# 3-Body problem solver

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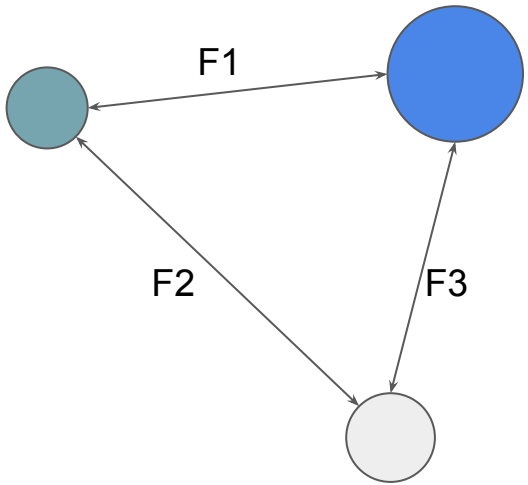
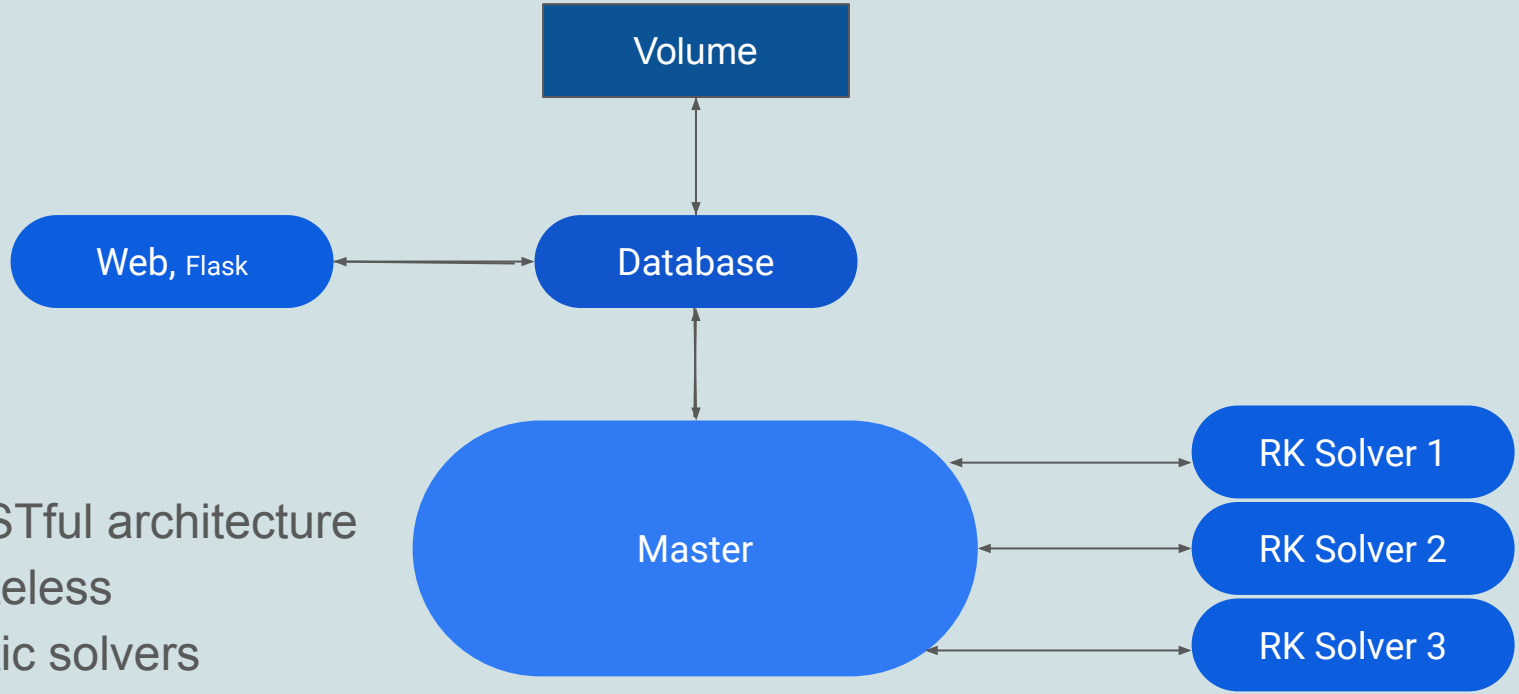
# 3 Body Problem:

- 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

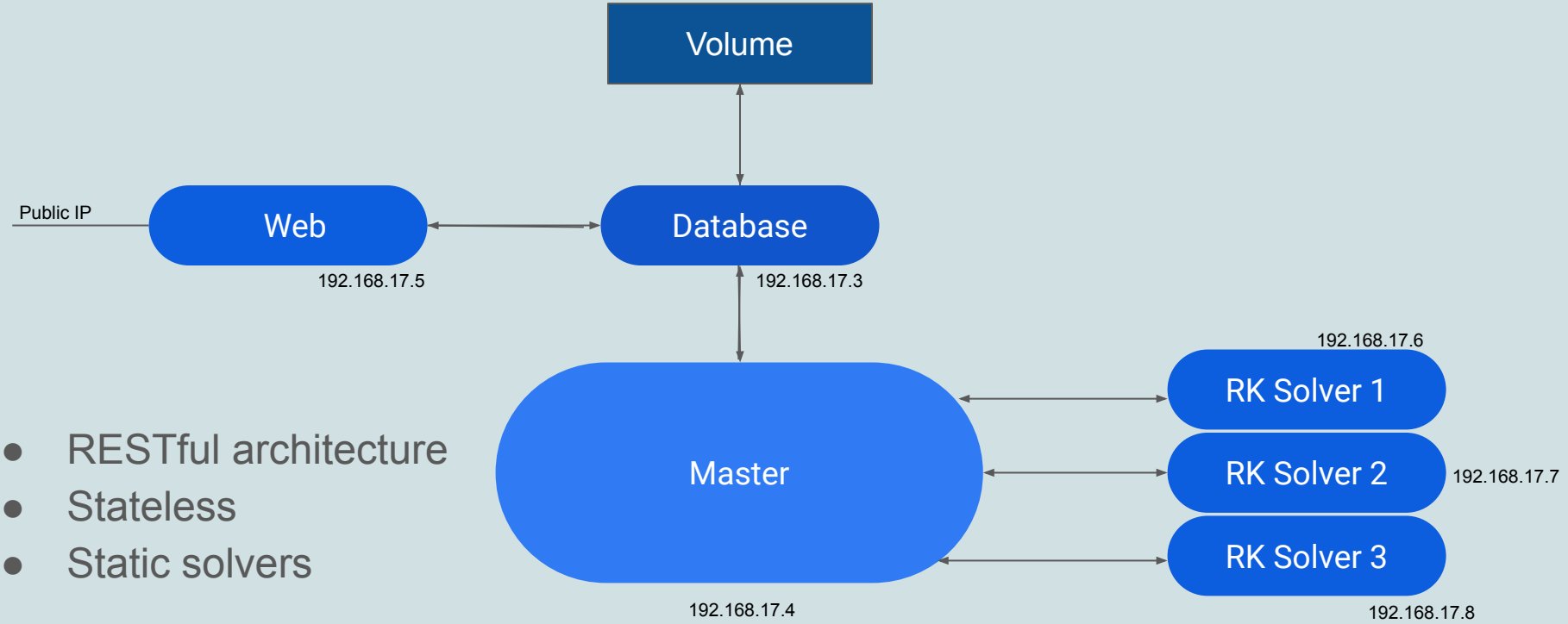


# LAYOUT:



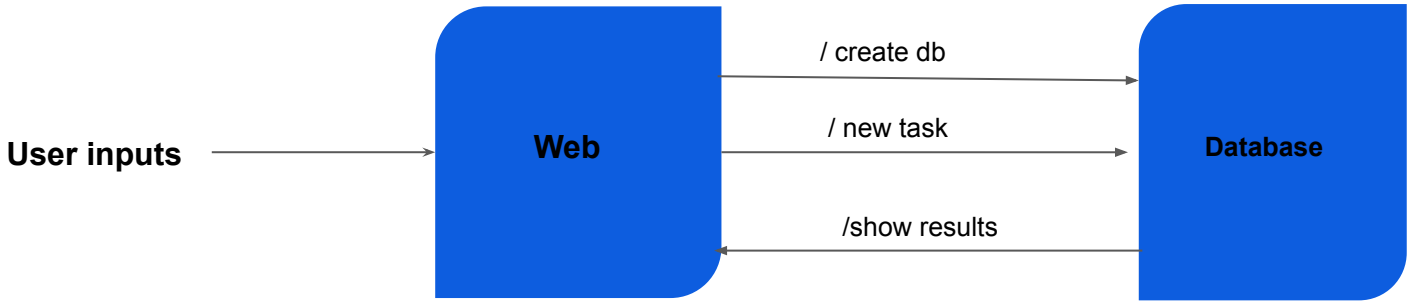

- RESTful architecture
- Stateless
- Static solvers

# LAYOUT:




- RESTful architecture
- Stateless
- Static solvers

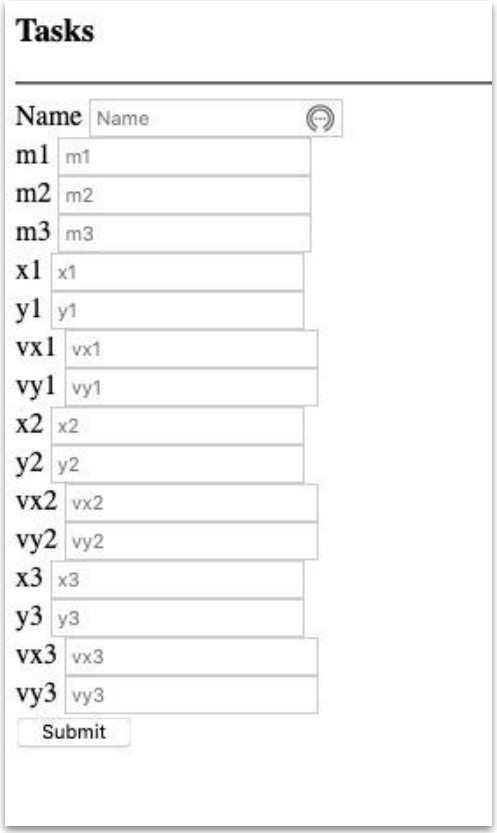
# WEB:




- 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**

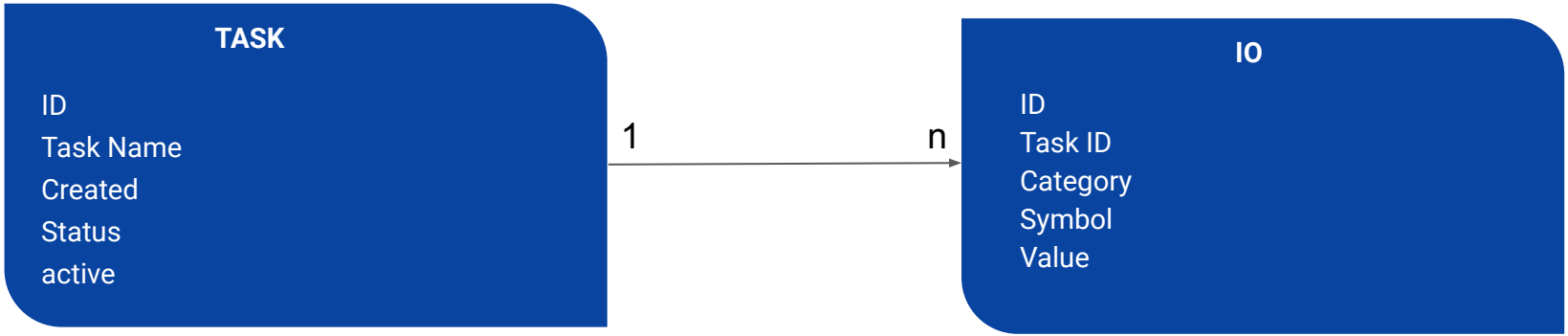
| Task_id | x1 | y1 | vx1 | vy1 | x2 | y2 | vx2 | vy2 | x3 | y3 | vx3 | vy3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | |

**Tasks (Add Taskname )**

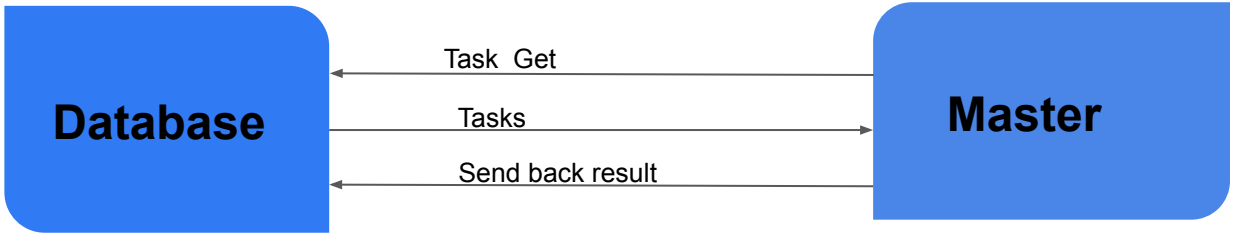
| Task_id | TaskName | Created | status | active |
|---|---|---|---|---|
| 3 | task 3 | 2020-01-28 07:18:52.206991 | 0 | 0 |
| 4 | task 5 | 2020-01-28 07:18:52.206991 | 0 | 0 |
| 1 | task 1 | 2020-01-28 07:18:52.206991 | 0 | 1 |
| 2 | task 2 | 2020-01-28 07:18:52.206991 | 0 | 1 |

# DATABASE:

## Communication objects



# MASTER:

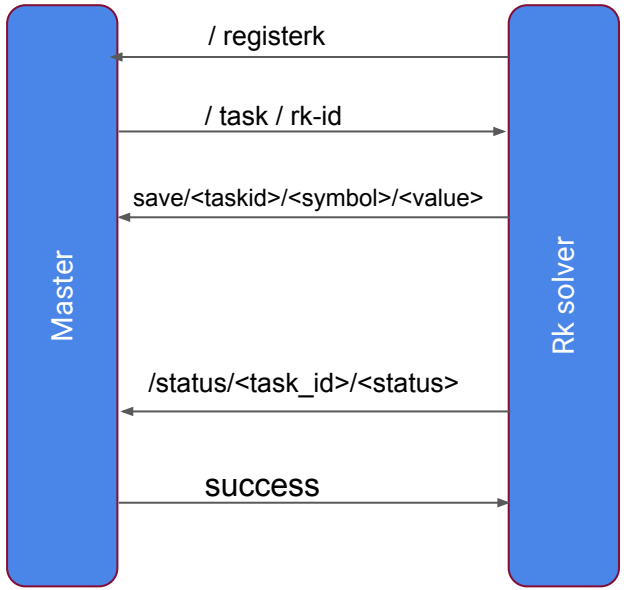



**Master API:**

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