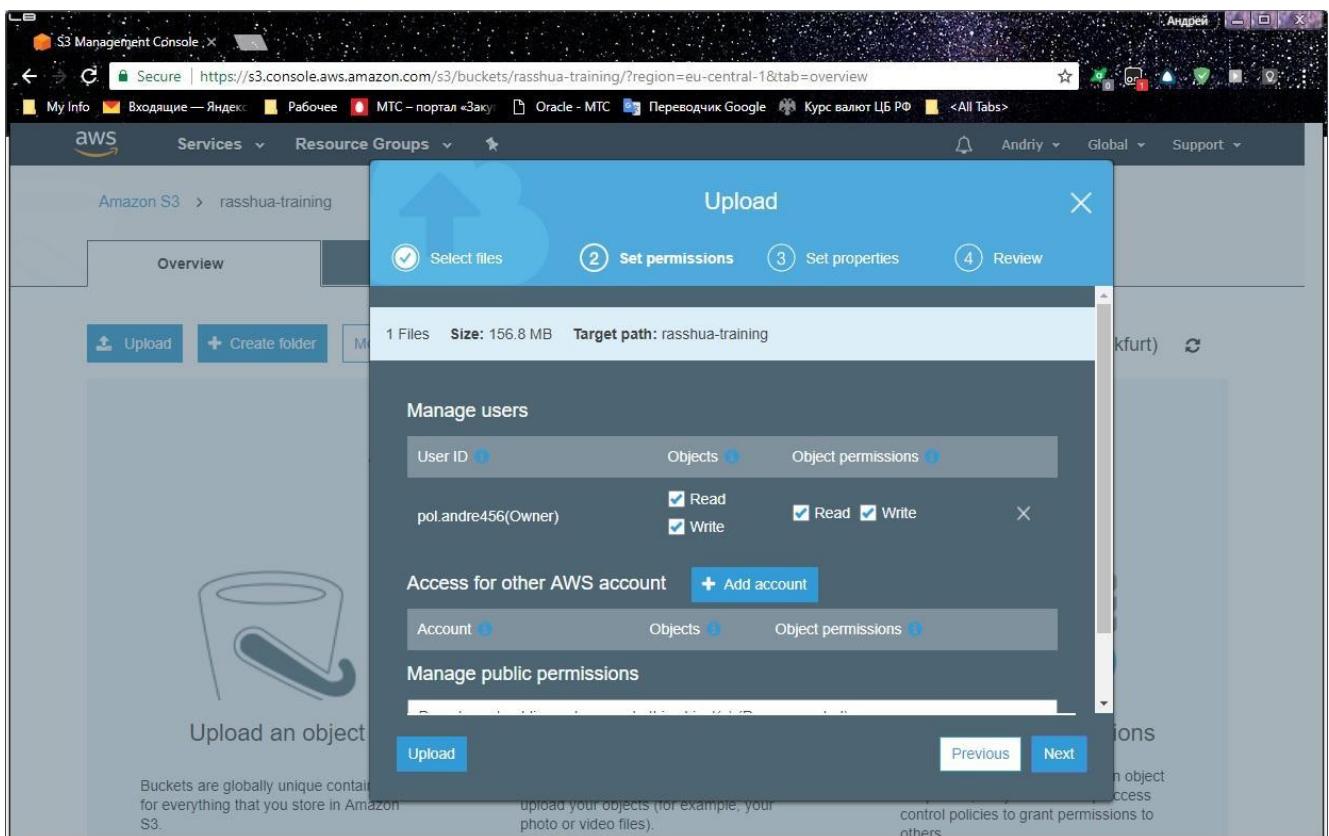
Click on “Upload” button to start file uploading process:

Drag & Drop the file or specify filename and location:

