

# Project 3 - RESTful Server

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**Due** Nov 30, 2021 by 10pm      **Points** 40      **Submitting** a text entry box or a website url  
**Available** after Nov 15, 2021 at 1:35pm

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## Assignment 3

### RESTful Web Server

#### **Task - Note: this is PART 1 of a two part project**

Create a RESTful web server for St. Paul crime data. Your server should implement a number of API routes relating to the data.

*NOTE:* you are allowed to use any Node.js modules (built-in, installed via npm, or written yourself) to help develop your RESTful web server.

#### **About the Data Set**

*St. Paul Crime Database:*

I have downloaded data from the St. Paul public dataset located at

<https://information.stpaul.gov/Public-Safety/Crime-Incident-Report-Dataset/gppb-g9cg>

(<https://information.stpaul.gov/Public-Safety/Crime-Incident-Report-Dataset/gppb-g9cg>) and stored them in a SQLite3 database.

The database has 3 tables as follows:

- Codes:
  - code (INTEGER) - crime incident type numeric code
  - incident\_type (TEXT) - crime incident type description
- Neighborhoods:
  - neighborhood\_number (INTEGER) - neighborhood id
  - neighborhood\_name (TEXT) - neighborhood name
- Incidents:
  - case\_number (TEXT): unique id from crime case
  - date\_time (DATETIME): date and time when incident took place
  - code (INTEGER): crime incident type numeric code
  - incident (TEXT): crime incident description (more specific than incident\_type)

- police\_grid (INTEGER): police grid number where incident occurred
- neighborhood\_number (INTEGER): neighborhood id where incident occurred
- block (TEXT): approximate address where incident occurred

## **RESTful Web Server (40 pts)**

### **Implement the following to earn 30/40 points (grade: C)**

- Package.json
  - Fill out the author and contributors sections in package.json (author should be whoever's GitHub account is used to host the code, contributors should be all group members)
  - Fill out the URL of the repository
  - Ensure all used modules downloaded via NPM are in the dependencies object
- Add the following routes for your API
  - GET /codes

- Return JSON array with list of codes and their corresponding incident type (ordered by code number)
- Example:

```
[
  {"code": 110, "type": "Murder, Non Negligent Manslaughter"},
  {"code": 120, "type": "Murder, Manslaughter By Negligence"},
  {"code": 210, "type": "Rape, By Force"},
  {"code": 220, "type": "Rape, Attempt"},
  {"code": 300, "type": "Robbery"},
  {"code": 311, "type": "Robbery, Highway, Firearm"},
  {"code": 312, "type": "Robbery, Highway, Knife or Cutting Instrument"},
  {"code": 313, "type": "Robbery, Highway, Other Dangerous Weapons"},
  {"code": 314, "type": "Robbery, Highway, By Strong Arm"},
  ...
]
```

- GET /neighborhoods
  - Return JSON object with list of neighborhood ids and their corresponding neighborhood name (ordered by id)
  - Example:

```
[
  {"id": 1, "name": "Conway/Battlecreek/Highwood"},
  {"id": 2, "name": "Greater East Side"},
  {"id": 3, "name": "West Side"},
  {"id": 4, "name": "Dayton's Bluff"},
  {"id": 5, "name": "Payne/Phalen"},
  {"id": 6, "name": "North End"},
  {"id": 7, "name": "Thomas/Dale(Frogtown)"},
  {"id": 8, "name": "Summit/University"},
  {"id": 9, "name": "West Seventh"},
  {"id": 10, "name": "Como"},
  {"id": 11, "name": "Hamline/Midway"},
  {"id": 12, "name": "St. Anthony"},
  {"id": 13, "name": "Union Park"},
  {"id": 14, "name": "Macalester-Groveland"},
  {"id": 15, "name": "Highland"},
]
```

```
[{"id": 16, "name": "Summit Hill"}, {"id": 17, "name": "Capitol River"}]
```

