express 和 pm2

express

> Express 是一个基于 Node.js 的快速、非侵入式、极简的 Web 应用程序框架。它提供了一组强大的功能，用于构建各种类型的 Web 应用程序和 API。Express 是 Node.js 生态系统中最流行的 Web 框架之一，广泛用于构建服务器端应用程序。

由介绍可以知道，express就是一个web框架

```
1  #安装
2  npm install express
3  #检查是否安装成功
4  npm list express
```

测试,创建一个ex.js文件

```javascript
1  // 引入express框架
2  const express = require('express');
3  // 创建网站服务器
4  const app = express();
5
6  app.get('/' , (req, res) ⇒ {
7      // send()
8      // 1. send方法内部会检测响应内容的类型
9      // 2. send方法会自动设置http状态码
10     // 3. send方法会帮我们自动设置响应的内容类型及编码
11     res.send('Hello. Express');
12 })
13
14 app.get('/list', (req, res) ⇒ {
15     res.send({name: '张三', age: 20})
16 })
17
18 // 监听端口
19 app.listen(3000);
20 console.log('网站服务器启动成功');
```

启动服务，正常启动

```
1  node ex.js
2  #访问http://localhost:3000/
```

使用pm2

> `pm2` 是一个用于 Node.js 应用程序的生产进程管理器，它可以帮助你管理和监控你的应用程序。`pm2` 提供了许多有用的功能，如自动重启、负载均衡、日志管理、监控等，使得在生产环境中运行 Node.js 应用程序变得更加简单和可靠。

```
1  pm2 start ex.js
```

回显如下：

```
 1                    ------------
 2
 3  __/\\\\\\\\\\\\\____/\\_____/\\\\____/\\\\\\\\\_____
 4   _\/\\\/////////\\\_\/\\\\\_____/\\\\\\__/\\\///////\\\___
 5    _\/\\_____\/\\\_\/\\\//\\\____/\\\//\\\_\/// _____\//\\\__
 6     _\/\\\\\\\\\\\\\/__\/\\\\///\\\/\\\/_\/\\_____/\\\/___
 7      _\/\\\/////////____\/\\\__\///\\\/___\/\\_____/\\\//_____
 8       _\/\\_____\/\\\____\///_____\/\\\_____/\\\//_____
 9        _\/\\_____\/\\_____\/\\\___/\\\/_____
10         _\/\\_____\/\\_____\/\\\__/\\\\\\\\\\\\\\\_
11          _\///_____\///_____\///__\///////////////__
12
13
14                         Runtime Edition
15
16       PM2 is a Production Process Manager for Node.js applications
17                    with a built-in Load Balancer.
18
19               Start and Daemonize any application:
20               $ pm2 start app.js
21
22               Load Balance 4 instances of api.js:
23               $ pm2 start api.js -i 4
24
25               Monitor in production:
26               $ pm2 monitor
27
28               Make pm2 auto-boot at server restart:
29               $ pm2 startup
30
31               To go further checkout:
32               http://pm2.io/
33
34
35                    ------------
36
37  [PM2] Spawning PM2 daemon with pm2_home=C:\Users\lenovo\.pm2
38  [PM2] PM2 Successfully daemonized
39  [PM2] Starting E:\gitproject\nodejs\express初体验\ex.js in fork_mode (1
    instance)
40  [PM2] Done.
```

id	name	mode	↻	status	cpu	memory
0	ex	fork	0	online	0%	45.7mb

查看日志

```
1  pm2 log
```

```
1   PS E:\gitproject\nodejs\express初体验> pm2 logs
2   [TAILING] Tailing last 15 lines for [all] processes (change the value
    with --lines option)
3   C:\Users\lenovo\.pm2\pm2.log last 15 lines:
4   PM2        | 2024-09-21T23:31:57: PM2 log: PM2 version        : 5.4.2
5   PM2        | 2024-09-21T23:31:57: PM2 log: Node.js version    : 20.11.1
6   PM2        | 2024-09-21T23:31:57: PM2 log: Current arch       : x64
7   PM2        | 2024-09-21T23:31:57: PM2 log: PM2 home           :
    C:\Users\lenovo\.pm2
8   PM2        | 2024-09-21T23:31:57: PM2 log: PM2 PID file       :
    C:\Users\lenovo\.pm2\pm2.pid
9   PM2        | 2024-09-21T23:31:57: PM2 log: RPC socket file    :
    \\.\pipe\rpc.sock
10  PM2        | 2024-09-21T23:31:57: PM2 log: BUS socket file    :
    \\.\pipe\pub.sock
11  PM2        | 2024-09-21T23:31:57: PM2 log: Application log path :
    C:\Users\lenovo\.pm2\logs
12  PM2        | 2024-09-21T23:31:57: PM2 log: Worker Interval    : 30000
13  PM2        | 2024-09-21T23:31:57: PM2 log: Process dump file  :
    C:\Users\lenovo\.pm2\dump.pm2
14  PM2        | 2024-09-21T23:31:57: PM2 log: Concurrent actions  : 2
15  PM2        | 2024-09-21T23:31:57: PM2 log: SIGTERM timeout     : 1600
16  PM2        | 2024-09-21T23:31:57: PM2 log:
    ============================================================================
    ======
17  PM2        | 2024-09-21T23:31:57: PM2 log: App [ex:0] starting in -fork
    mode-
18  PM2        | 2024-09-21T23:31:57: PM2 log: App [ex:0] online
19
20  C:\Users\lenovo\.pm2\logs\ex-error.log last 15 lines:
21  C:\Users\lenovo\.pm2\logs\ex-out.log last 15 lines:
22  0|ex        | 网站服务器启动成功
```

监控

```
1  pm2 monit
```

```
PS E:\gitproject\nodejs\express初体验> pm2 logs
[TAILING] Tailing last 15 lines for [all] processes (change the value with --lines option)
C:\Users\lenovo\.pm2\pm2.log last 15 lines:
PM2       | 2024-09-21T23:31:57: PM2 log: PM2 version          : 5.4.2
PM2       | 2024-09-21T23:31:57: PM2 log: Node.js version      : 20.11.1
┌ Process List ─────────────────┐┌─ ex Logs ──────────────────────────────────────────┐
│[ 0] ex   Mem:  34 MB   CPU:   ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
│                               ││                                                    │
└───────────────────────────────┘└────────────────────────────────────────────────────┘
┌ Custom Metrics ──────────────┐┌─ Metadata ─────────────────────────────────────────┐
│ Used Heap Size      9.35 MiB ││ App Name           ex                              │
│ Heap Usage          89.74 %  ││ Namespace          default                         │
└──────────────────────────────┘└────────────────────────────────────────────────────┘
```

查看程序状态

```
1  pm2 list
```

停止服务

```
1  pm2 stop ex.js
```

```
PS E:\gitproject\nodejs\express初体验> pm2 stop ex.js
[PM2] Applying action stopProcessId on app [ex.js](ids: [ 0 ])
[PM2] [ex](0) ✓
```

id	name	namespace	version	mode	pid	uptime	↺	status	cpu	mem	user	watching
0	ex	default	1.0.0	fork	0	0	0	stopped	0%	0b	lenovo	disabled