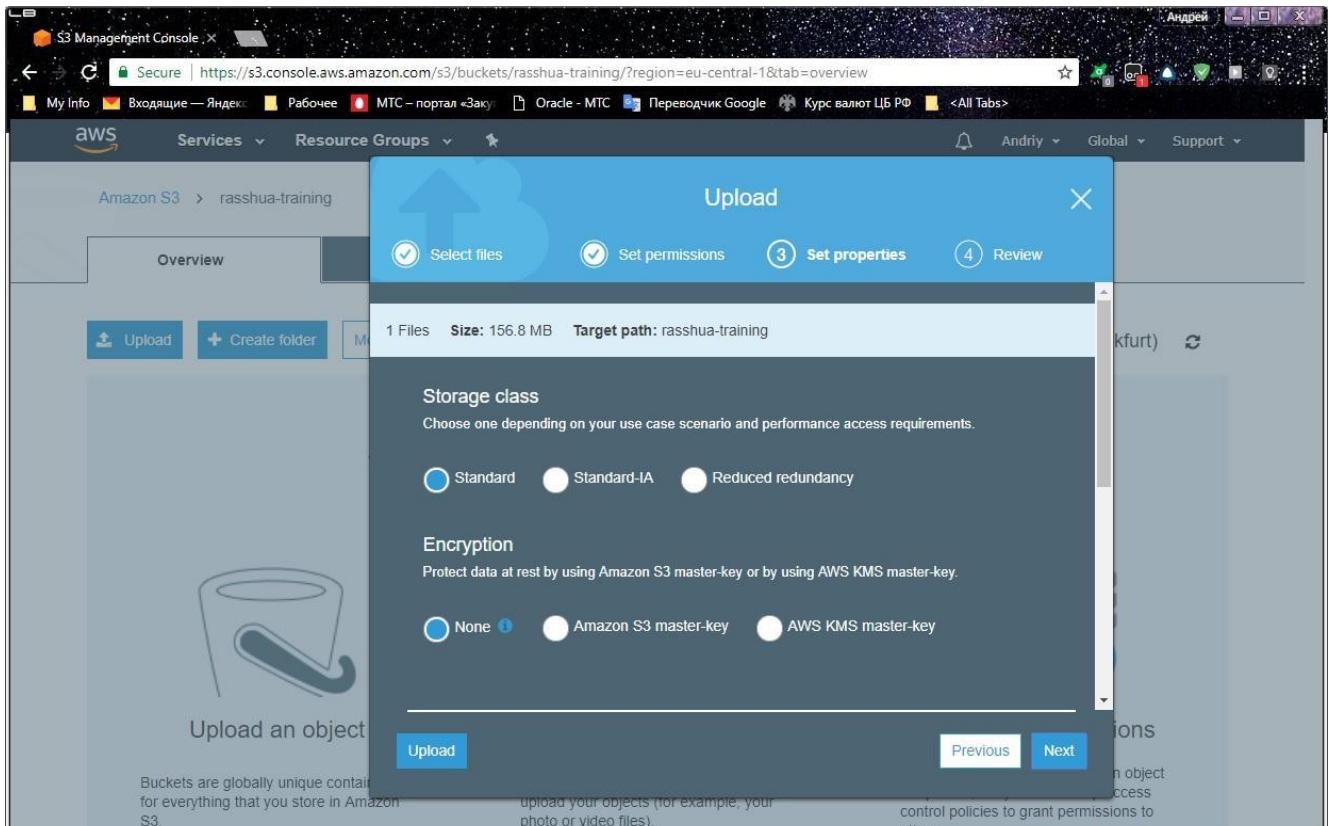


You may upload your file just now with default options.

Please click "Next" button at the bottom for reviewing of optional parameters:

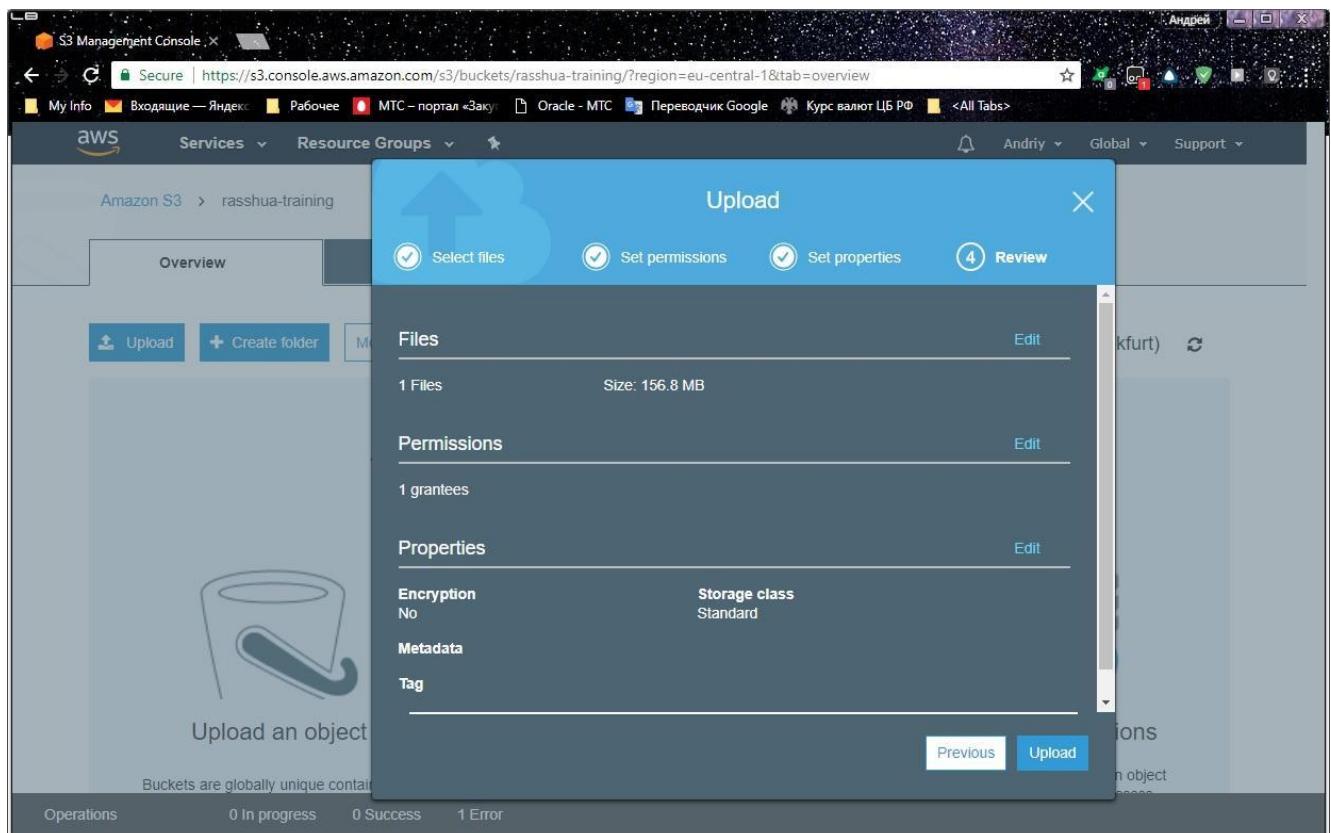


You may define permission options for your file here and it is similar to permission options for bucket.
Please click “Next” button at the bottom:

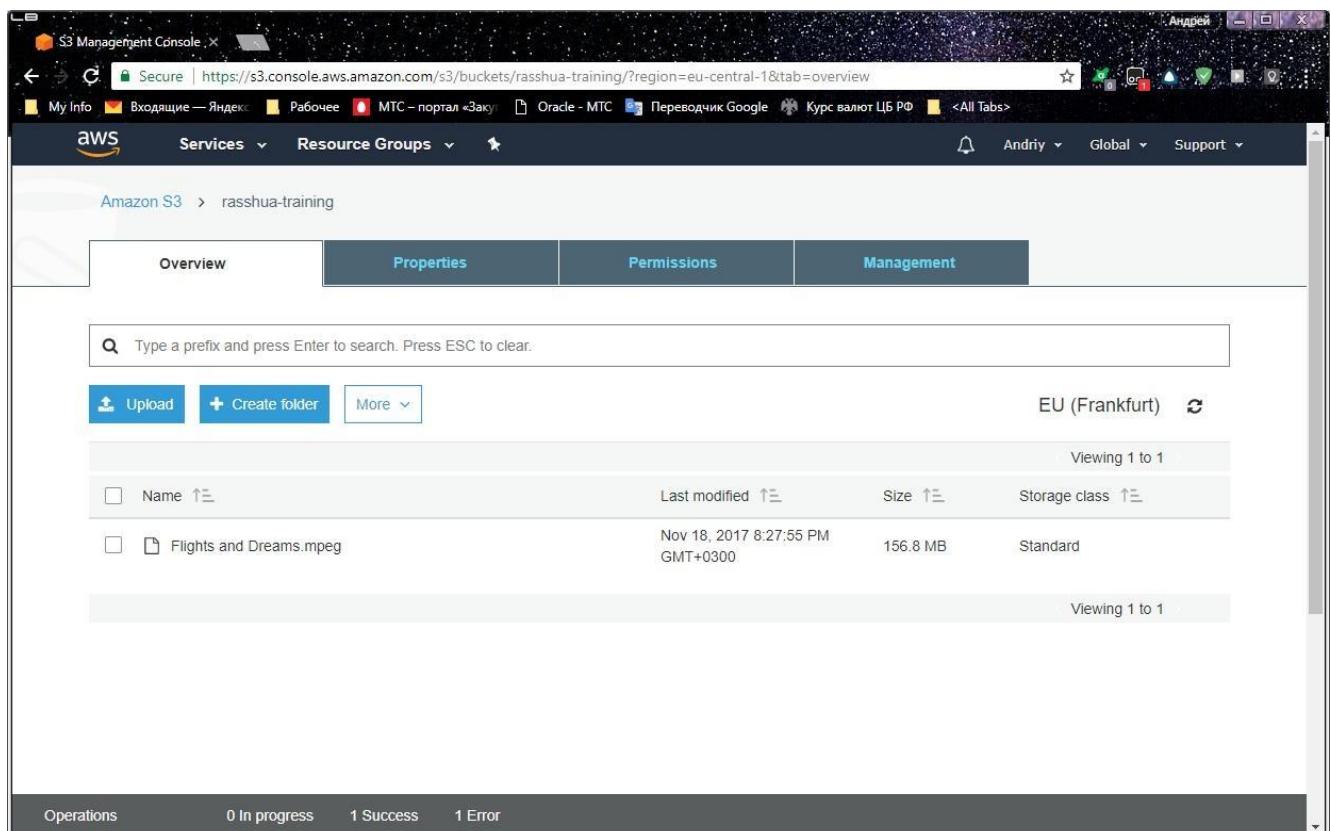


At the page you may set storage class, encryption and tags; you may define user metadata for your file as well.

Please click “Next” button at the bottom for file reviewing before uploading:



Please click “Upload” button at the bottom ant then find your file in the bucket after uploading:



3. Retrieve the file

Please select checkbox to the left on filename to access the relevant functions:

The screenshot shows the AWS S3 Management Console interface. On the left, there's a list of files in a bucket named 'rasshua-training'. One file, 'Flights and Dreams.mpeg', is selected, indicated by a blue background and a checked checkbox to its left. A modal window titled 'Flights and Dreams.mpeg' is overlaid on the list. This modal contains the following information:

Overview	Key	Flights and Dreams.mpeg
Size	164384772	
Expiration date	N/A	
Expiration rule	N/A	
ETag	4441f28a65f91ca3ccd78f60810ca896-10	
Last modified	Nov 18, 2017 8:27:55 PM GMT+0300	
Link	https://s3.eu-central-1.amazonaws.com/rasshua-training/Flights+and+Dreams.mpeg	

