Documentation

The main program is contained in program.py, which includes:

1. Salary Conversion

2. Sensor Aggregation

3. Sensor Aggregation Simulation

In the program, the three parts of the program is packed inside salary_conversion(), sensors_aggregation(), and sensors_aggregation_simulation(), respectively to make it more organized.

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1. Salary Conversion

The ‘user’ table and ‘salaries’ table is joined and can be obtained by using the endpoint ‘/salary_conversion/joined’. The returned view is shown below.

Salary Conversion

ID	Name	Username	Email	Address	Phone	Salary in IDR	Salary in USD
1	Leanne Graham	Bret	Sincere@april.biz	Kulas Light, Apt. 556, Gwenborough, 92998-3874	1-770-736-8031 x56442	4001112	278
2	Ervin Howell	Antonette	Shanna@melissa.tv	Victor Plains, Suite 879, Wisokyburgh, 90566-7771	010-692-6593 x09125	4685534	325
3	Clementine Bauch	Samantha	Nathan@yesenia.net	Douglas Extension, Suite 847, McKenziehaven, 59590-4157	1-463-123-4447	3013602	209
4	Patricia Lebsack	Karianne	Julianne.OConner@kory.org	Hoeger Mall, Apt. 692, South Elvis, 53919-4257	493-170-9623 x156	9619331	668
5	Chelsey Dietrich	Kamren	Lucio_Hettinger@annie.ca	Skiles Walks, Suite 351, Roscoeview, 33263	(254)954-1289	8380697	582
6	Mrs. Dennis Schulist	Leopoldo_Corkery	Karley_Dach@jasper.info	Norberto Crossing, Apt. 950, South Christy, 23505-1337	1-477-935-8478 x6430	9091825	632
7	Kurtis Weissnat	Elwyn.Skiles	Telly.Hoeger@billy.biz	Rex Trail, Suite 280, Howemouth, 58804-1099	210.067.6132	6996573	486
8	Nicholas Runolfsdottir V	Maxime_Nienow	Sherwood@rosamond.me	Ellsworth Summit, Suite 729, Aliyaview, 45169	586.493.6943 x140	3910255	272
9	Glenna Reichert	Delphine	Chaim_McDermott@dana.io	Dayna Park, Suite 449, Bartholomebury, 76495-3109	(775)976-6794 x41206	5968429	415
10	Clementina DuBuque	Moriah.Stanton	Rey.Padberg@karina.biz	Kattie Turnpike, Suite 198, Lebsackbury, 31428-2261	024-648-3804	5964808	414

To obtain the currency value for salary conversion, the program creates a GET request at https://free.currconv.com/api/v7/convert, with the appropriate key values along with the key generated from the website server by email. Since the website limits the amount of requests per hour, the currency will be stored at currency_data.json, located in ‘JSON Files’ folder. The currency value will be

updated if the currency_data() function is called for the first time on that day. This is done to make HTTP request on the website more effective.

2. Sensor Aggregation

The statistics of sensor data can be obtained by using the endpoint '/sensor_aggregation/statistics'. The output is shown below.

Sensor Aggregation

roomArea1

	Temperature	Humidity
min	17.005340236963963	87.03293224165277
max	26.98035967139652	96.99954297852648
median	21.619965261644992	92.10155691538746
average	21.857994050359405	92.06914445914848

roomArea2

	Temperature	Humidity
min	17.033949669267418	87.00796037119966
max	26.99928737310924	96.94968601576343
median	21.97313443526807	91.89253208513693
average	22.049739635815037	91.98393966653921

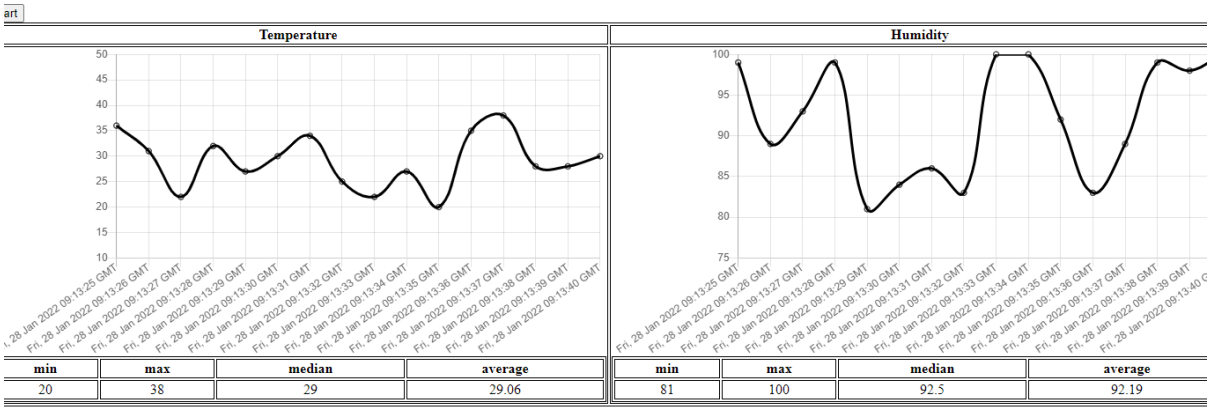
roomArea3

	Temperature	Humidity
min	17.0696300592691 55	87.02600069483388
max	26.98179300279191	96.98659751767917
median	22.061098580039157	91.8568825697183
average	21.93091025119789	91.94313906491483

The program shows the reading of the temperature and humidity from corresponding sensors for different timestamps. The lowest and highest value along with the median and average is calculated based on the corresponding data for different timestamps.

3. Sensor Aggregation Simulation.

The sensor aggregation simulation can be run by using the endpoint '/simulation'. The simulation example is shown below.



min	max	median	average
20	38	29	29.06

min	max	median	average
81	100	92.5	92.19

In order to avoid storing too many data, the simulation stores only 16 data for each temperature and humidity sensor reading. The chart is constructed using Chart.js. For the simulation to happen, a GET request is made to the endpoint '/simulation/values'. The time delay for each request is controlled by the front-end, so the server side will only make response and give values to be shown in the front-end. The min, max, median, and average values of the simulation is also shown in the endpoint view, which are calculated by the server.