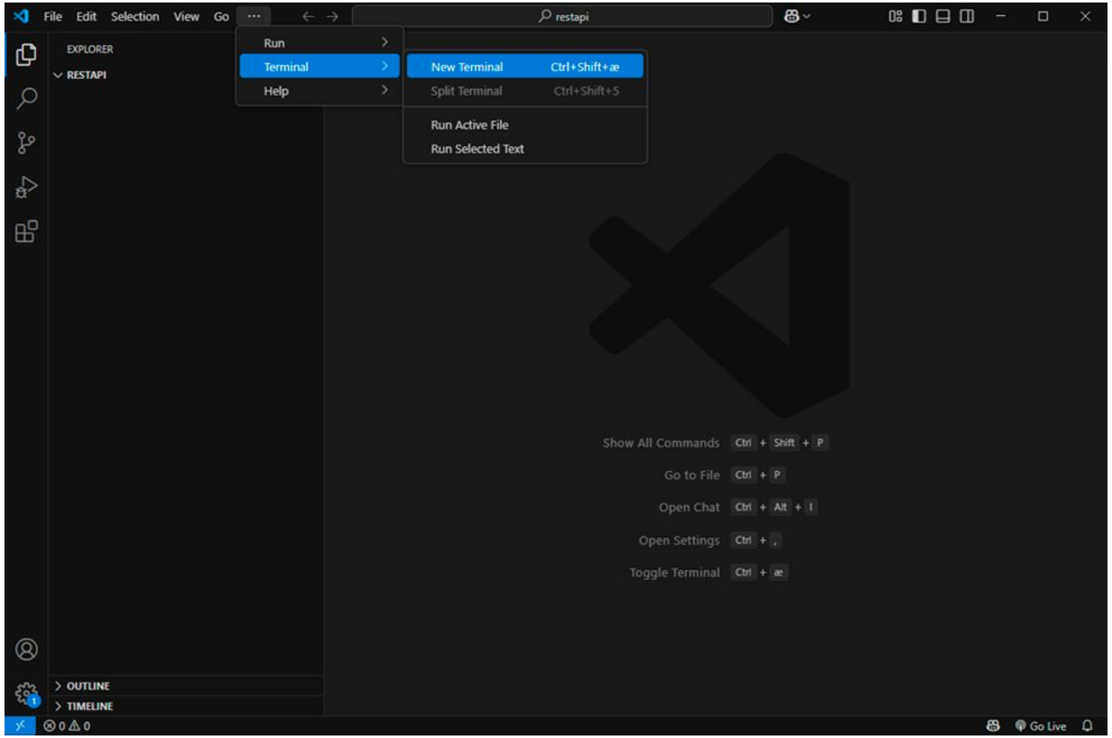
Python REST API

Setup

- Installer Python fx Microsoft Store
- Åben Terminal
- Åben VS Code
- Installer Python Extension



Virtuelt miljø

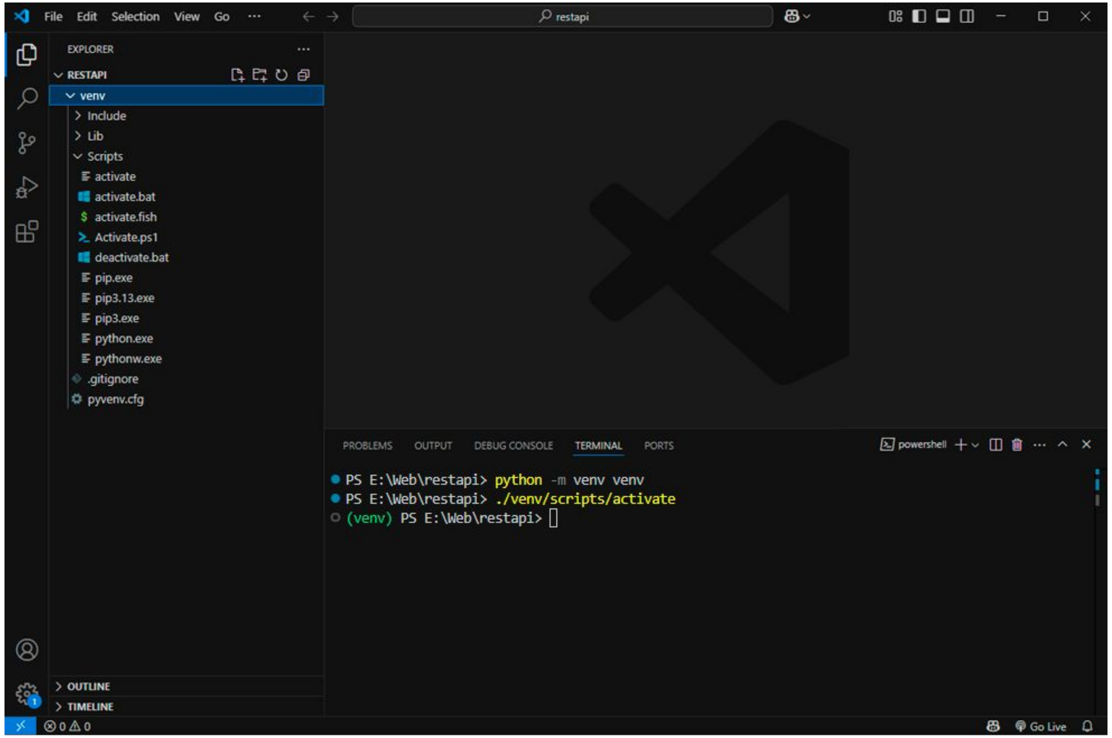
- Opret og aktivér virtuelt miljø

  python -m venv name

  - Lokal installation af Python pakker
  - Isoleret pakkehåndtering
- Aktivér miljø:

