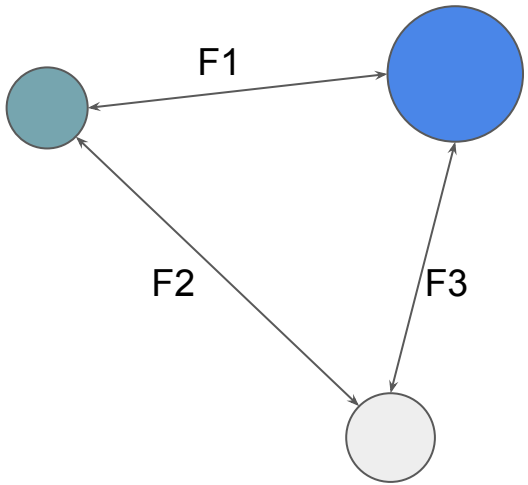
3-Body problem solver

Faramarz
Prakash
Siddharth
Kartik
Shivam

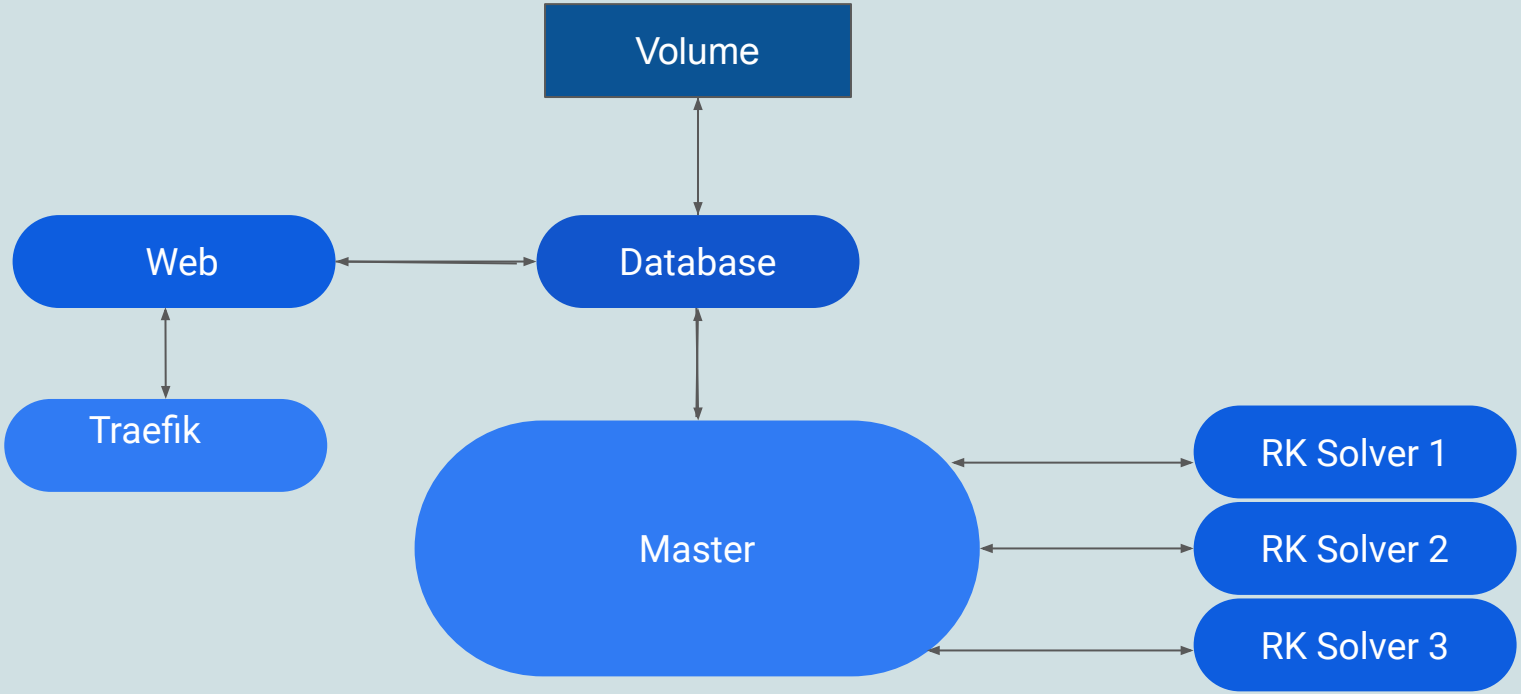
3 Body Problem:

- Set of 12 equations
- solved by Runge kutta 4th order numerically

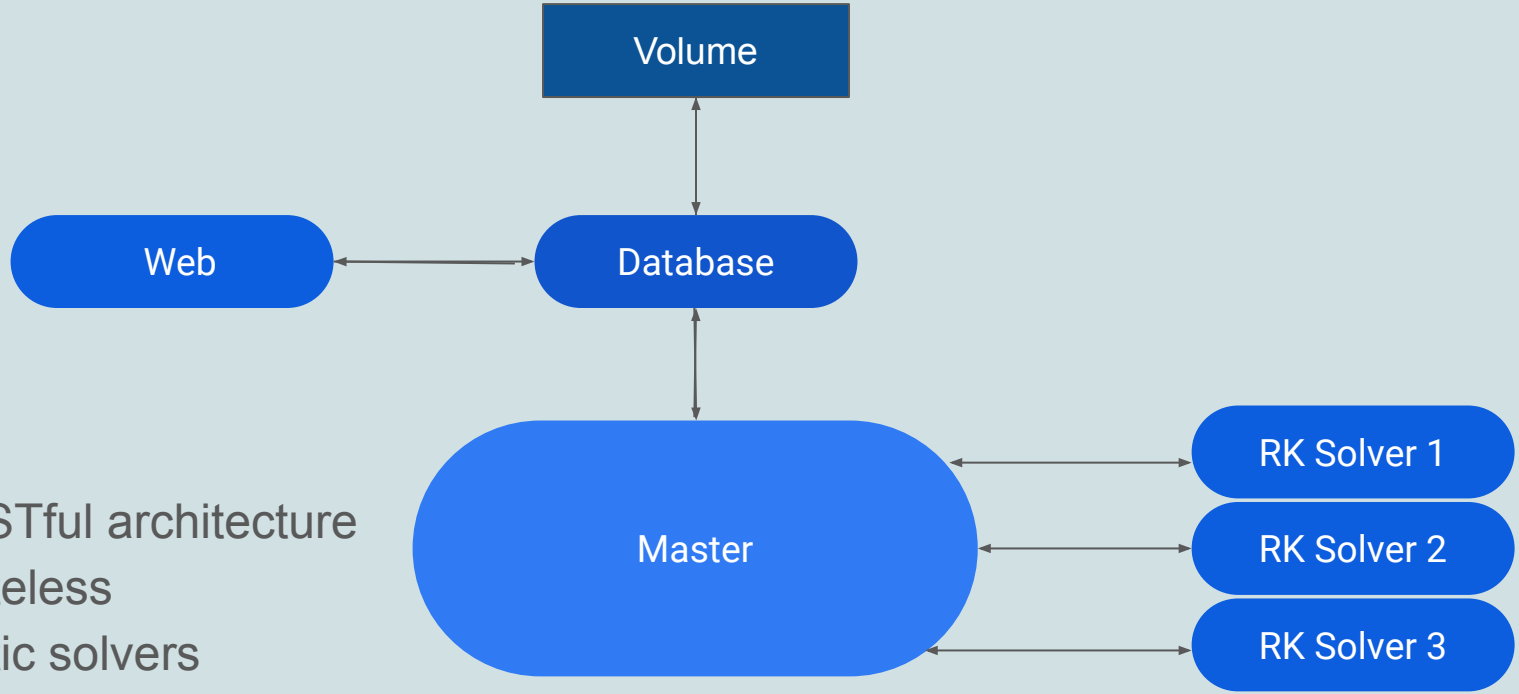
- 15 Input params: Mass, initial Pos, initial Velocity of 3bodies
- 12 outputs: Final Positions and Velocities after 5 seconds



