

Sistem Client-Broker-Worker dengan Load Balancing di Python

Deskripsi Proses

Sistem ini terdiri dari tiga bagian utama yaitu Client, Broker (Server Utama), dan Worker Server.

Client mengirimkan permintaan ke broker, dan broker mendistribusikan permintaan tersebut ke worker server

dengan pendekatan load balancing. Dua metode alokasi digunakan: round-robin dan balanced berdasarkan jumlah request.

Worker yang dipilih akan memproses permintaan dan mengirim respons kembali ke broker, yang kemudian meneruskannya ke client.

Gambaran Umum File

- **Client:** File client.py mengirimkan permintaan ke broker dengan format "Application ID:ApplicationType".
- **Broker:** File broker_server.py adalah server utama yang menerima permintaan dari client dan mendistribusikan permintaan ke worker server sesuai metode load balancing yang dipilih (round-robin atau balanced).
- **Worker:** File worker_server.py berfungsi sebagai server worker yang menerima permintaan dari broker dan memberikan respons berdasarkan jenis permintaan (Long atau Short).

Gambaran Umum Proses

1. Client mengirim request ke broker dengan Application ID dan Application Type.

2. Broker menerima request dan memilih worker server menggunakan metode load balancing.
3. Broker meneruskan request ke worker server yang dipilih.
4. Worker server memproses request dan mengirimkan respons ke broker.
5. Broker meneruskan respons dari worker ke client.

Flowchart Alur Kerja

Flowchart di bawah ini menggambarkan alur kerja dari sistem client-broker-worker dengan load balancing:



Langkah-langkah Menjalankan Program

1. Pastikan Python sudah terinstall di komputer.
2. Jalankan worker server dengan perintah berikut di terminal:
 - python worker_server.py (untuk setiap worker di port 8081, 8082, dan 8083).

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\Pasca\S2 INFORMATIKA\Komputasi Berbasis Jaringan\balancing> python worker_server.py
Worker server 1 listening on port 8081...
Worker server 2 listening on port 8082...
Worker server 3 listening on port 8083...
```

3. Jalankan broker server di terminal dengan perintah:
 - python broker_server.py (berjalan di port 8080).

```
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PS D:\Pasca\S2 INFORMATIKA\Komputasi Berbasis Jaringan\balancing> python broker_server.py
Broker server running on port 8080...
```

4. Jalankan client untuk mengirim permintaan ke broker dengan perintah:

- python client_server.py (dengan Application ID dan Application Type sesuai kebutuhan).

```
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PS D:\Pasca\S2 INFORMATIKA\Komputasi Berbasis Jaringan\balancing> python client_server.py
Client received: Worker 1 processed complex (Long) request for App1.
Client received: Worker 2 processed simple (Short) request for App2.
Client received: Worker 3 processed complex (Long) request for App3.
Client received: Worker 1 processed simple (Short) request for App4.
PS D:\Pasca\S2 INFORMATIKA\Komputasi Berbasis Jaringan\balancing>
```

5. Perhatikan output di terminal untuk melihat distribusi dan pemrosesan request.

```
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PS D:\Pasca\S2 INFORMATIKA\Komputasi Berbasis Jaringan\balancing> python broker_server.py
Broker server running on port 8080...
Broker: Forwarded request 'App1' to Worker 1 on port 8081.
Broker: Forwarded request 'App2' to Worker 2 on port 8082.
Broker: Forwarded request 'App3' to Worker 3 on port 8083.
Broker: Forwarded request 'App4' to Worker 1 on port 8081.
Broker: Forwarded request 'App1' to Worker 2 on port 8082.
Broker: Forwarded request 'App2' to Worker 3 on port 8083.
Broker: Forwarded request 'App3' to Worker 1 on port 8081.
Broker: Forwarded request 'App4' to Worker 2 on port 8082.
```

Anggota kelompok

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