

Docker

UAI/755

Michal Němeček, Matěj Petrovský

Instalace (Ubuntu)

```
1 sudo apt update  
2 sudo apt install ca-certificates curl  
3 sudo install -m 0755 -d /etc/apt/keyrings  
4 sudo curl -fsSL https://download.docker.com/linux/ubuntu/  
gpg -o /etc/apt/keyrings/docker.asc  
5 sudo chmod a+r /etc/apt/keyrings/docker.asc
```

```
1 sudo tee /etc/apt/sources.list.d/docker.sources <<EOF
2 Types: deb
3 URIs: https://download.docker.com/linux/ubuntu
4 Suites: $(. /etc/os-release && echo "${UBUNTU_CODENAME}:-$VERSION_CODENAME")
5 Components: stable
6 Signed-By: /etc/apt/keyrings/docker.asc
7 EOF
8 sudo apt update
```

```
1 sudo apt install \
2     docker-ce \
3     docker-ce-cli \
4     containerd.io \
5     docker-buildx-plugin \
6     docker-compose-plugin
```

Instalace (Arch linux)

```
1 sudo pacman -Sy docker docker-compose
```

Instalace (ostatní)

Instalace (ostatní)

Instalace (ostatní)



Příklad 1: Python

Python (interaktivní konzole)

Příklad 1: Python

- stažení image
 - ▶ docker pull base/python:latest

- spuštění kontejneru

```
▶ docker run -it --name python python:latest
```

Interaktivní + TTY název kontejneru image

Python (interaktivní konzole)

Příklad 1: Python

```
~ > docker pull python:latest
latest: Pulling from library/python
13cc39f8244a: Pull complete
e3143549f2b8: Pull complete
72e8e93b0d01: Pull complete
23d55a674b2e: Pull complete
8f5fb10be9d4: Pull complete
2fbf02c04055: Pull complete
149075fccccd1: Pull complete
Digest: sha256:e6b1f7011589cc717a5112e6fdb56217e9e734a57e4cb50216e912b068b392a8
Status: Downloaded newer image for python:latest
docker.io/library/python:latest
~ > docker run -it --name python python:latest
Python 3.14.0 (main, Nov 4 2025, 14:36:43) [GCC 14.2.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello, world!")
Hello, world!
>>> quit
~ >
```

Příklad 2: vytvoření image

Dockerfile

Příklad 2: vytvoření image

```
1 FROM nginx  
2 COPY ./src/ /usr/share/nginx/html
```

Sestavení image

Příklad 2: vytvoření image

```
~/docker
› docker build -t myweb .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

Sending build context to Docker daemon 731.1kB
Step 1/2 : FROM nginx
latest: Pulling from library/nginx
d7ecded7702a: Pulling fs layer
266626526d42: Pulling fs layer
320b0949be89: Pulling fs layer
d921c57c6a81: Pulling fs layer
9def903993e4: Pulling fs layer
52bc359bcd7: Pulling fs layer
e2f8e296d9df: Pulling fs layer
d921c57c6a81: Waiting
52bc359bcd7: Waiting
9def903993e4: Waiting
e2f8e296d9df: Waiting
320b0949be89: Verifying Checksum
320b0949be89: Download complete
d921c57c6a81: Verifying Checksum
d921c57c6a81: Download complete
9def903993e4: Download complete
52bc359bcd7: Verifying Checksum
```

Sestavení image

Příklad 2: vytvoření image

```
52bc359bcbd7: Download complete
266626526d42: Verifying Checksum
266626526d42: Download complete
e2f8e296d9df: Download complete
d7ecded7702a: Verifying Checksum
d7ecded7702a: Download complete
d7ecded7702a: Pull complete
266626526d42: Pull complete
320b0949be89: Pull complete
d921c57c6a81: Pull complete
9def903993e4: Pull complete
52bc359bcbd7: Pull complete
e2f8e296d9df: Pull complete
Digest: sha256:1beed3ca46acebe9d3fb62e9067f03d05d5bfa97a00f30938a0a3580563272ad
Status: Downloaded newer image for nginx:latest
    → d261fd19cb63
Step 2/2 : COPY ./src/ /usr/share/nginx/html
    → 230761c29914
Successfully built 230761c29914
Successfully tagged myweb:latest
~/docker [Took 10s]
>
```