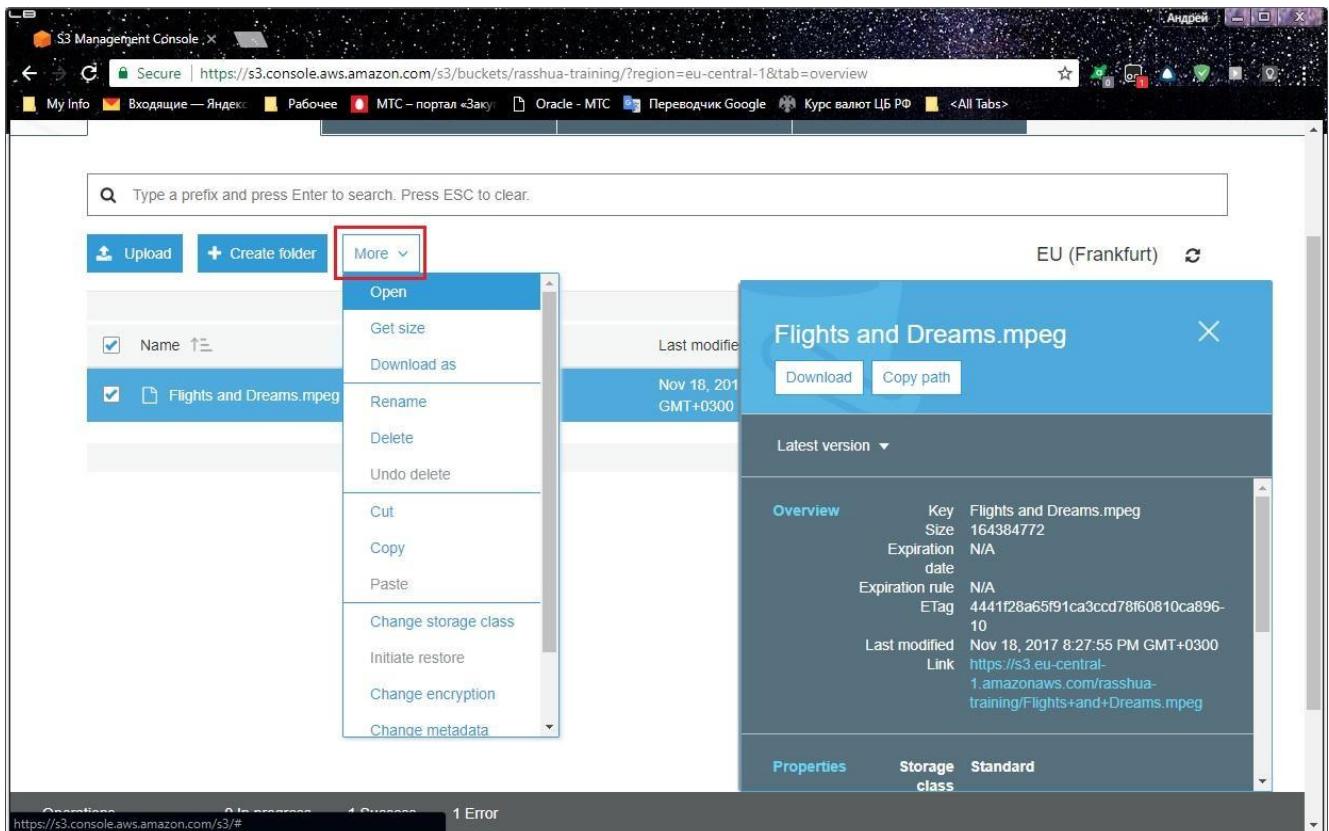
At the bottom of the modal, there are three tabs: 'Properties', 'Storage class', and 'Standard'.

You may use “Download” button If you want to store your file locally:

This screenshot shows the same 'Flights and Dreams.mpeg' file properties modal window as the previous one, but with a red box highlighting the 'Download' button at the top left of the modal. The rest of the modal content is identical to the previous screenshot.

The system will request you to specify file name and location as usual.

Please note that “More” menu item becomes available as soon as we select a file in the list. You may explore this menu item by yourself.



