

«Параллельные и распределённые вычисления»  Лабораторная работа №8 Очередь задач	Выполнил:	Зенин М.А.
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	Дата выполнения:	
	Подпись преподавателя	

Цель: Изучение работы с параллельными вычислениями в языке Python.

Задача: Реализовать совместную обработку данных группой исполнителей.

Скачивание статей гражданского кодекса с консультант плюс

Compose.yml с редисом

```
services:
  redis:
    image: redis:6.2-alpine
    ports:
      - '6379:6379'
    volumes:
      - './redis_data:/data'
```

(запускается через docker compose up (-d))

Приложение celery

```
from celery import Celery
import requests

app = Celery('tasks', broker='redis://localhost:6379/0')

@app.task
def download_link(url):
    headers = {
        'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0.4472.124 Safari/537.36'
    }
    prefix = "https://www.consultant.ru"
    response = requests.get(prefix + url, headers=headers)
    if response.status_code == 200:
        with open(f'files/{url.replace("/", "-")}.html', 'w') as file:
            file.write(response.text)
    else:
        print(url)
        print(f"Failed to retrieve the page. Status code: {response.status_code}")
```

Программка, отправляющая задачи:

```

from tasks import download_link
import requests
from bs4 import BeautifulSoup
from tqdm import tqdm

def extract_links(url):
    response = requests.get(url)
    if response.status_code == 200:
        soup = BeautifulSoup(response.text, 'html.parser')
        links = [a['href'] for a in soup.find_all('a', href=True) if not a['href'].startswith(('http://', 'https://', '//www'))]
    else:
        print(f"Failed to retrieve the page. Status code: {response.status_code}")
        return []

url = 'https://www.consultant.ru/document/cons_doc_LAW_5142/'
links = extract_links(url)

for link in tqdm(links):
    result = download_link.delay(link)

```

## Запуск работника celery

```

(.venv) [zen@nex lab8]$ celery -A tasks worker --loglevel=info

----- celery@nex v5.5.2 (immunity)
-- ***** -----
-- ***** ----- Linux-6.14.3-arch1-1-x86_64-with-glibc2.41 2025-04-30 05:18:31
-- *** --- * ---
-- ** ----- [config]
-- ** ----- .> app: tasks:0x7f3d0e021160
-- ** ----- .> transport: redis://localhost:6379/0
-- ** ----- .> results: disabled://
-- *** --- * --- .> concurrency: 8 (prefork)
-- ***** ----- .> task events: OFF (enable -E to monitor tasks in this worker)
-- ***** -----
-- ----- [queues]
-- .> celery exchange=celery(direct) key=celery

[tasks]
. tasks.download_link

[2025-04-30 05:18:31,731: INFO/MainProcess] Connected to redis://localhost:6379/0
[2025-04-30 05:18:31,738: INFO/MainProcess] mingle: searching for neighbors
[2025-04-30 05:18:32,756: INFO/MainProcess] mingle: all alone
[2025-04-30 05:18:32,789: INFO/MainProcess] celery@nex ready.

```

## Запущу несколько

```
-- ***** --- Linux-6.14.3-arch1-1-x86_64-with-glibc2.41 2025-04-30 05:18:31
-- *** --- * ---
-- ** ----- [config]
-- ** ----- .> app: tasks:0x7f3d0e021160
-- ** ----- .> transport: redis://localhost:6379/0
-- ** ----- .> results: disabled://
-- ** ----- * --- .> concurrency: 8 (prefork)
-- ***** --- .> task events: OFF (enable -E to monitor tasks in this worker)
-- ***** ---
-- ----- [queues]
-- ----- .> celery exchange=celery(direct) key=celery

[tasks]
. tasks.download_link

[2025-04-30 05:18:31,731: INFO/MainProcess] Connected to redis://localhost:6379/0
[2025-04-30 05:18:31,738: INFO/MainProcess] mingle: searching for neighbors
[2025-04-30 05:18:32,756: INFO/MainProcess] mingle: all alone
[2025-04-30 05:18:32,789: INFO/MainProcess] celery@nex ready.
[]

-- *** --- * ---
-- ** ----- [config]
-- ** ----- .> app: tasks:0x795cd7bd9160
-- ** ----- .> transport: redis://localhost:6379/0
-- ** ----- .> results: disabled://
-- ** ----- * --- .> concurrency: 8 (prefork)
-- ***** --- .> task events: OFF (enable -E to monitor tasks in this worker)
-- ***** ---
-- ----- [queues]
-- ----- .> celery exchange=celery(direct) key=celery

[tasks]
. tasks.download_link

[2025-04-30 05:19:46,518: INFO/MainProcess] Connected to redis://localhost:6379/0
[2025-04-30 05:19:46,525: INFO/MainProcess] mingle: searching for neighbors
[2025-04-30 05:19:47,546: INFO/MainProcess] mingle: all alone
[2025-04-30 05:19:47,576: INFO/MainProcess] celery@nex ready.
[]
```