  ./name/scripts/activate

  - Nu bruger vi python og pip i dette miljø

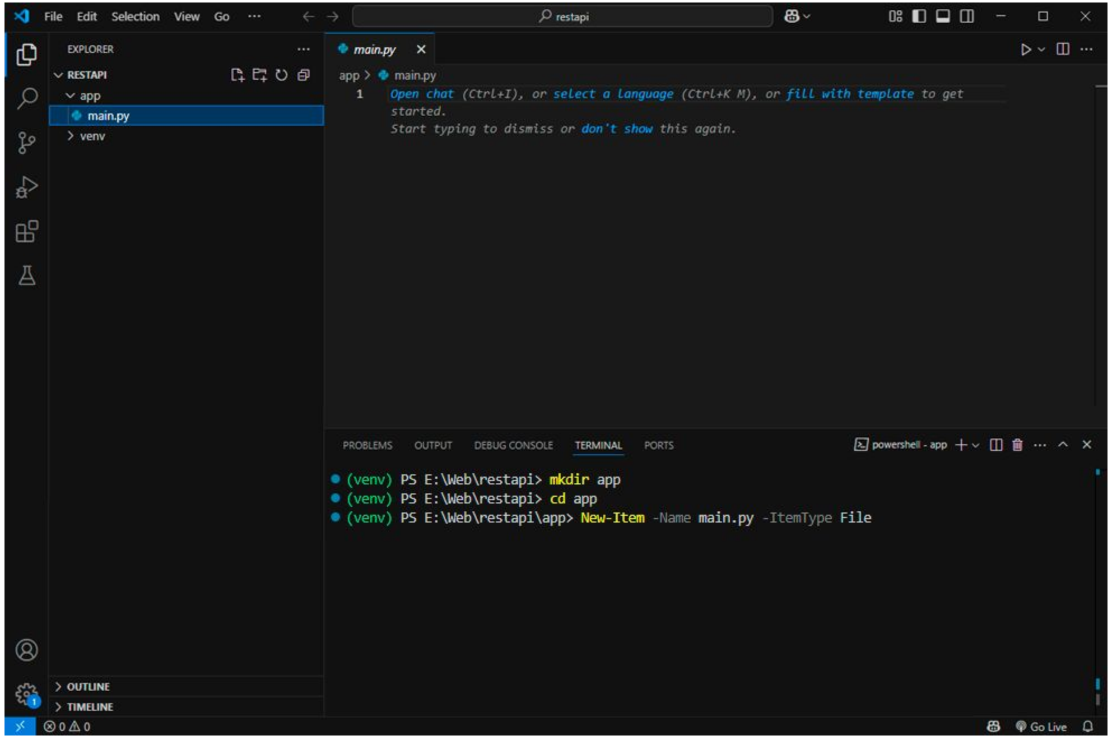


```
PS E:\Web\restapi> python -m venv venv
PS E:\Web\restapi> ./venv/scripts/activate
(venv) PS E:\Web\restapi>
```

Opret projektstruktur

- app mappe
- main.py fil ← API kode

  New-Item -Name main.py
  -ItemType File



```
Open chat (Ctrl+I), or select a language (Ctrl+K M), or fill with template to get
started.
Start typing to dismiss or don't show this again.
```

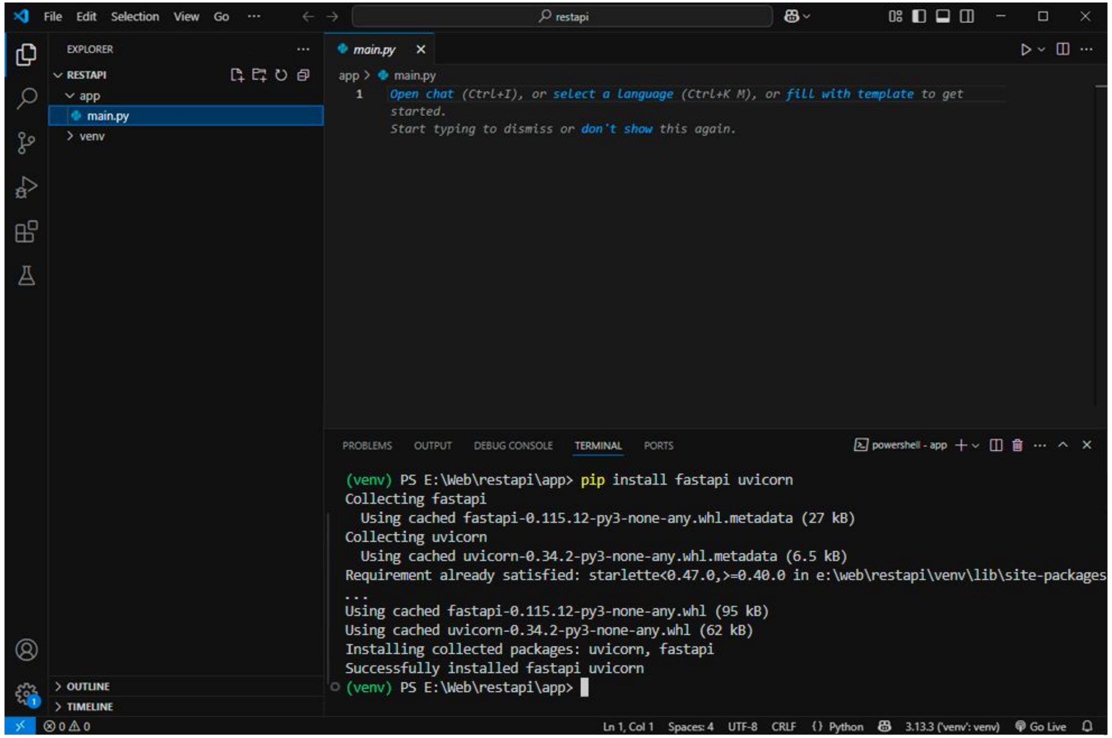
```
(venv) PS E:\Web\restapi> mkdir app
(venv) PS E:\Web\restapi> cd app
(venv) PS E:\Web\restapi\app> New-Item -Name main.py -ItemType File
```