4. Delete the file and the bucket

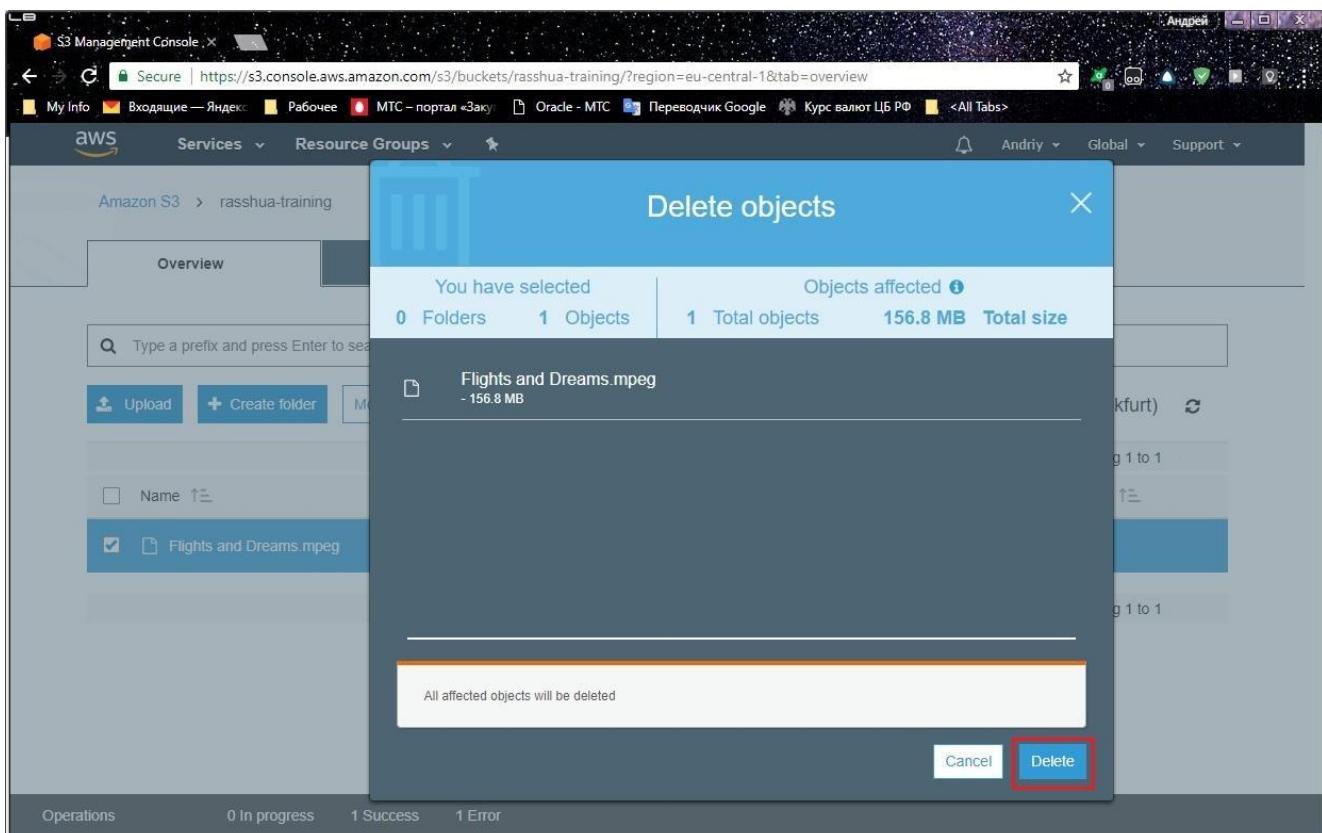


In fact it is the best practice to delete files and buckets which are not in use more. When you are deleting unused objects you preserve yourself against extra charge for them.

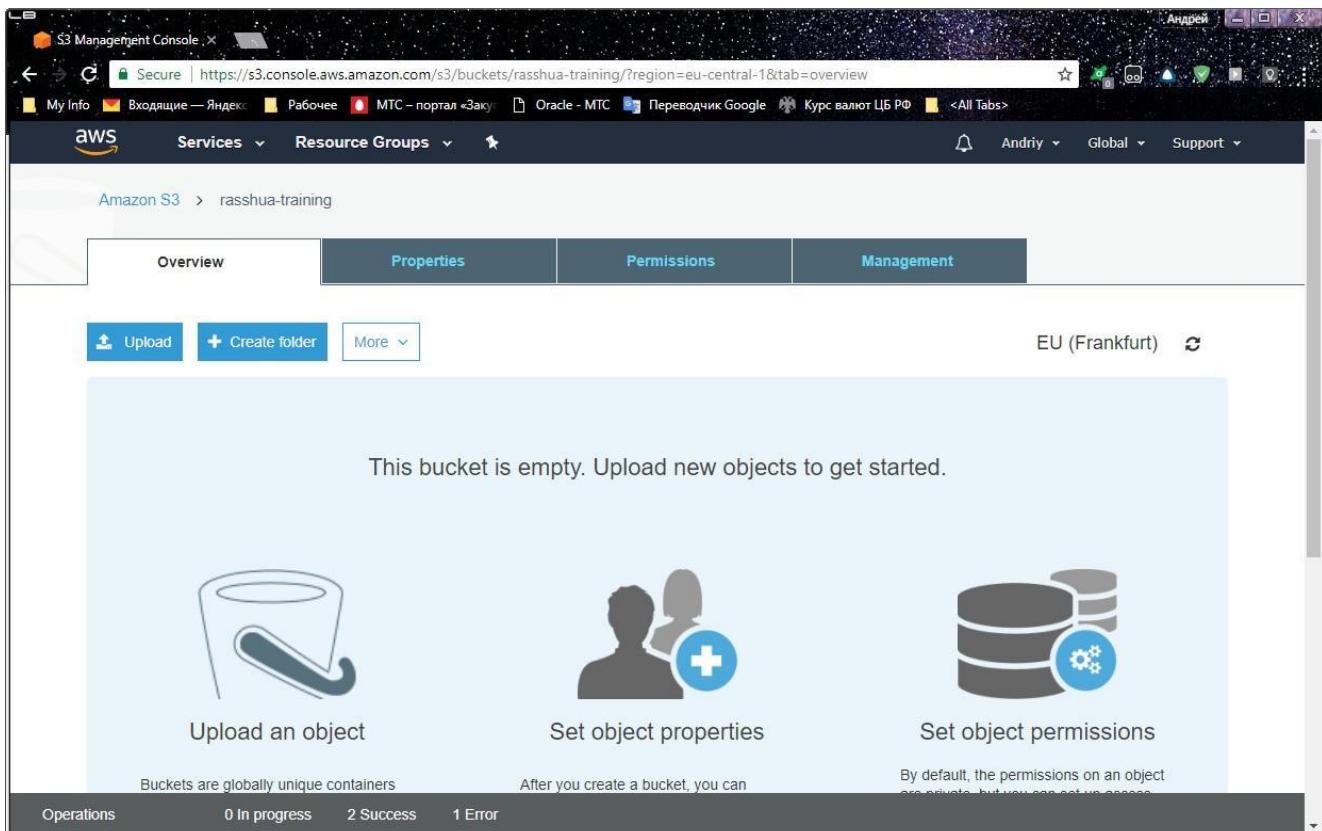
Select the file you want to delete in the bucket then issue the command “More” → “Delete”:

The screenshot shows the AWS S3 Management Console interface. A file named "Flights and Dreams.mpeg" is selected in the list. A context menu is open over the file, with the "More" option highlighted and a red box around it. The "Delete" option in the menu is also highlighted with a red box. To the right of the file list, a detailed view of the file is shown in a modal window, including its key, size, expiration date, and a direct link to the file.

Review and confirm the operation:



The file will disappear in the bucket:



Go up on Amazon S3 level, select the bucket you want to delete and click “Delete bucket” button:

The screenshot shows the AWS S3 Management Console. On the left, there's a list of buckets with 'rasshua-training' selected. In the center, a modal window displays the properties of the selected bucket. At the top of the modal is the bucket name 'rasshua-training'. Below it are sections for 'Properties', 'Permissions', and 'Management'. The 'Properties' section includes fields like 'Events', 'Versioning', 'MFA delete', etc. The 'Permissions' section shows the owner as 'pol.andre456'. The 'Management' section shows 'Lifecycle' as 'Disabled'. At the bottom of the modal, there are tabs for 'Operations', '0 In progress', '2 Success', and '1 Error'. The 'Delete bucket' button in the main S3 interface is also highlighted with a red box.

The system will request you to confirm deleting:

This screenshot shows the same AWS S3 Management Console interface as before, but with a different modal window. The new modal is titled 'Delete bucket' and contains a question: 'Are you sure you want to delete the bucket "rasshua-training" ?'. Below this is a text input field labeled 'Type the name of the bucket to confirm:' with the text 'rasshua-training' entered. A note at the bottom of the modal states: 'Amazon S3 buckets are unique. If you delete this bucket, you may lose the bucket name to another AWS user.' At the bottom right of the modal are 'Cancel' and 'Confirm' buttons. The background of the main interface shows the bucket list and its properties.

Please type the bucket name exactly in the input line.

5. Batch backing up to Amazon S3 using CLI

On this hands-on exercise we will try to operate Amazon AWS services using Amazon Command Line Interface (CLI). To be able to complete hands-on sequence you must have Amazon CLI application installed on your PC and you will need security credentials available for Amazon CLI configuration purpose.