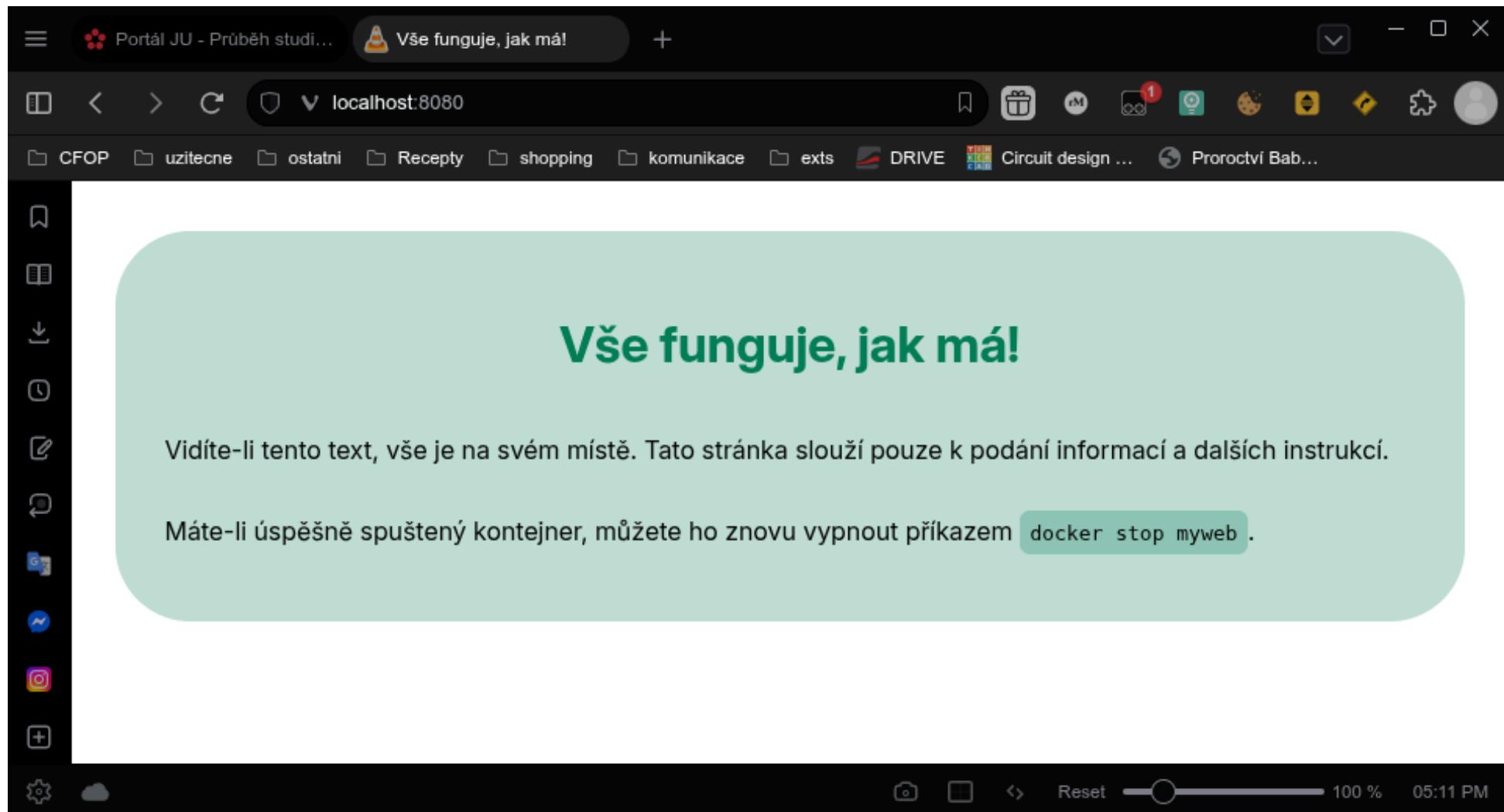
Vytvoření a spuštění kontejneru

Příklad 2: vytvoření image

```
~/docker
› docker create --name myweb -p 8080:80 myweb:latest
03128142a4e57e3e21d1734612d67ca5110cc3215a270d05c3d2fb635c2052da
~/docker
› docker start myweb
myweb
~/docker
›
```

Vytvoření a spuštění kontejneru

Příklad 2: vytvoření image



Příklad 3: Docker Compose

PHPMyAdmin + MySQL

Příklad 3: Docker Compose

```
1 name: example
2 services:
3   db:
4     image: mysql:latest
5     restart: always
6     hostname: sqlsrv
7     environment:
8       MYSQL_USER: "admin"
9       MYSQL_PASSWORD: "abcdef"
10      MYSQL_ROOT_PASSWORD: "abcdef"
11      MYSQL_DATABASE: "exampledb"
12
13   adminer:
14     image: adminer:latest
15     restart: always
16     ports:
17       - 8080:8080
18     depends_on:
19       - db
```

