

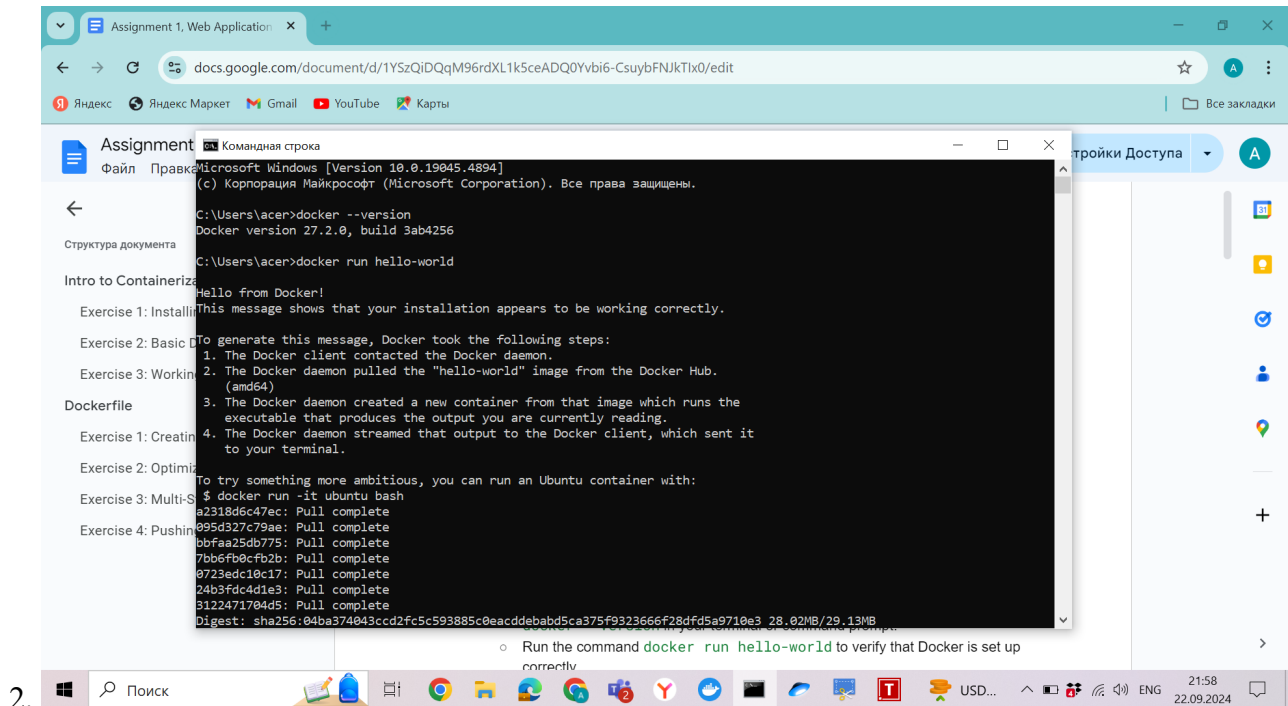
Assignment 1, Web Application Development

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Intro to Containerization: Docker

