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Distributed Music Editor - Advanced Sound Systems

Distributed Computing

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Used Technologies

- Celery
- RabbitMQ
- FastAPI

Motives of choice:

- Celery was used because it allows us to have an easy way to distribute tasks among the workers that are available at any given time, with the help of RabbitMQ serving as the message broker for Celery.
- FastAPI was chosen because both team members already had some experience with it, and it allows an easy creation of asynchronous tasks with the use of BackgroundTask (Set and Forget).

Architecture

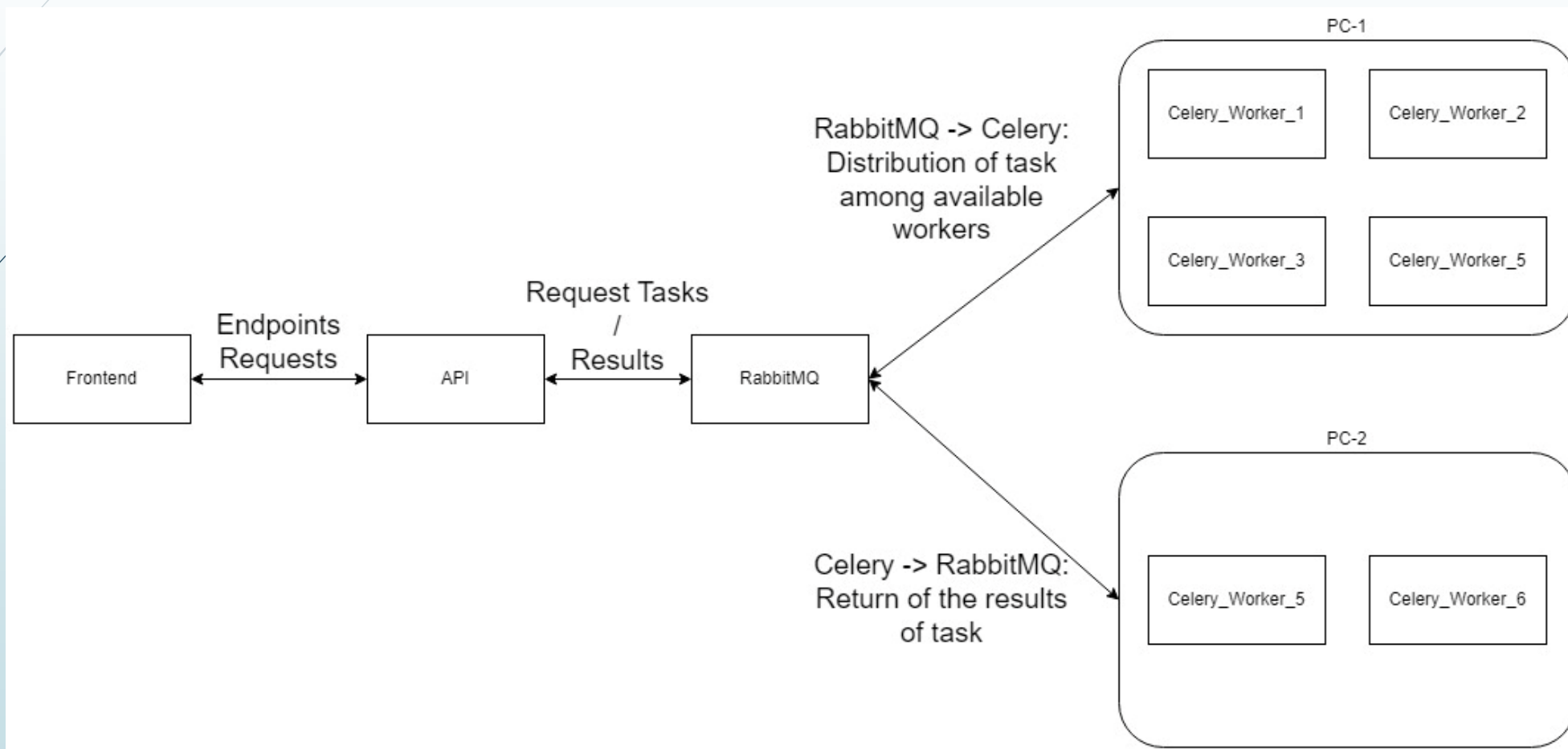


Figure 1– Architecture

Flow of Post and Get requests

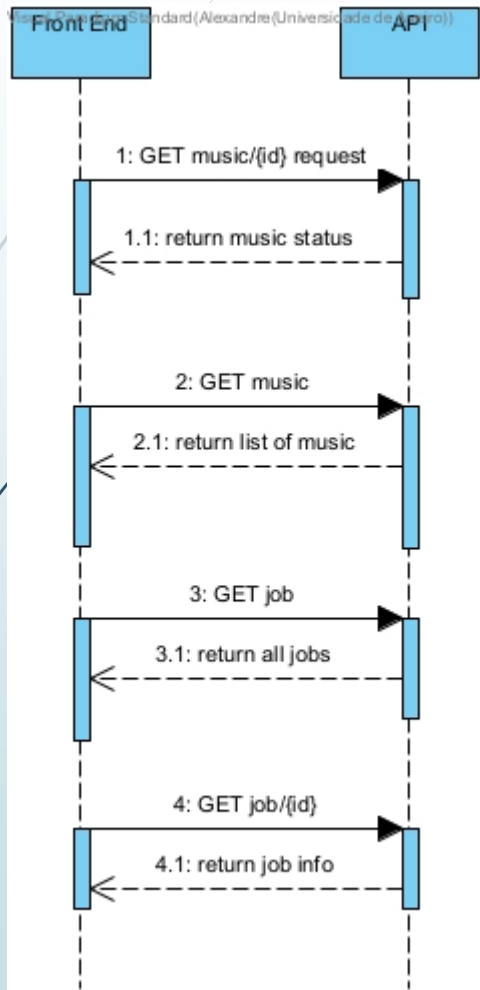


Figure 2 – GET requests

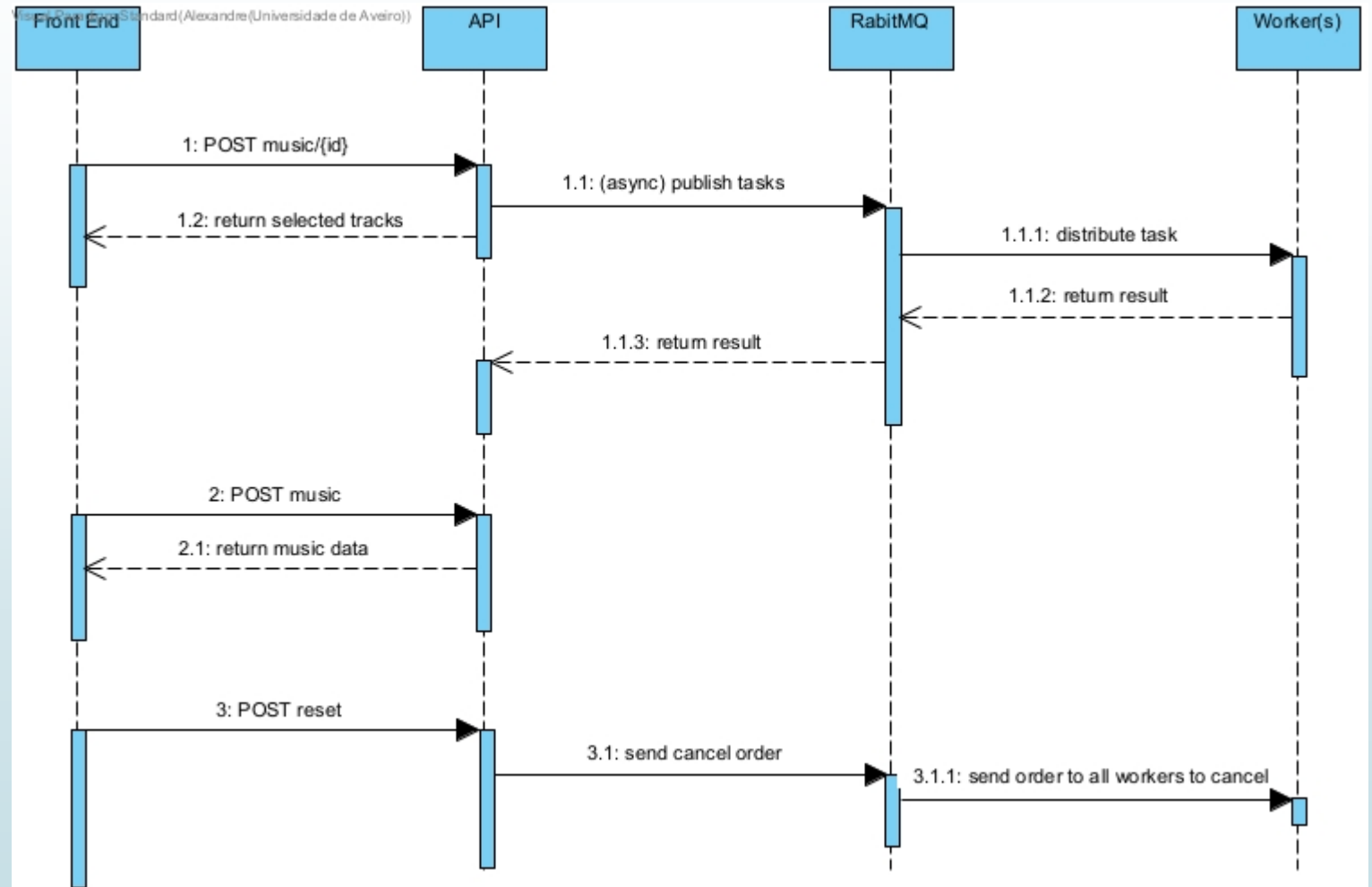
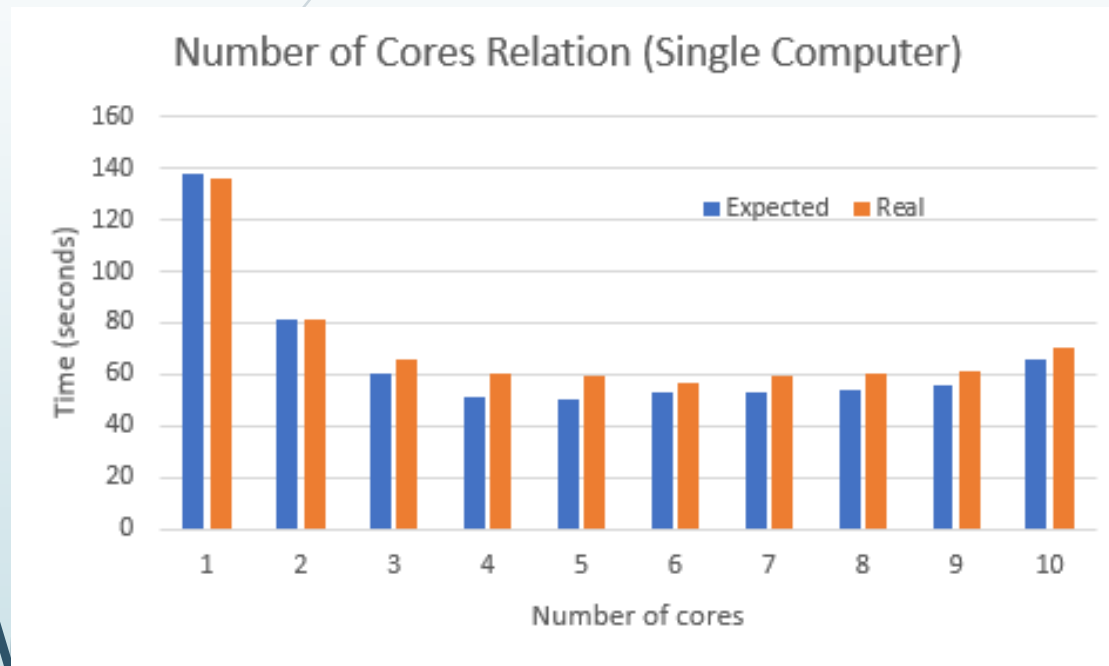


Figure 3 – POST requests

Elapsed Time



Graph 1 – Relation between no. of Cores and time spent (Single Computer)

- 1 core: $(34/1.5)/1 * 6 \approx 138$ seconds (reality 136 seconds)
- 2 cores: $(34/1.5)/2 * 7 \approx 80.5$ seconds (reality 81 seconds)
- 3 cores: $(34/1.5)/3 * 8 \approx 60.4$ seconds (reality 66 seconds)
- 4 cores: $(34/1.5)/4 * 9 \approx 51$ seconds (reality 59.6 seconds)
- 5 cores: $(34/1.5)/5 * 11 \approx 49.8$ seconds (reality 58.9 seconds)
- 6 cores: $(34/1.5)/6 * 14 \approx 52.8$ (reality 57.2 seconds)
- 7 cores: $(34/1.5)/7 * 16.4 \approx 53.1$ (reality 59.4 seconds)
- 8 cores: $(34/1.5)/8 * 18.875 \approx 53.47$ (reality 59.8 seconds)
- 9 cores: $(34/1.5)/9 * 22.3 \approx 56.2$ (reality 61.3 seconds)
- 10 cores: $(34/1.5)/10 * 29.3 \approx 66.41$ (reality 70.1 seconds)