Fast API

- Installer fast API pakker

  pip install fastapi uvicorn

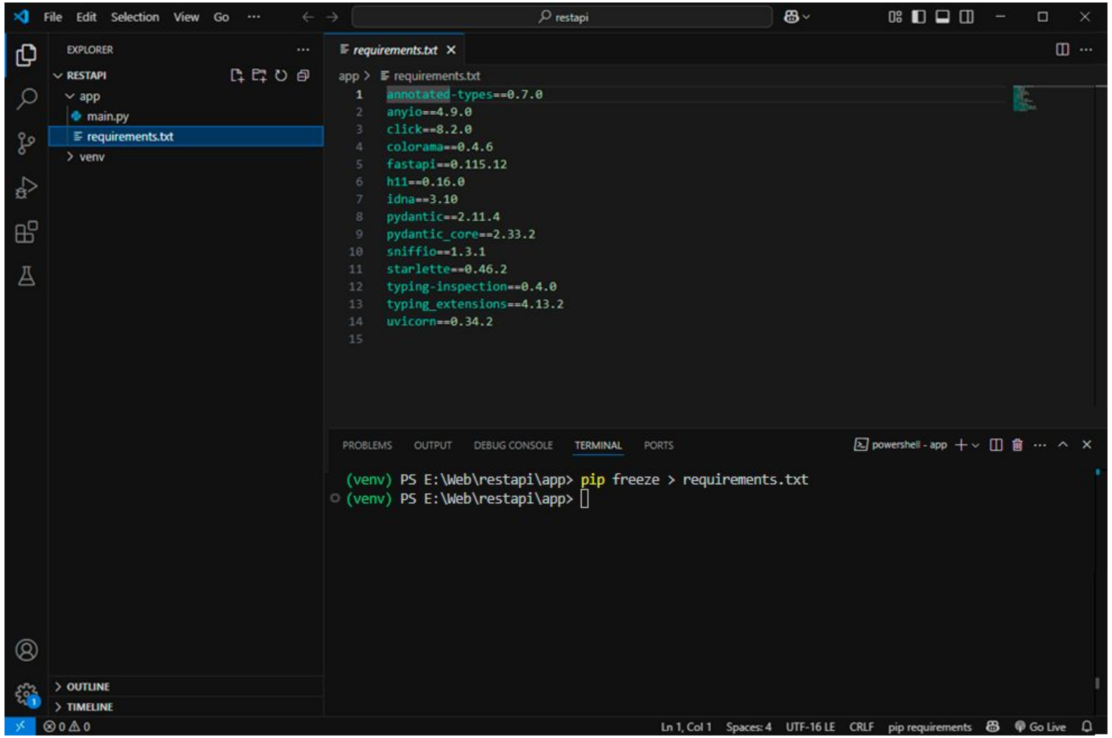
  - Asynkron kode
    - async, await
  - Automatisk datavalidering
    - Auto tjek om dataene passer vores beskrivelse
  - Automatisk dokumentation
    - Genererer swagger UI til vores endpoint
    - http://localhost:8000/docs


File Edit Selection View Go
restapi
EXPLORER
RESTAPI
app
main.py
venv
main.py
app > main.py
Open chat (Ctrl+I), or select a language (Ctrl+K M), or fill with template to get started.
Start typing to dismiss or don't show this again.
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
powershell - app
OUTLINE
TIMELINE
Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python 3.13.3 ('venv': venv) Go Live

```
(venv) PS E:\Web\restapi\app> pip install fastapi uvicorn
Collecting fastapi
  Using cached fastapi-0.115.12-py3-none-any.whl.metadata (27 kB)
Collecting uvicorn
  Using cached uvicorn-0.34.2-py3-none-any.whl.metadata (6.5 kB)
Requirement already satisfied: starlette<0.47.0,>=0.40.0 in e:\web\restapi\venv\lib\site-packages
...
Using cached fastapi-0.115.12-py3-none-any.whl (95 kB)
Using cached uvicorn-0.34.2-py3-none-any.whl (62 kB)
Installing collected packages: uvicorn, fastapi
Successfully installed fastapi uvicorn
(venv) PS E:\Web\restapi\app>
```