Spuštění

Příklad 3: Docker Compose

```
~/docker/compose
> docker compose up
[+] Running 14/29
  db [====] 165.5MB / 277.5MB Pulling
    ✓ 023a182c62a0 Pull complete          17.5s
    ✓ f5f78fcfd9ccb Pull complete        7.9s
    ✓ 494c372d15c3 Pull complete        8.2s
    ✓ dceea80f7340c Pull complete        8.2s
    ✓ 480d01bd7a6a Pull complete        8.5s
    ✓ 834e15e3ed24 Pull complete        8.6s
    ✓ c276de9b5571 Pull complete        8.6s
    ✓ 0cd145fbb449 Pull complete        13.0s
    ✓ 5a3f7744d0e7 Downloading [=====]  13.1s
    ✓ 21aa606d8d58 Download complete     15.3s
  : 8.8s
  : adminer [====] Pulling
    ✓ 2d35ebdb57d9 Pull complete          17.5s
    ✓ 1329c5084d62 Pull complete        11.9s
    ✓ fc671ef6f9c8 Pull complete        13.0s
    ✓ f413b510cd4a Pull complete        13.0s
    ✓ aa5a2611d454 Downloading [=====]  13.3s
    ✓ ad217014f3d0 Download complete     15.3s
    ✓ 800a2b6306a0 Waiting              14.4s
    : 15.3s
    : fb47194af07c Waiting              15.3s
    : 4cb8c0d2cc28 Waiting              15.3s
    : 5ed107248614 Waiting              15.3s
    : 5500e10789f2 Waiting              15.3s
    : 75f4e19fb4b8 Waiting              15.3s
    : 4f4fb700ef54 Waiting              15.3s
    : e06f17d8d87f Waiting              15.3s
    : c812d71d0a92 Waiting              15.3s
    : 80e636f8651f Waiting              15.3s
    : 3a418472befc Waiting              15.3s
```

```
[+] Running 2/2
 ✓ Container example-db-1      Created          0.0s
 ✓ Container example-adminer-1 Created          0.0s
Attaching to adminer-1, db-1
db-1  | 2025-11-15 17:40:25+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 9.5.0-1.el9 started.
adminer-1 | [Sat Nov 15 17:40:25 2025] PHP 8.4.14 Development Server (http://[::]:8080) started
db-1    | 2025-11-15 17:40:25+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
db-1    | 2025-11-15 17:40:25+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 9.5.0-1.el9 started.
db-1    | 2025-11-15 17:40:25+00:00 [Note] [Entrypoint]: Initializing database files
db-1    | 2025-11-15T17:40:25.729191Z 0 [System] [MY-015017] [Server] MySQL Server Initialization - start.
db-1    | 2025-11-15T17:40:25.730642Z 0 [System] [MY-013169] [Server] /usr/sbin/mysqld (mysqld 9.5.0) initializing
g of server in progress as process 80
db-1    | 2025-11-15T17:40:25.742348Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
db-1    | 2025-11-15T17:40:26.003165Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
db-1    | 2025-11-15T17:40:27.203481Z 6 [Warning] [MY-010453] [Server] root@localhost is created with an empty pa
ssword ! Please consider switching off the --initialize-insecure option.
db-1    | 2025-11-15T17:40:29.871334Z 0 [System] [MY-015018] [Server] MySQL Server Initialization - end.
db-1    | 2025-11-15 17:40:29+00:00 [Note] [Entrypoint]: Database files initialized
db-1    | 2025-11-15 17:40:29+00:00 [Note] [Entrypoint]: Starting temporary server
db-1    | 2025-11-15T17:40:29.932459Z 0 [System] [MY-015015] [Server] MySQL Server - start.
db-1    | 2025-11-15T17:40:30.140881Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 9.5.0) starting as
 process 119
db-1    | 2025-11-15T17:40:30.140914Z 0 [System] [MY-015590] [Server] MySQL Server has access to 12 logical CPUs.
db-1    | 2025-11-15T17:40:30.140937Z 0 [System] [MY-015590] [Server] MySQL Server has access to 16033136640 byte
s of physical memory.
db-1    | 2025-11-15T17:40:30.159143Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
db-1    | 2025-11-15T17:40:30.418094Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
db-1    | 2025-11-15T17:40:30.729473Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
db-1    | 2025-11-15T17:40:30.729505Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TL