Design:

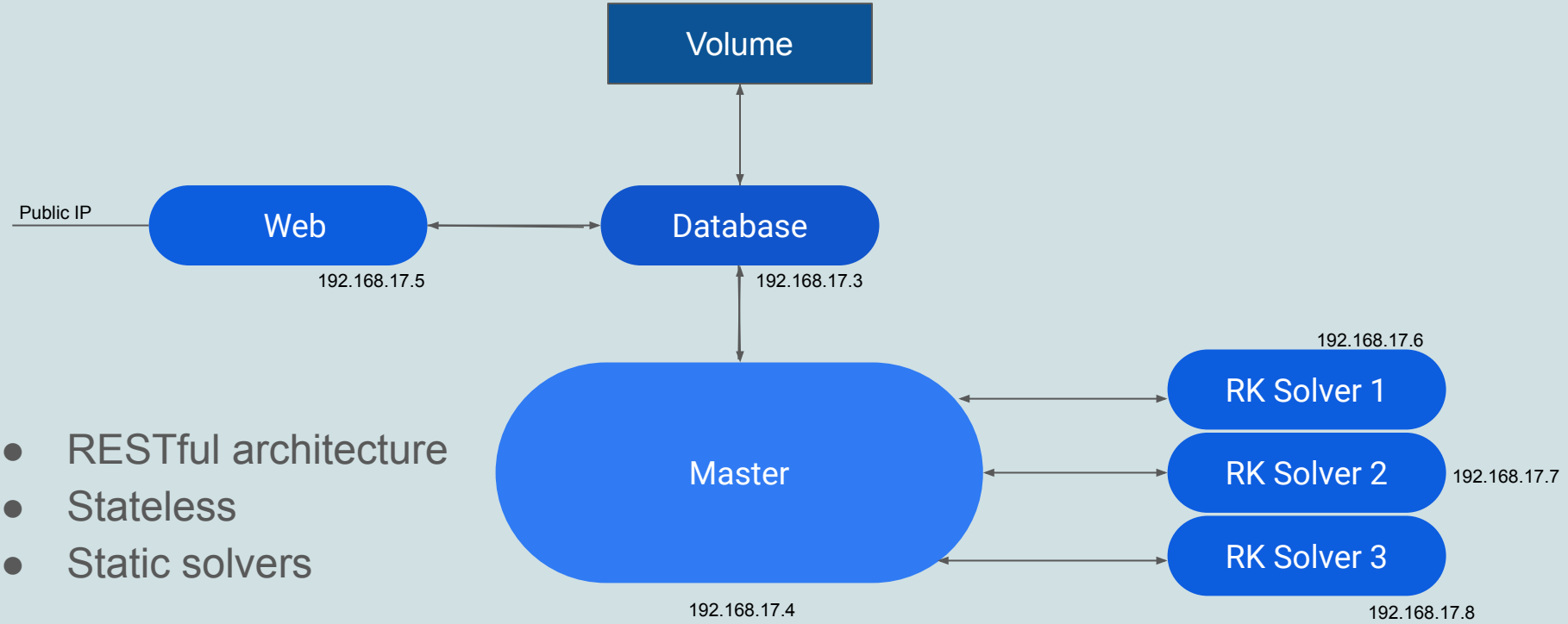

Volume
Web
Database
Traefik
Master
RK Solver 1
RK Solver 2
RK Solver 3

LAYOUT:



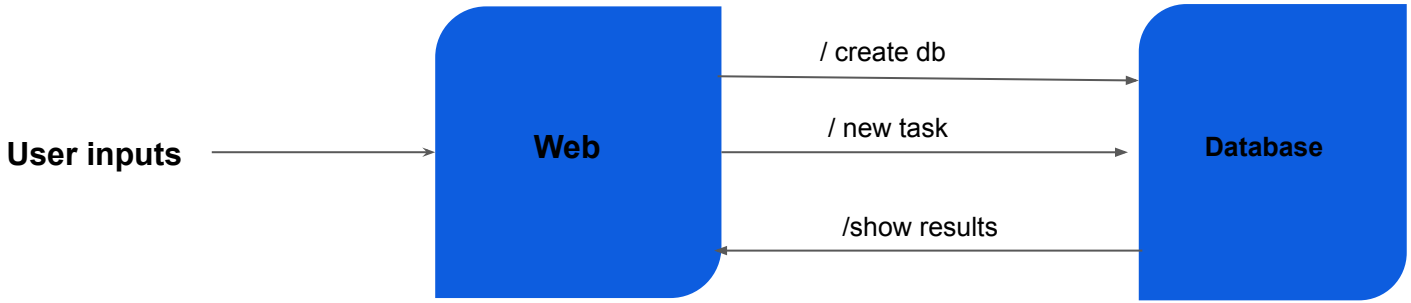
- RESTful architecture
- Stateless
- Static solvers

LAYOUT:



- RESTful architecture
- Stateless
- Static solvers

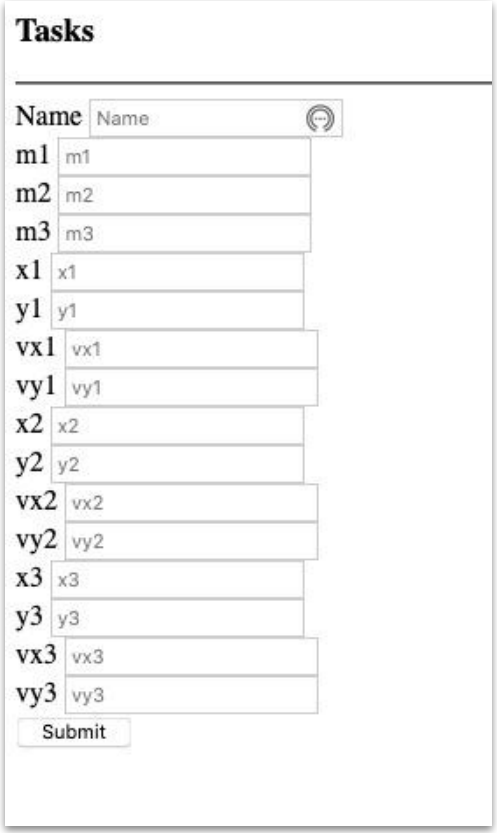
WEB:



- Flask for webapp
- SQLalchemy

WEB:

User input page



WEB:

Results and Status page

Inputs For Task_id

task_id task_id Submit

Task_id	m1	m2	m3	x1	y1	vx1	vy1	x2	y2	vx2	vy2	x3	y3	vx3	vy3
1	9.0	2.0	1.0	3.02	2.05	4.0	5.0	3.04	0.05	1.0	1.0	3.0	1.0	2.0	1.0

Results

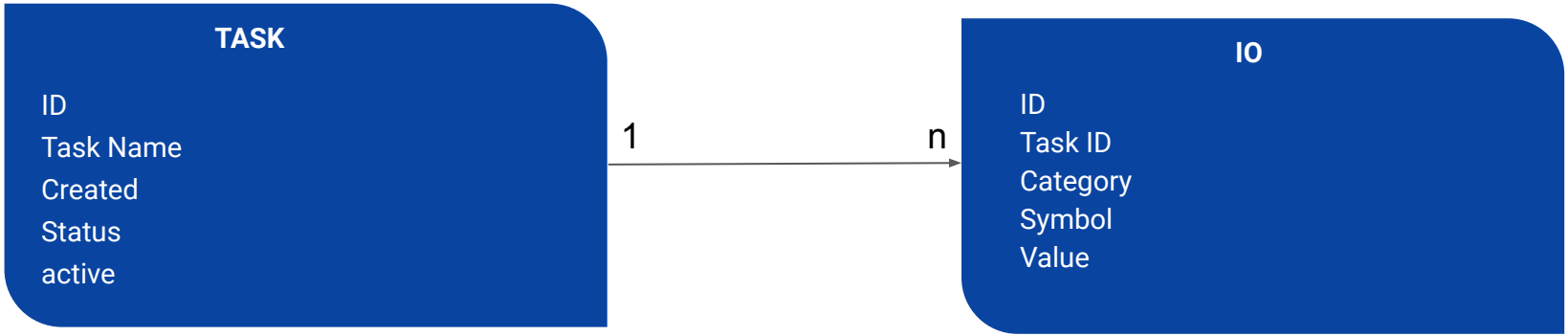
Task_id	x1	y1	vx1	vy1	x2	y2	vx2	vy2	x3	y3	vx3	vy3
1												