Miljøstyring

- Requirements



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restapi
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OUTLINE
TIMELINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
powershell - app
Ln 1, Col 1 Spaces: 4 UTF-16 LE CRLF pip requirements Go Live

```
annotated-types==0.7.0
anyio==4.9.0
click==8.2.0
colorama==0.4.6
fastapi==0.115.12
h11==0.16.0
idna==3.10
pydantic==2.11.4
pydantic_core==2.33.2
sniffio==1.3.1
starlette==0.46.2
typing-inspection==0.4.0
typing_extensions==4.13.2
uvicorn==0.34.2
```

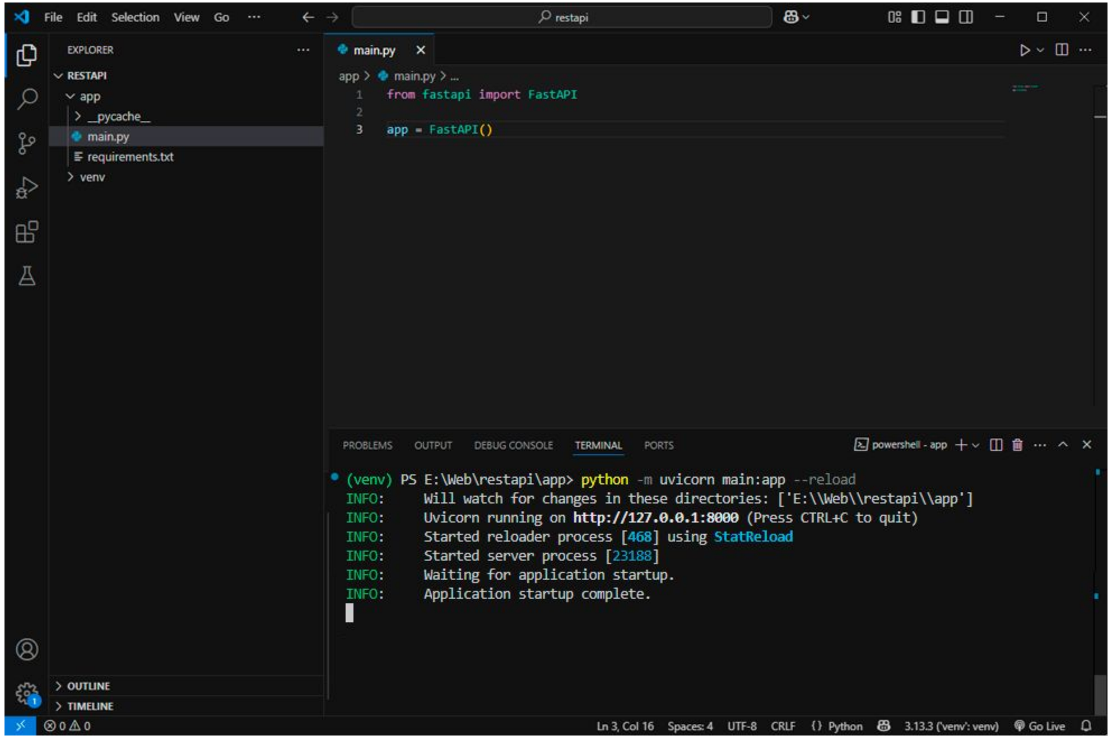
```
(venv) PS E:\Web\restapi\app> pip freeze > requirements.txt
(venv) PS E:\Web\restapi\app>
```

Test API

- Import dependencies
- Opret Fast API app
- Run API (+ auto genindlæs server)