S. Encrypted connections are now supported for this channel.
db-1    | 2025-11-15T17:40:30.732310Z 0 [Warning] [MY-011810] [Server] Insecure configuration for --pid-file: Loc
ation '/var/run/mysqld' in the path is accessible to all OS users. Consider choosing a different directory.
```

```
db-1    | 2025-11-15T17:40:30.754057Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Socket: /var/run/mysqld/mysqlx.sock
db-1    | 2025-11-15T17:40:30.754176Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '9.5.0' socket: '/var/run/mysqld/mysqld.sock' port: 0 MySQL Community Server - GPL.
db-1    | 2025-11-15 17:40:30+00:00 [Note] [Entrypoint]: Temporary server started.
db-1    | '/var/lib/mysql/mysql.sock' → '/var/run/mysqld/mysqld.sock'
db-1    | Warning: Unable to load '/usr/share/zoneinfo/iso3166.tab' as time zone. Skipping it.
db-1    | Warning: Unable to load '/usr/share/zoneinfo/leap-seconds.list' as time zone. Skipping it.
db-1    | Warning: Unable to load '/usr/share/zoneinfo/leapseconds' as time zone. Skipping it.
db-1    | Warning: Unable to load '/usr/share/zoneinfo/tzdata.zi' as time zone. Skipping it.
db-1    | Warning: Unable to load '/usr/share/zoneinfo/zone.tab' as time zone. Skipping it.
db-1    | Warning: Unable to load '/usr/share/zoneinfo/zone1970.tab' as time zone. Skipping it.
db-1    | 2025-11-15 17:40:32+00:00 [Note] [Entrypoint]: Creating database exampledb
db-1    | 2025-11-15 17:40:32+00:00 [Note] [Entrypoint]: Creating user admin
db-1    | 2025-11-15 17:40:32+00:00 [Note] [Entrypoint]: Giving user admin access to schema exampledb
db-1
db-1    | 2025-11-15 17:40:32+00:00 [Note] [Entrypoint]: Stopping temporary server
db-1    | 2025-11-15T17:40:32.448037Z 14 [System] [MY-013172] [Server] Received SHUTDOWN from user root. Shutting down mysqld (Version: 9.5.0).
db-1    | 2025-11-15T17:40:33.104552Z 0 [System] [MY-010910] [Server] /usr/sbin/mysqld: Shutdown complete (mysqld 9.5.0) MySQL Community Server - GPL.
db-1    | 2025-11-15T17:40:33.104566Z 0 [System] [MY-015016] [Server] MySQL Server - end.
db-1    | 2025-11-15 17:40:33+00:00 [Note] [Entrypoint]: Temporary server stopped
db-1
db-1    | 2025-11-15 17:40:33+00:00 [Note] [Entrypoint]: MySQL init process done. Ready for start up.
db-1
db-1    | 2025-11-15T17:40:33.473034Z 0 [System] [MY-015015] [Server] MySQL Server - start.
db-1    | 2025-11-15T17:40:33.691161Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 9.5.0) starting as process 1
db-1    | 2025-11-15T17:40:33.691193Z 0 [System] [MY-015590] [Server] MySQL Server has access to 12 logical CPUs.
db-1    | 2025-11-15T17:40:33.691216Z 0 [System] [MY-015590] [Server] MySQL Server has access to 16033136640 bytes of physical memory.
```

```
db-1      | 2025-11-15T17:40:33.699068Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
db-1      | 2025-11-15T17:40:33.950652Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
db-1      | 2025-11-15T17:40:34.207164Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
db-1      | 2025-11-15T17:40:34.207191Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TL
S. Encrypted connections are now supported for this channel.
db-1      | 2025-11-15T17:40:34.209676Z 0 [Warning] [MY-011810] [Server] Insecure configuration for --pid-file: Loc
ation '/var/run/mysqld' in the path is accessible to all OS users. Consider choosing a different directory.
db-1      | 2025-11-15T17:40:34.236136Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Bind-addres
s: '::' port: 33060, socket: /var/run/mysqld/mysqlx.sock
db-1      | 2025-11-15T17:40:34.236219Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Ve
rsion: '9.5.0'  socket: '/var/run/mysqld/mysqld.sock'  port: 3306  MySQL Community Server - GPL.
```