Your security credential file may look like this:

Microsoft Excel - credentials_.csv			
	A	B	C
1	Access key ID	Secret access key	
2	AKJAIYCK3YKIYWSA8U5A	QmC55TensNQWDUqgb88EHivNkil/ijTZ6L+rIzTF	
3			
4			

 Amazon AWS CLI is available for downloading through the following links:

- For Windows 64-bit: <https://s3.amazonaws.com/aws-cli/AWSCLI64.msi>
- For Windows 32-bits: <https://s3.amazonaws.com/aws-cli/AWSCLI32.msi>
- For MAC OS: <http://docs.aws.amazon.com/cli/latest/userguide/installing.html#install-bundle-other-os>

Please open Command prompt (for Windows) or Terminal (for MAC) and perform initial configuring of your AWS CLI by determining Access Key ID, Secret Access Key, region and default output format:

	<pre>C:\Users\USER>aws configure AWS Access Key ID [None]:AKJAIYCK3YKIYWSA8U5A AWS Secret Access Key [None]: QmC55TensNQWDUqgb88EHivNkil/ijTZ6L+rIzTF Default region name [None]:us-east-1 Default output format [None]: C:\Users\USER></pre>
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Create the bucket by using CLI command:

	<pre>C:\Users\USER>aws s3 mb s3://my-100500-backup-bucket make_bucket: my-100500-backup-bucket C:\Users\USER></pre>
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	<p>Please remember that the bucket name (my-100500-backup-bucket in our example) must be unique around entire Amazon S3 services otherwise the system returns error message.</p>
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Open S3 Dashboard in AWS Console and ensure that your new bucket is listed there:

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with links for Services, Resource Groups, Global, and Support. A banner at the top of the main content area says "Amazon Glacier now offers expedited retrievals, typically in 1-5 minutes. Learn More »" and "Documentation". Below this, the "Amazon S3" service is selected. There's a search bar labeled "Search for buckets". Below the search bar are three buttons: "+ Create bucket", "Delete bucket", and "Empty bucket". To the right, it shows "5 Buckets" (with 1 Public), "3 Regions", and a "Discover the new console" link. The main table lists five buckets:

Bucket name	Access	Region	Date created
cf-templates-bllkmvdb5wg3-eu-central-1	Not public *	EU (Frankfurt)	Jul 16, 2017 7:25:13 PM
get.triangu.com	Public	US West (Oregon)	Aug 28, 2015 9:31:29 AM
my-100500-backup-bucket	Not public *	US East (N. Virginia)	Nov 20, 2017 5:09:37 PM
triangu-backups	Not public *	US West (Oregon)	Aug 29, 2015 6:49:44 PM

Upload your backup file into desired bucket:

```
$> C:\Users\USER>aws s3 cp "C:\Users\Backup example.zip" s3://my-100500-backup-bucket  
upload: ..\Backup example.zip to s3://my-100500-backup-bucket/Backup example.zip
```

In the output above "C:\Users\Backup example.zip" is the filename of your backup file. You may use original syntax of filename if name of file does not contain spaces.

Please ensure that your file is in the bucket using S3 Dashboard:

The screenshot shows the AWS S3 Management Console interface. At the top, there's a navigation bar with 'Services', 'Resource Groups', and user information. Below it, the 'Amazon S3' section shows the path 'my-100500-backup-bucket'. A tab bar at the top of the main content area includes 'Overview', 'Properties', 'Permissions', and 'Management', with 'Management' being the active tab. A search bar is present above the file list. Below the search bar are buttons for 'Upload', 'Create folder', and 'More'. The location 'US East (N. Virginia)' is shown with a refresh icon. The main content area displays a table of files. The first file, 'Backup example.zip', has a red oval drawn around it. The table columns are 'Name', 'Last modified', 'Size', and 'Storage class'. The file details are: Name: Backup example.zip, Last modified: Nov 20, 2017 5:32:57 PM GMT+0300, Size: 91.7 MB, Storage class: Standard.

If you want to download the file from your bucket and save it locally on PC you will use the same command with reversed arguments like this:

\$>	<pre>C:\Users\USER>aws s3 cp "s3://my-100500-backup-bucket/Backup example.zip" D:\Repository\ download: s3://my-100500-backup-bucket/Backup example.zip to D:\Repository\Backup example.zip C:\Users\USER></pre>
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You can delete your file in the bucket through the single command line:

\$>	<pre>C:\Users\USER>aws s3 rm "s3://my-100500-backup-bucket/Backup example.zip" delete: s3://my-100500-backup-bucket/Backup example.zip C:\Users\USER></pre>
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And finally you may delete the bucket if necessary:

\$>	<pre>C:\Users\USER>aws s3 rb s3://my-100500-backup-bucket remove_bucket: my-100500-backup-bucket C:\Users\USER></pre>
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