python -m uvicorn main:app --reload

fastapi dev



File Edit Selection View Go ···
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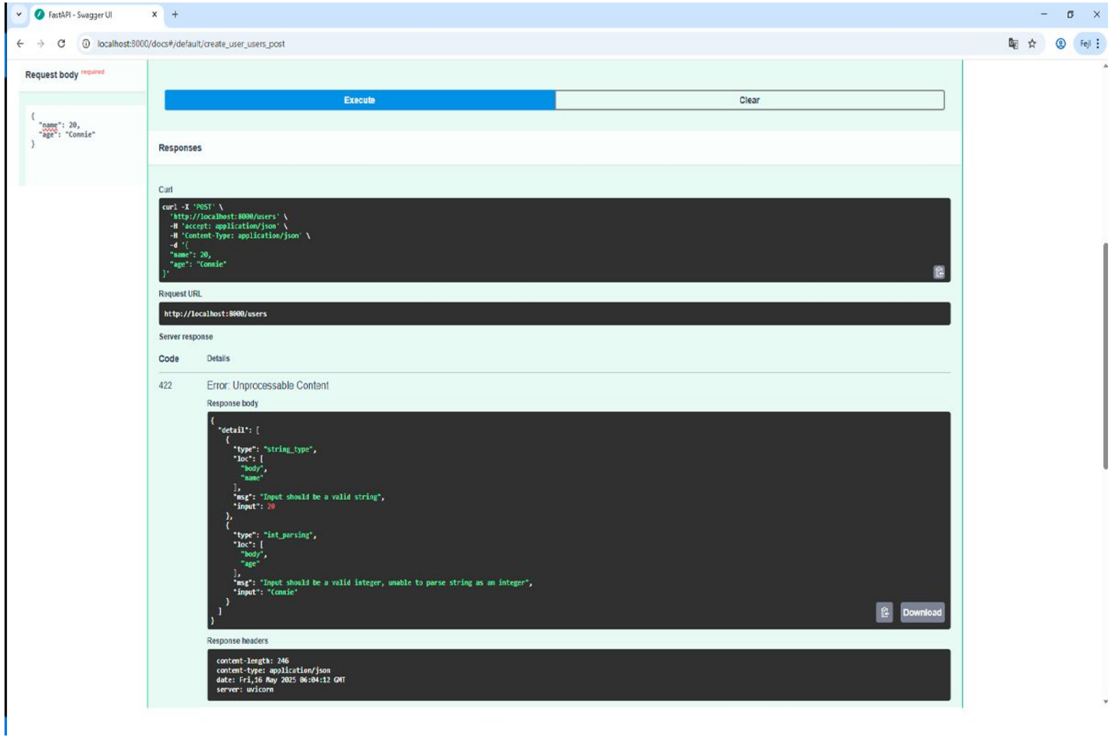
powershell - app
Ln 3, Col 16 Spaces: 4 UTF-8 CRLF {} Python 3.13.3 ('venv': venv) Go Live

```python
from fastapi import FastAPI

app = FastAPI()
```

```
(venv) PS E:\Web\restapi\app> python -m uvicorn main:app --reload
INFO:     Will watch for changes in these directories: ['E:\\Web\\restapi\\app']
INFO:     Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO:     Started reloader process [468] using StatReload
INFO:     Started server process [23188]
INFO:     Waiting for application startup.
INFO:     Application startup complete.
```

Test API

- Auto dokumentation
  - localhost:8000/docs
- Auto datavalidering
  - Send ugyldig forespørgsel



```
{
  "name": 20,
  "age": "Connie"
}
```

```
curl -X 'POST' \
  'http://localhost:8000/users' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
  "name": 20,
  "age": "Connie"
}'
```

```
http://localhost:8000/users
```

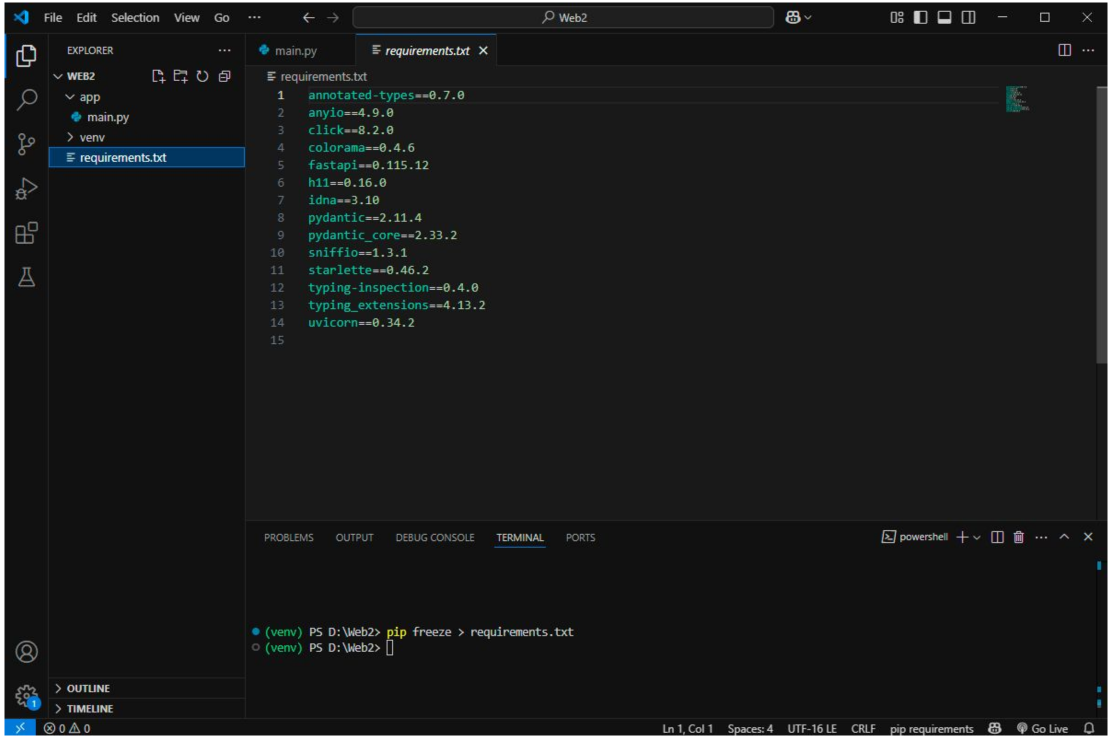
422 Error: Unprocessable Content

```
{
  "detail": [
    {
      "type": "string_type",
      "loc": [
        "body",
        "name"
      ],
      "msg": "Input should be a valid string",
      "input": 20
    },
    {
      "type": "int_parsing",
      "loc": [
        "body",
        "age"
      ],
      "msg": "Input should be a valid integer, unable to parse string as an integer",
      "input": "Connie"
    }
  ]
}
```

```
content-length: 246
content-type: application/json
date: Fri,16 May 2025 06:04:12 GMT
server: uvicorn
```