Выполняю программу, отправляющую задачи и работники начинают скачивать

```
Task sent, result will be: 938ccbd1-01d3-42eb-b413-598e162a0e2e
Task sent, result will be: 2da4b5a5-1ca5-4f91-924b-39ee44988f2c
Task sent, result will be: 49771d7b-d051-46db-8e5f-56cef39d2dd3
Task sent, result will be: d0ec212d-0435-424b-a11f-c5ca952433e
Task sent, result will be: 8484df6e-e79c-8841-bf86-56ed059b94b
Task sent, result will be: 0bf619bd-d87a-44dc-b7f6-1d05b84878a5
Task sent, result will be: 04c755df-d713-4185-8c86-937caf8f6326
Task sent, result will be: a8aabe3b-bdc2-43e5-a594-71cf4b3196ec
Task sent, result will be: a93de567-df2d-4bb7-8442-fc3808c38149
Task sent, result will be: 1f87ea22-dc9f-4688-a47f-0ba46eb16a2f
Task sent, result will be: 6547f1d5-1110-475b-82be-cba026836173
Task sent, result will be: dd810ed1-8c85-4ec6-bc01-9d5da1c1d30e
Task sent, result will be: d42870ef-43e2-4e8d-9235-f9add8193edc
Task sent, result will be: a8aabe3b-bdc2-43e5-a594-71cf4b3196ec
Task sent, result will be: dc247fa1-bf8b-460f-8c00-abf65ca3cd5e
Task sent, result will be: dee74555-c20c-4842-af0f-6476b135d703
Task sent, result will be: bec3dad6-1c11-4793-8a9d-4f76ddf3ddb7
Task sent, result will be: d47446ae-bb78-4d7a-82ef-b265c8008413
Task sent, result will be: 5d60ee20-aefe-4ff7-b5e7-b15a9d4a0939
Task sent, result will be: 861c263e-a2ab-4e9a-9de5-8cb51c03338d
Task sent, result will be: 2f6d7b44-3f88-46d4-b444-49d54f1815ce
Task sent, result will be: 0f291380-16e9-43bf-ba3d-5f135826ea0f
Task sent, result will be: 23ac734d-a114-45ee-84c0-c05da22a3f5c
Task sent, result will be: efe8a978-46e3-45f4-97bb-d1348cfb6c22
Task sent, result will be: 213fafb9-1ab1-4839-abd6-f7fafc5177e6
Task sent, result will be: 5d034442-93ad-41ae-adae-5c7c53b8c1b4
Task sent, result will be: e7f93b28-7ff5-4678-8407-7b787a19098e
Task sent, result will be: e2668517-a243-4b23-b245-bcc16876ff07
Task sent, result will be: 4d3d7057-c3ce-41c3-be1f-905da57bfbeb
Task sent, result will be: 2ea30662-7fec-4d93-97a7-1844981e894d
Task sent, result will be: d25573a0-d631-44d7-9a31-adea559a9c58
Task sent, result will be: 0fc6c74c-38c0-492c-a208-b8507f6061e8
Task sent, result will be: 834d0c0f-73e1-40e3-8fb0-4416c35b7c84
Task sent, result will be: 91b54e61-5a98-486f-91bf-a194cf1021cb
Task sent, result will be: e971f4a8-c523-42a7-b513-cd0abb8685b2
Task sent, result will be: f9411583-b044-4157-8afc-9b9fb24ce70a
100% [redacted] 842/842 [00:01:00:00, 478.47it/s]
(.venv) [zen@nex lab8]$ hx send_tasks.py
(.venv) [zen@nex lab8]$ python send_tasks.py
100% [redacted] 842/842 [00:01:00:00, 514.85it/s]
(.venv) [zen@nex lab8]$ python send_tasks.py
100% [redacted] 842/842 [00:01:00:00, 467.58it/s]
(.venv) [zen@nex lab8]$ python send_tasks.py
100% [redacted] 842/842 [00:01:00:00, 465.48it/s]
(.venv) [zen@nex lab8]$
```

```
417-9dca-4f6c-85c8-7da5ba69f1ea] succeeded in 0.30575785499968333s: None
[2025-04-30 05:20:44,045: INFO/MainProcess] Task tasks.download_link[26d1060b-73f2-4f6b-9173-c42a8e9674f2] received
[2025-04-30 05:20:44,050: INFO/ForkPoolWorker-1] Task tasks.download_link[cc326883-3ab5-4275-94d6-37772e3e1da5] succeeded in 0.3258236730016506s: None