W Enable Watch

The screenshot shows a web browser window with the URL `localhost:8080/index.php`. The page is titled "Přihlásit se - Adminer". On the left, there is a sidebar with various icons and a language selection dropdown set to "Čeština". The main area contains a form for logging into a MySQL/MariaDB database. The fields are as follows:

Systém	MySQL / MariaDB
Server	sqlsrv
Uživatel	admin
Heslo
Databáze	exampledb

Below the form are two buttons: "Přihlásit se" (Login) and "Trvalé přihlášení" (Persistent login). The status bar at the bottom right shows "100 % 06:47 PM".

The screenshot shows the Adminer web-based MySQL management tool running in a browser window. The URL in the address bar is `localhost:8080/index.php`. The title bar of the browser says "Databáze: exampledb - sqls". The Adminer sidebar on the left shows various icons for database management, with "Adminer 5.4.1" and "DB: exampledb" selected. The main content area is titled "Databáze: exampledb". It displays several tabs: "Pozměnit databázi", "Schéma databáze", and "Oprávnění". Below these tabs, under the heading "Tabulky a pohledy", it says "Žádné tabulky." (No tables). There are buttons to "Vytvořit tabulku" (Create table) and "Vytvořit pohled" (Create view). Under "Procedure a funkce", there are buttons for "Vytvořit proceduru" (Create procedure) and "Vytvořit funkci" (Create function). The bottom right corner of the browser window shows the zoom level at 100% and the time as 06:47 PM.

Rekapitulace

Co jsme dnes udělali?

Rekapitulace

- spustili jsme interaktivní kontejner s Pythonem
- podstrčili jsme složku do Nginx image
- zaručili jsme, že se Adminer nespustí bez databáze

Děkujeme za pozornost