Ekstra

- *pip install fastapi[standard]*
  - fastapi dev
- requirements
  - fastapi
  - uvicorn
  - pydantic

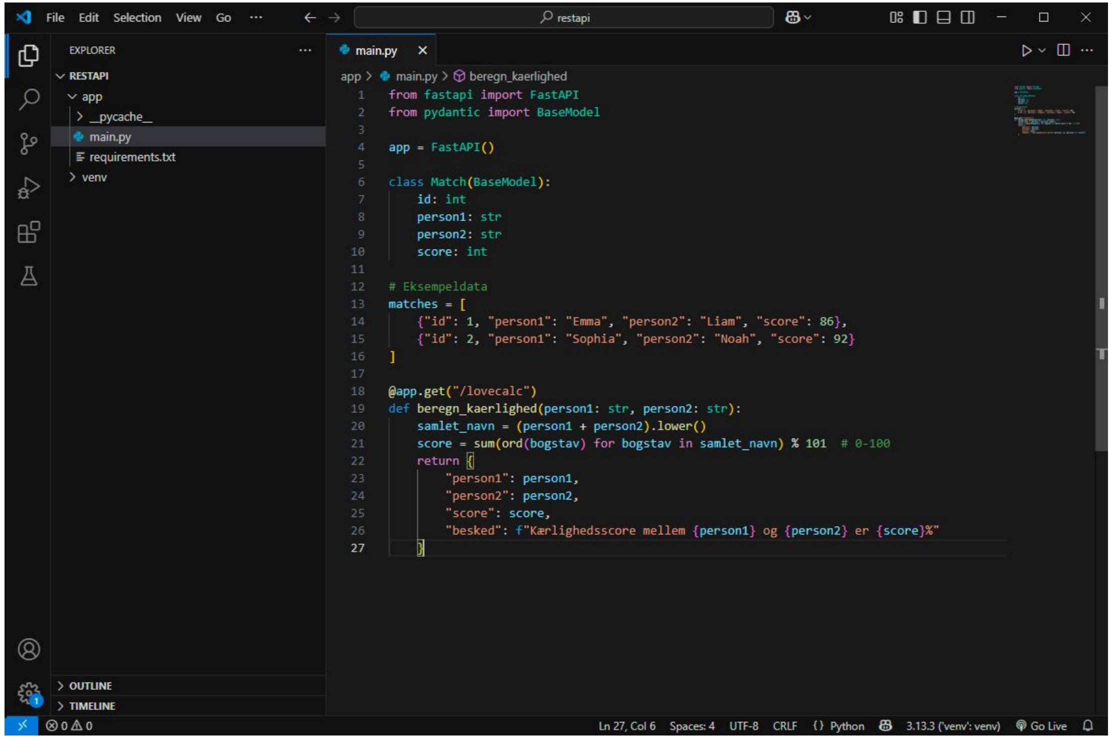


```
annotated-types==0.7.0
anyio==4.9.0
click==8.2.0
colorama==0.4.6
fastapi==0.115.12
h11==0.16.0
idna==3.10
pydantic==2.11.4
pydantic_core==2.33.2
sniffio==1.3.1
starlette==0.46.2
typing-inspection==0.4.0
typing_extensions==4.13.2
uvicorn==0.34.2
```

```
(venv) PS D:\Web2> pip freeze > requirements.txt
(venv) PS D:\Web2>
```