[2025-04-30 05:20:44,055: INFO/MainProcess] Task tasks.download_link[a26b29ea-b15c-43db-acd0-850feeb92539] received
[2025-04-30 05:20:44,057: INFO/ForkPoolWorker-7] Task tasks.download_link[9597e45c-88c2-4a13-b77c-3453fe15c743] succeeded in 0.3323202390001825s: None
[2025-04-30 05:20:44,061: INFO/MainProcess] Task tasks.download_link[19ae2907-ae02-4173-bddf-1450adc1471e] received
[2025-04-30 05:20:44,083: INFO/ForkPoolWorker-5] Task tasks.download_link[78c0c06b-6a62-4df8-b868-798eba2eb52e] succeeded in 0.20217241299906163s: None
[2025-04-30 05:20:44,088: INFO/MainProcess] Task tasks.download_link[53ef5776-8a55-4591-a730-0278ddfc963a] received
[2025-04-30 05:20:44,138: INFO/ForkPoolWorker-2] Task tasks.download_link[3691b1e2-0c72-434e-82aa-4eb74e72b3bf] succeeded in 0.324357425000926s: None
[2025-04-30 05:20:44,142: INFO/ForkPoolWorker-6] Task tasks.download_link[ffbf759ad-948a-4aaf-9e4b-24df9a3c5f9f] succeeded in 0.3222741999981066s: None
[2025-04-30 05:20:44,146: INFO/MainProcess] Task tasks.download_link[af5cd3e0-bf86-49d6-af00-15395de18668] received
[]
[2025-04-30 05:20:44,022: INFO/ForkPoolWorker-4] Task tasks.download_link[5f20b410-b08a-46b4-94b7-1bdf6c2fd6d0] succeeded in 0.2100667130016518s: None
[2025-04-30 05:20:44,022: INFO/ForkPoolWorker-3] Task tasks.download_link[977792c4-3e27-4775-b906-5552c243d393] succeeded in 0.29524171400043997s: None
[2025-04-30 05:20:44,029: INFO/MainProcess] Task tasks.download_link[f6529b1b-f137-4ac4-af34-abe03589c0b1] received
[2025-04-30 05:20:44,031: INFO/MainProcess] Task tasks.download_link[f2d56f31-1220-43f4-a9f0-c9ac498af11c] received
[2025-04-30 05:20:44,032: INFO/ForkPoolWorker-8] Task tasks.download_link[9fcd014-1401-4e00-a569-2bf55826760e] succeeded in 0.3194649039996875s: None
[2025-04-30 05:20:44,036: INFO/MainProcess] Task tasks.download_link[b27d9503-f646-4620-8cd8-34e0a6a408b0] received
[2025-04-30 05:20:44,109: INFO/ForkPoolWorker-6] Task tasks.download_link[23f4e759-a533-4f2e-93ca-e4cf5d454ae6] succeeded in 0.2057442360001005s: None
[2025-04-30 05:20:44,110: INFO/ForkPoolWorker-2] Task tasks.download_link[0e86b0b9-96f3-4599-962b-44054d978c49] succeeded in 0.29246985299869266s: None
[2025-04-30 05:20:44,116: INFO/MainProcess] Task tasks.download_link[503a9e09-e4d53-4b5d-a580-734853d3527d] received
[2025-04-30 05:20:44,118: INFO/MainProcess] Task tasks.download_link[c89f2734-7bbe-4b76-be9a-34621b5e60ec] received
[]
```

Статьи:

-document-cons\_doc\_LAW\_5142-f5742b6373038a15f928a5e6c0b18017f0ca5e02-.html  
-document-cons\_doc\_LAW\_5142-f589d9a4e0187211e24202a72b1d19b603fa3111-.html  
-document-cons\_doc\_LAW\_5142-f5e55adcc2ef06ee9e5b7f57f0f3ca3d2ea8825c-.html  
-document-cons\_doc\_LAW\_5142-f6393de25fd77adbbf1c56c728db1da758416df8-.html  
-document-cons\_doc\_LAW\_5142-f670878d88ab83726bd1804b82668b84b027802e-.html  
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-document-cons\_doc\_LAW\_5142-f6ef073fdeb7c69cfabc279056f1f4124956b5d9-.html  
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