Exercise 1: Installing Docker

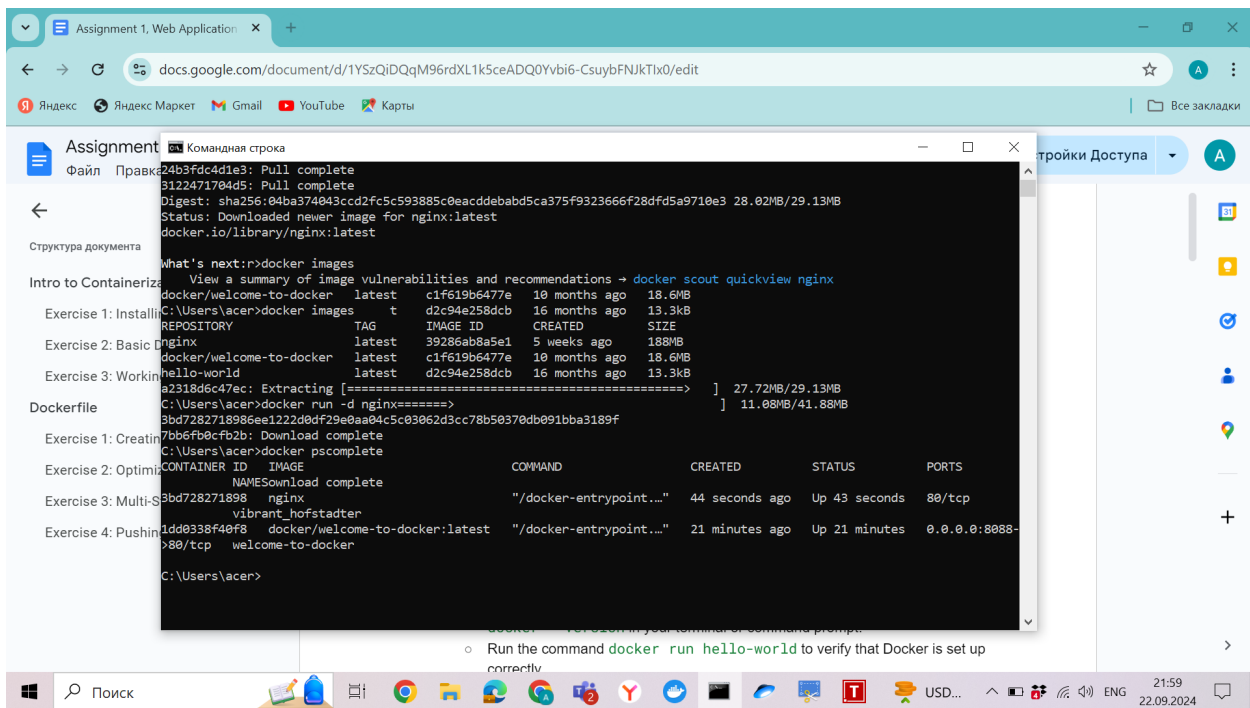
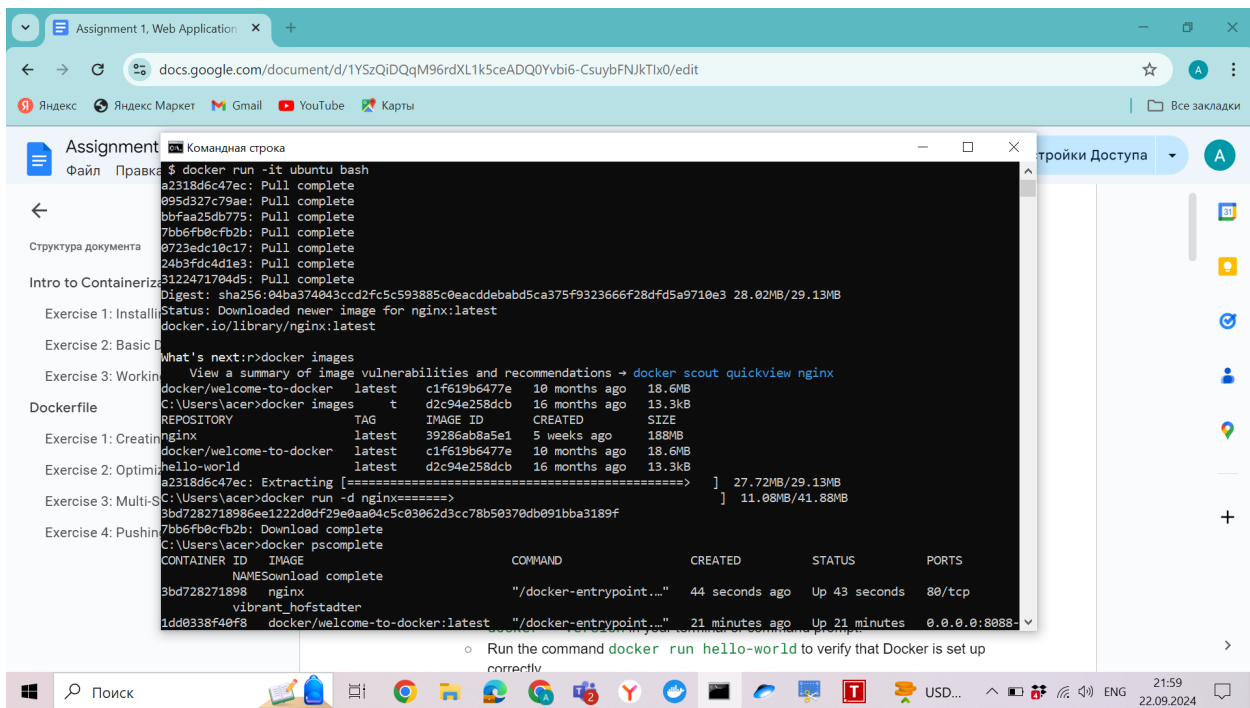
1. I installed Docker



3. Questions:

- Docker has several key components: Docker Engine (for building and running containers), Docker CLI (for interacting with Docker), Docker Daemon (manages containers), and Docker Hub (cloud image storage).
- Unlike traditional virtual machines, Docker uses containers that share the host OS kernel, making them smaller and faster to start.
- Ouptup starts with: Hello from Docker!
This message shows that your installation appears to be working correctly.

Exercise 2: Basic Docker Commands



Questions:

- docker pull downloads the image, and docker run starts a container from the image.
- by using the docker ps command to display the ID and status of running containers.
- a stopped container isn't deleted and can be restarted using the docker start <container-id> command.