GET

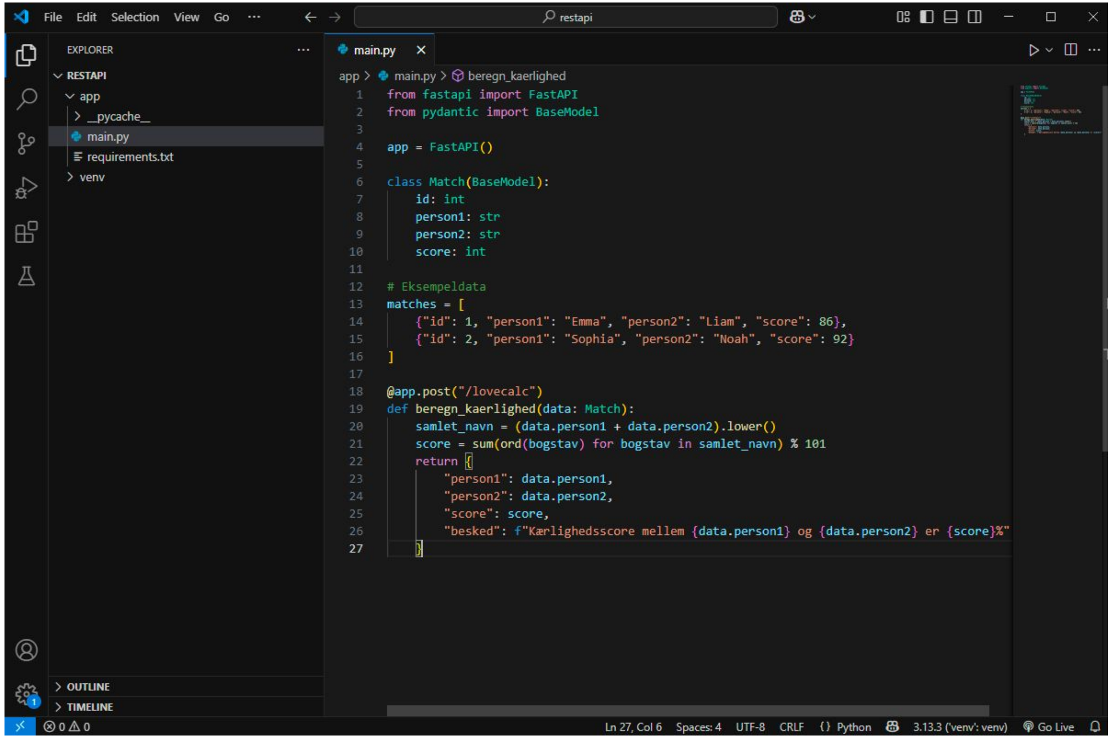
- GET /matches
- GET /lovecalc



```python
from fastapi import FastAPI
from pydantic import BaseModel

app = FastAPI()

class Match(BaseModel):
    id: int
    person1: str
    person2: str
    score: int

# Eksempeldata
matches = [
    {"id": 1, "person1": "Emma", "person2": "Liam", "score": 86},
    {"id": 2, "person1": "Sophia", "person2": "Noah", "score": 92}
]

@app.get("/lovecalc")
def beregn_kaerlighed(person1: str, person2: str):
    samlet_navn = (person1 + person2).lower()
    score = sum(ord(bogstav) for bogstav in samlet_navn) % 101  # 0-100
    return {
        "person1": person1,
        "person2": person2,
        "score": score,
        "besked": f"Kærlighedsscore mellem {person1} og {person2} er {score}%"
    }
```

POST

- POST /lovecalc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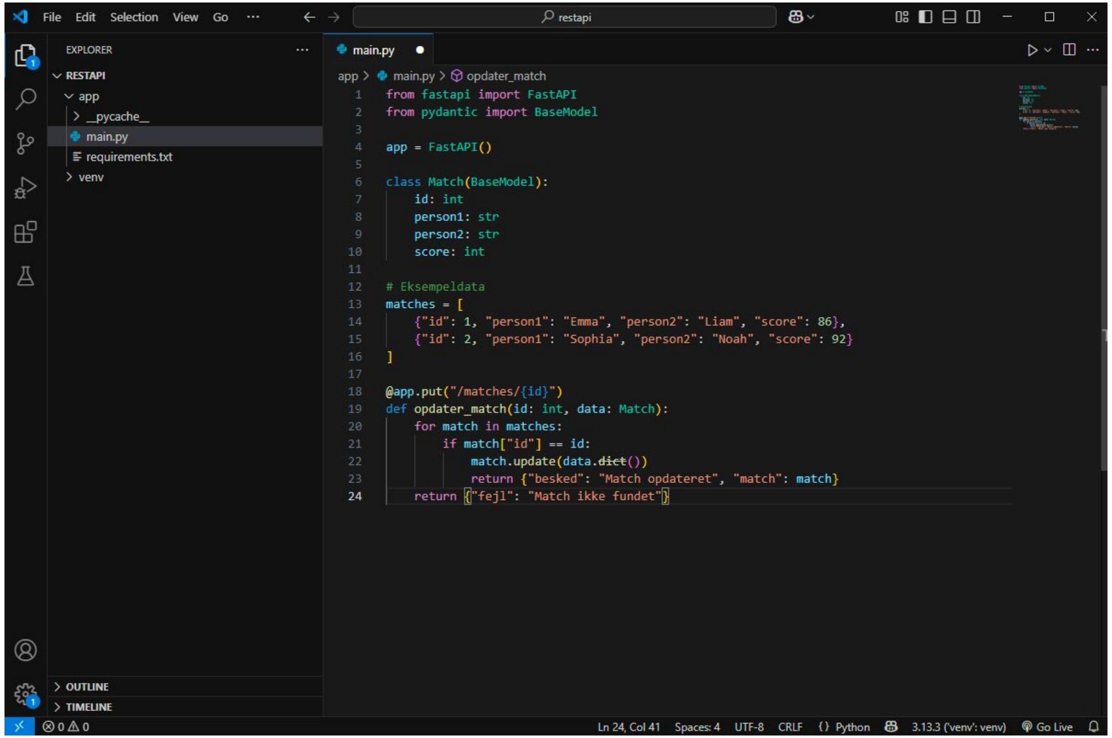
app > main.py > beregn_kaerlighed
Ln 27, Col 6 Spaces: 4 UTF-8 CRLF Python 3.13.3 ('venv': venv) Go Live

```python
from fastapi import FastAPI
from pydantic import BaseModel

app = FastAPI()

class Match(BaseModel):
    id: int
    person1: str
    person2: str
    score: int

# Eksempeldata
matches = [
    {"id": 1, "person1": "Emma", "person2": "Liam", "score": 86},
    {"id": 2, "person1": "Sophia", "person2": "Noah", "score": 92}
]

@app.post("/lovecalc")
def beregn_kaerlighed(data: Match):
    samlet_navn = (data.person1 + data.person2).lower()
    score = sum(ord(bogstav) for bogstav in samlet_navn) % 101
    return {
        "person1": data.person1,
        "person2": data.person2,
        "score": score,
        "besked": f"Kærlighedsscore mellem {data.person1} og {data.person2} er {score}%"
    }
```