Tasks (Add Taskname)

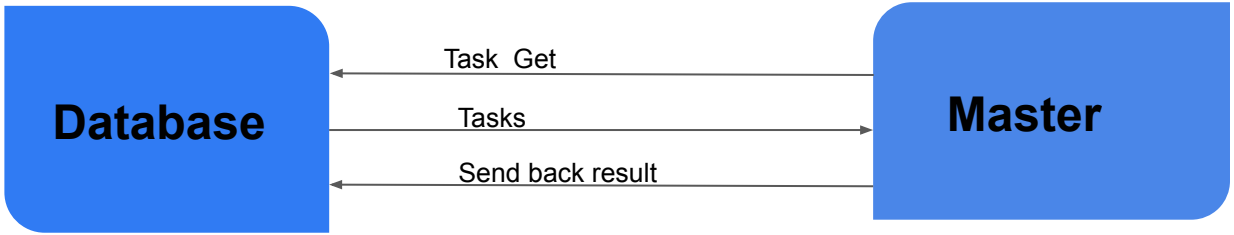
Task_id	TaskName	Created	status	active
3	task 3	2020-01-28 07:18:52.206991	0	0
4	task 5	2020-01-28 07:18:52.206991	0	0
1	task 1	2020-01-28 07:18:52.206991	0	1
2	task 2	2020-01-28 07:18:52.206991	0	1

DATABASE:

Communication objects



MASTER:

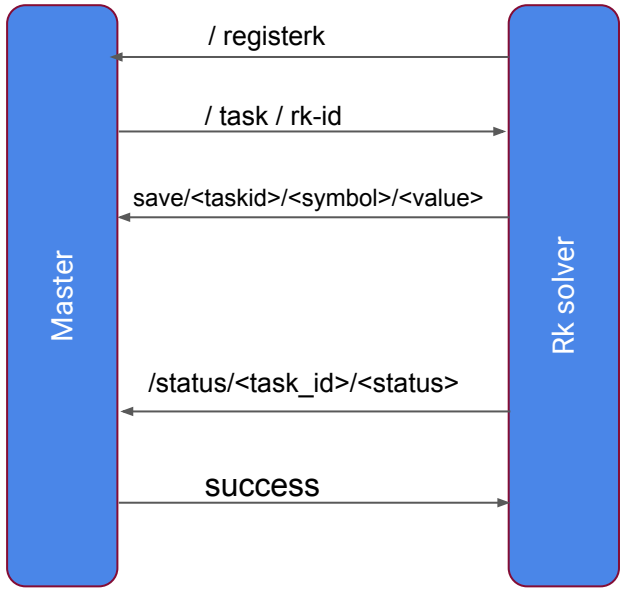


Master API:

192.16.8.17.4:5000 / registerk
192.16.8.17.4:5000 / task / <rk_id>
192.16.8.17.4:5000 / save <task_id> / <symbol> / <volume >
192.16.8.17.4:5000 /status / <task_id> / <start>

RK SOLVER:


Master
RK Solver


Master
Rk solver
/ registerk
/ task / rk-id
save/<taskid>/<symbol>/<value>
/status/<task_id>/<status>
success

RK SOLVER:

- Reference for 3 body problem

  https://nbviewer.jupyter.org/urls/www.numfys.net/media/notebooks/planetary_motion_three_body_problem.ipynb

Thank you