Exercise 3: Working with Docker Containers

Assignment 1, Web Application

docs.google.com/document/d/1YSzQiDQqM96rdXL1k5ceADQ0Yvbi6-CsuybFNjKtIx0/edit#heading=h.pcyd1du1p3we

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Командная строка

Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest

What's next: > docker images
View a summary of image vulnerabilities and recommendations → [docker scout quickview nginx](#)

docker/welcome-to-docker latest c1f619b6477e 10 months ago 18.6MB
C:\Users\acer> docker images d2c94e258dcb 16 months ago 13.3kB

REPOSITORY TAG IMAGE ID CREATED SIZE
docker/welcome-to-docker latest 39286ab8a5e1 5 weeks ago 188MB
docker/welcome-to-docker latest c1f619b6477e 10 months ago 18.6MB
hello-world latest d2c94e258dcb 16 months ago 13.3kB

=====] 27.72MB/29.13MB
] 11.08MB/41.88MB

C:\Users\acer> docker run -d nginx=====

8bd7282718986ee1222d0d4f29e0aa04c5c03062d3cc78b50370db091bba3189f

7bb6fb0cfb2b: Download complete

C:\Users\acer> docker ps complete

CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS

8bd728271898 nginx "/docker-entrypoint..." 44 seconds ago Up 43 seconds 80/tcp

1dd0338f40f8 docker/welcome-to-docker:latest "/docker-entrypoint..." 21 minutes ago Up 21 minutes 0.0.0.0:8088-

880/tcp welcome-to-docker

C:\Users\acer> docker run -d -p 8080:80 nginx

417ed1c2e3ea9fbfb97d61cd7dad9b2299e06b7c006d44b8e3781e39dd279e6c

C:\Users\acer>

Exercise 1: Creating a Simple Dockerfile

Поиск

18°C

22:02
22.09.2024

Assignment 1, Web Application

Welcome to nginx!

localhost:8080

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Все закладки

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

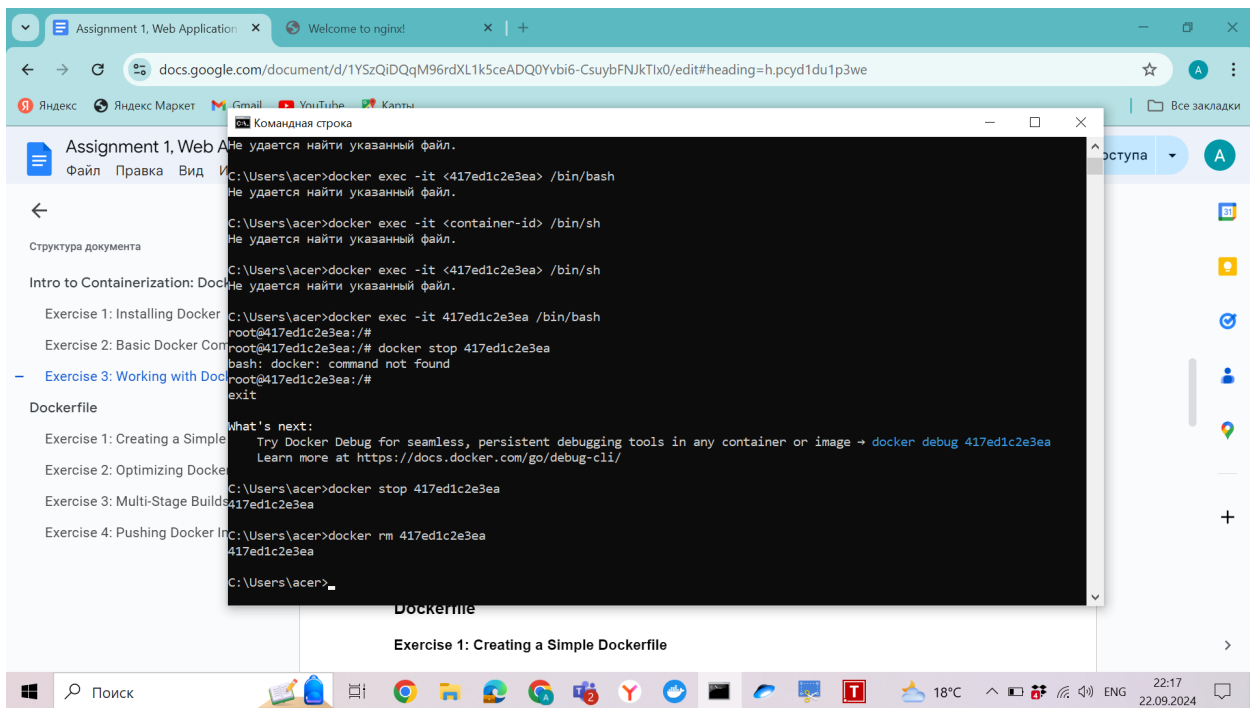
For online documentation and support please refer to [nginx.org](#).
Commercial support is available at [nginx.com](#).