PUT

- PUT /matches{id}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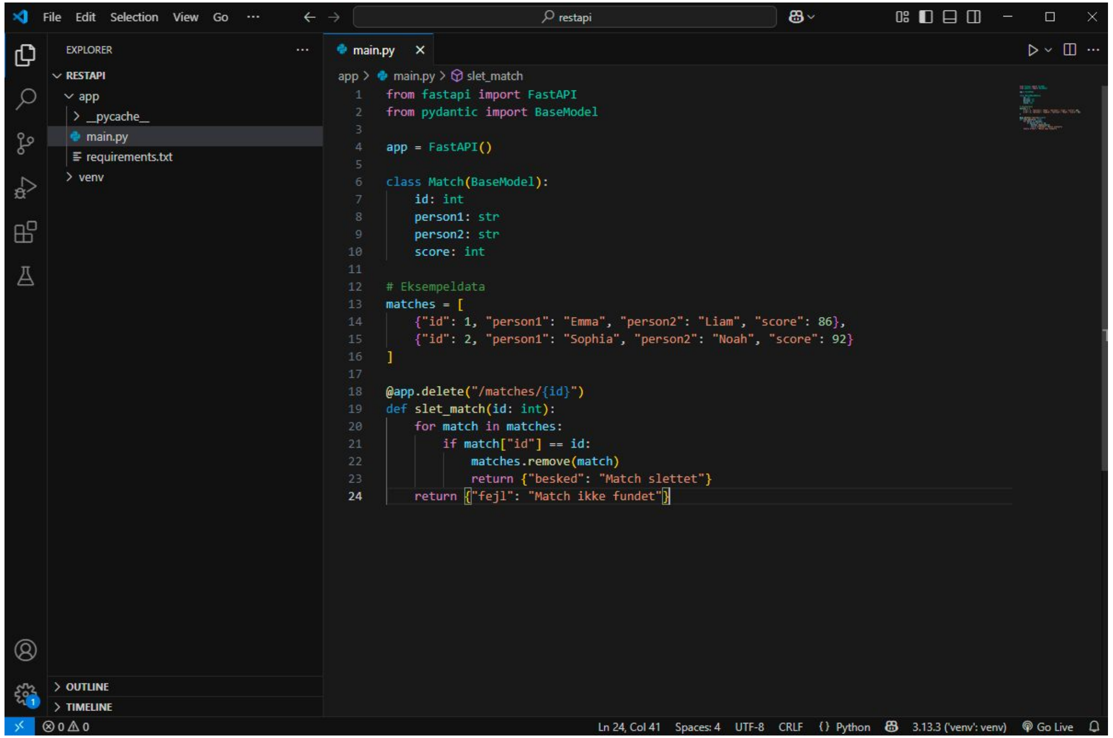
app > main.py > opdater_match
Ln 24, Col 41 Spaces: 4 UTF-8 CRLF Python 3.13.3 ('venv': venv) Go Live

```python
from fastapi import FastAPI
from pydantic import BaseModel

app = FastAPI()

class Match(BaseModel):
    id: int
    person1: str
    person2: str
    score: int

# Eksempeldata
matches = [
    {"id": 1, "person1": "Emma", "person2": "Liam", "score": 86},
    {"id": 2, "person1": "Sophia", "person2": "Noah", "score": 92}
]

@app.put("/matches/{id}")
def opdater_match(id: int, data: Match):
    for match in matches:
        if match["id"] == id:
            match.update(data.~~dict~~())
            return {"besked": "Match opdateret", "match": match}
    return {"fejl": "Match ikke fundet"}
```

DELETE

- DELETE /matches{id}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app > main.py > slet_match
Ln 24, Col 41 Spaces: 4 UTF-8 CRLF Python 3.13.3 ('venv': venv) Go Live

```python
from fastapi import FastAPI
from pydantic import BaseModel

app = FastAPI()

class Match(BaseModel):
    id: int
    person1: str
    person2: str
    score: int

# Eksempeldata
matches = [
    {"id": 1, "person1": "Emma", "person2": "Liam", "score": 86},
    {"id": 2, "person1": "Sophia", "person2": "Noah", "score": 92}
]

@app.delete("/matches/{id}")
def slet_match(id: int):
    for match in matches:
        if match["id"] == id:
            matches.remove(match)
            return {"besked": "Match slettet"}
    return {"fejl": "Match ikke fundet"}
```

Dokumentation

- https://fastapi.tiangolo.com/ ← Dokumentation til at bygge API
- https://docs.python.org/3/ ← Python dokumentation og kommandoer
- https://docs.python.org/3/library/venv.html ← Virtuelt miljø
- https://medium.com/geekculture/javascript-vs-python-syntax-cheatsheet-9bc7c59599c6 ← js vs python cheatsheet