- GET /incidents

- Return JSON object with list of crime incidents (ordered by date/time). Note date and time should be separate fields.
- Example:

```
[ { "case_number": "19245020", "date": "2019-10-30", "time": "23:57:08", "code": 9954, "incident": "Proactive Police Visit", "police_grid": 87, "neighborhood_number": 7, "block": "THOMAS AV & VICTORIA" }, { "case_number": "19245016", "date": "2019-10-30", "time": "23:53:04", "code": 9954, "incident": "Proactive Police Visit", "police_grid": 87, "neighborhood_number": 7, "block": "98X UNIVERSITY AV W" }, { "case_number": "19245014", "date": "2019-10-30", "time": "23:43:19", "code": 700, "incident": "Auto Theft", "police_grid": 95, "neighborhood_number": 4, "block": "79X 6 ST E" }, ... ]
```

- PUT /new-incident

- Upload incident data to be inserted into the SQLite3 database
- Data fields:
  - case\_number
  - date
  - time
  - code
  - incident
  - police\_grid
  - neighborhood\_number
  - block
- Note: response should reject (status 500) if the case number already exists in the database

- DELETE /remove-incident

- Remove data from the SQLite3 database
- Data fields:
  - case\_number
- Note: response should reject (status 500) if the case number does not exist in the database

### Implement additional features to earn a B or A

- Add the following query option for GET /codes (2 pts)
  - code - comma separated list of codes to include in result (e.g. ?code=110,700). By default all codes should be included.
- Add the following query options for GET /neighborhoods (2 pts)
  - id - comma separated list of neighborhood numbers to include in result (e.g. ?id=11,14). By default all neighborhoods should be included.
- Add the following query options for GET /incidents (6 pts)
  - start\_date - first date to include in results (e.g. ?start\_date=2019-09-01)
  - end\_date - last date to include in results (e.g. ?end\_date=2019-10-31)
  - code - comma separated list of codes to include in result (e.g. ?code=110,700). By default all codes should be included.
  - grid - comma separated list of police grid numbers to include in result (e.g. ?grid=38,65). By default all police grids should be included.
  - neighborhood - comma separated list of neighborhood numbers to include in result (e.g. ?neighborhood=11,14). By default all neighborhoods should be included.
  - limit - maximum number of incidents to include in result (e.g. ?limit=50). By default the limit should be 1,000. Result should include the N most recent incidents (within specified date range).

### Database

The database can be downloaded here ([stpaul\\_crime.sqlite3](https://stthomas.instructure.com/courses/46313/files/5069571/download?download_frd=1) ↓  
([https://stthomas.instructure.com/courses/46313/files/5069571/download?download\\_frd=1](https://stthomas.instructure.com/courses/46313/files/5069571/download?download_frd=1)) )

### Submission

Code should be saved in a repository on GitHub. Do NOT add your node\_modules directory to your repository. This is what package.json is for - it will store which modules you use for your project. In order to submit, you should enter the the project's GitHub URL for the assignment (in Canvas).

I will be doing the following to assess your assignment:

1. git clone https://github.com/<user>/<project>
2. cd <project>
3. Copy my local version of 'stpaul\_crime.sqlite3' to the 'db' folder
4. npm install
5. node server.js
6. Perform GET, PUT, DELETE requests using curl

**IMPORTANT:** Only one group member should submit the GitHub URL. Every member should submit a checklist of what you feel you have accomplished from the rubric above (including who did what), and include your total expected score. This can be as a text entry submission (if not submitting the URL), or as a comment once you submit the URL.

### **Groups**

Ben F., Grant, & Logan	Antonio, Nolan, & Lucas	Jackson, Brandon B., & Michael
Jack, Zak, & Carter	Ben E., Daniel, & Anshul	Brandon T., Joe, & Aaron
Tseng, Emma, & Elizabeth	Peter, Tonya, & Noah	Zack & Erik

### **Deadline**

This project is due Tuesday, November 30 at 10:00pm.