Thank you for using nginx.

Поиск

18°C

22:03
22.09.2024

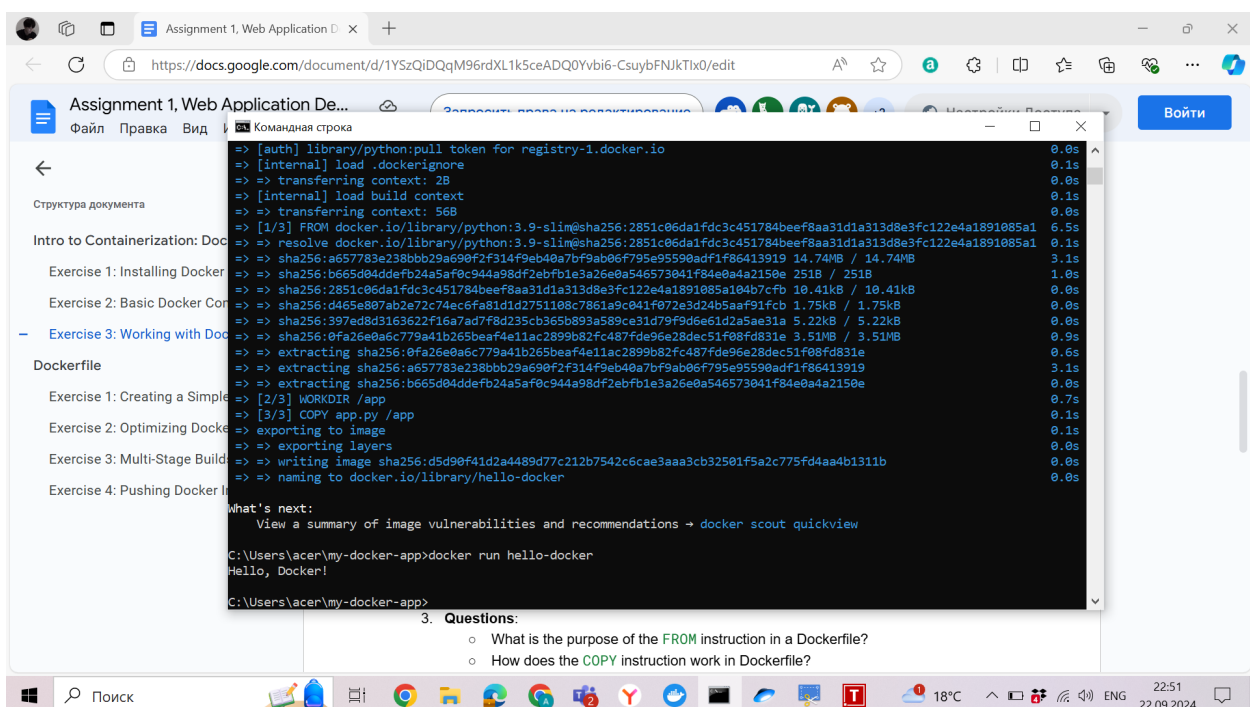


Questions:

- Port mapping redirects requests from specific host ports to ports in the container, allowing access to container services from the outside network.
- The docker exec command allows executing commands inside a running container.
- A stopped container can be removed with docker rm to ensure it no longer consumes resources.

Dockerfile

Exercise 1: Creating a Simple Dockerfile



Questions

- The FROM instruction specifies the base image for the container.
- COPY copies files from the host to the container.
- CMD specifies the default command that can be overridden, while ENTRYPOINT is a mandatory command that always runs.

Exercise 2: Optimizing Dockerfile with Layers and Caching

Questions:

- Docker layers are intermediate steps created during the image build process. Each layer is stored separately, and if it hasn't changed, Docker can use the cache, which reduces build time and image size.
- Docker caches each layer. If there are no changes to a particular layer, Docker uses the cache, which significantly speeds up the build process.
- The .dockerignore file works similarly to .gitignore and specifies files and directories that should not be included in the Docker image. This helps reduce image size and speed up the build process.

Exercise 3: Multi-Stage Builds

Questions:

- They create lighter images by excluding unnecessary build tools and files.
- They don't include temporary files and build tools in the final image.
- When you want to minimize image size and separate build and runtime environments.

Exercise 4: Pushing Docker Images to Docker Hub

Questions:

- It's for storing and sharing Docker images.
- Use the docker tag command to link the image to Docker Hub.
- Log in to Docker (docker login), tag the image (docker tag), push it (docker push), verify on Docker Hub