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第一章 OnlineJudge 的部署

1.1 查看容器

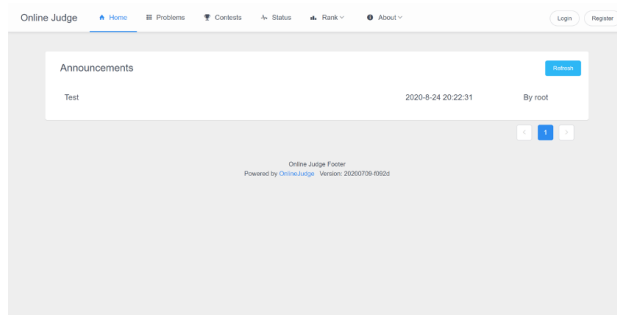
使用 docker 命令查看容器的状态（Healthy 表示运行正常）

```
docker ps -a
```

ref:<https://github.com/QingdaoU/OnlineJudgeDeploy>

CONTAINER ID	IMAGE	STATUS	COMMAND	CREATED	STATUS	PORTS
244b2442b0e9	registry.cn-hangzhou.aliyuncs.com/onlinejudge/oj_backend	Up 2 weeks ago	"/bin/sh -c 'app.py'"	2 weeks ago	Up 24 hours	0.0.0.0
244b2442b0e9	registry.cn-hangzhou.aliyuncs.com/onlinejudge/oj_server	Up 2 weeks ago	"/bin/sh -c 'code.py'"	2 weeks ago	Up 24 hours	8080/TCP
244b2442b0e9	redis:4.9-alpine	Up 2 weeks ago	"docker-entrypoint.s..."	2 weeks ago	Up 24 hours	6379/TCP
244b2442b0e9	postgres:10-alpine	Up 2 weeks ago	"docker-entrypoint.s..."	2 weeks ago	Up 24 hours	0.0.0.0

部署好后浏览器访问 <http://IPAddr/>，可以看到一个 naive 的 oj：



1.2 连接数据库

OJ 系统部署在虚拟机中的容器中，如果需要连接到容器中的数据库，则需要做一个端口映射


```
DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.postgresql_psycopg2',
        # 'HOST': '127.0.0.1',
        # 'PORT': 5435,
        'HOST': '10.24.0.39',
        'PORT': 12348,
        'NAME': 'onlinejudge',
        'USER': 'onlinejudge',
        'PASSWORD': 'onlinejudge'
    }
}
```

注 容器端口映射到云主机端口：最后一行，由端口 12348 映射到 5432

```

10
11  oj-postgres:
12    image: mxzf0213/ecnu_oj:postgres
13    container_name: oj-postgres
14    restart: always
15    volumes:
16      - ./data/postgres:/var/lib/postgresql/data
17    environment:
18      - POSTGRES_DB=onlinejudge
19      - POSTGRES_USER=onlinejudge
20      - POSTGRES_PASSWORD=onlinejudge
21    ports:
22      - "0.0.0.0:12348:5432"
23

```

 heyujing@10-24-0-39: ~/OJ/OnlineJudgeDeploy

```

version: "2"
services:

  oj-redis:
    image: redis:4.0-alpine
    container_name: oj-redis
    restart: always
    volumes:
      - ./data/redis:/data

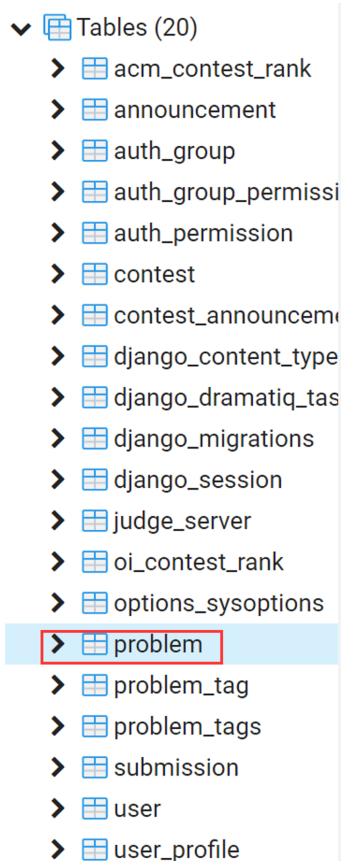
  oj-postgres:
    image: postgres:10-alpine
    container_name: oj-postgres
    restart: always
    volumes:
      - ./data/postgres:/var/lib/postgresql/data
    environment:
      - POSTGRES_DB=onlinejudge
      - POSTGRES_USER=onlinejudge
      - POSTGRES_PASSWORD=onlinejudge
    ports:
      - "0.0.0.0:12348:5432"

```

第二章 访问与修改数据库

2.1 访问数据库

直接使用 pagadmin4 可连接到数据库，该数据库共有 20 个表，Problem 存储我们的习题



2.2 修改数据库

我们添加的属性有：

- 标签
- 难度
- 状态

```
# RS_oj
labels = models.TextField(null=True)
difficulty_ = models.IntegerField(default=0)
answer_status = models.IntegerField(default=0)
```

添加好后可以使用命令 `python manage.py makemigrations` 以及 `python manage.py migrate` 之后重新 up 容器，刷新数据库后就可看到字段已经添加成功

Data Output		Explain	Messages	Notifications									
core	contest_id	integer	is_public	boolean	spj_compile_ok	boolean	io_mode	jsonb	share_submission	boolean	difficulty_	answer_status	labels
											integer	integer	integer[]
0	[null]	false	false	false	("input": "inp...	false					1	-1	[0,0,0,1,0,0,0,1,0]
0	[null]	false	false	false	("input": "inp...	false					3	0	[0,0,0,0,0,0,0,0,1]
0	[null]	false	false	false	("input": "inp...	false					2	0	[0,0,0,0,0,0,0,1,1]
0	[null]	false	false	false	("input": "inp...	false					2	1	[0,0,1,0,0,0,0,0,1]
0	[null]	false	false	false	("input": "inp...	false					1	1	[0,0,0,0,0,0,1,0,0]
0	[null]	false	false	false	("input": "inp...	false					3	-1	[0,0,0,0,0,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					2	0	[0,0,0,0,1,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					3	0	[0,0,0,0,1,0,0,0,1]
0	[null]	false	false	false	("input": "inp...	false					1	0	[0,0,0,0,0,1,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					2	1	[0,0,0,1,1,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					2	-1	[0,0,0,0,0,0,0,1,0]
0	[null]	false	false	false	("input": "inp...	false					2	1	[0,0,0,0,0,1,0,1,0]
0	[null]	false	false	false	("input": "inp...	false					1	-1	[0,0,0,0,0,1,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					3	-1	[0,0,1,0,0,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					1	1	[0,1,0,0,0,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					3	1	[1,0,0,0,0,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					2	0	[0,0,0,0,0,0,0,0,1]
0	[null]	false	false	false	("input": "inp...	false					1	0	[0,0,1,0,0,0,0,0,0]
0	[null]	false	false	false	("input": "inp...	false					2	-1	[0,0,0,0,1,1,1,0,0]

注 蓝色标注部分为新添加的属性，用于推荐系统