SIT314/SIT729 – Week 5 Group Activity  
Designing JSON for IoT Applications

short line

# Overview

# In the technical task we will use JSON. We are going to be using Javascript Object Notation (JSON) to create sensor readings from our mock sensor. If you are not familiar with JSON, go through the tutorials <https://www.w3schools.com/js/js_json_intro.asp>).

# Tasks

Design a JSON string for each of the following:

1. A room temperature sensor for the room you are in.

{

"sensor\_id": "temp\_001",

"location": "living\_room",

"timestamp": "2023-11-15T14:30:45Z",

"temperature\_celsius": 22.5,

"humidity\_percent": 45,

"battery\_level": 85,

"status": "normal"

}

1. The status of a self-driving car.

{

"vehicle\_id": "sd\_car\_xyz123",

"timestamp": "2023-11-15T14:31:22Z",

"location": {

"latitude": 34.052235,

"longitude": -118.243683

},

"speed\_kmh": 45,

"fuel\_level": 78,

"autonomous\_mode": true,

"system\_status": "operational",

"current\_destination": "Downtown LA",

"sensor\_health": {

"lidar": "ok",

"camera": "ok",

"radar": "ok"

}

}

1. The location of a person.

{

"person\_id": "user\_789",

"timestamp": "2023-11-15T14:32:10Z",

"location": {

"latitude": 40.7128,

"longitude": -74.0060,

"accuracy\_meters": 5

},

}

1. A weather update for a location.

{

"station\_id": "weather\_nyc\_001",

"timestamp": "2023-11-15T14:33:05Z",

"location": {

"city": "New York",

"country": "USA",

"coordinates": {

"latitude": 40.7128,

"longitude": -74.0060

}

},

"temperature\_c": 18,

"humidity\_percent": 65,

"wind\_speed\_kmh": 15,

"conditions": "partly\_cloudy",

"air\_quality\_index": 42,

"forecast": {

"next\_3\_hours": "light\_rain",

"next\_12\_hours": "cloudy"

}

}

1. The status of a smart vacuum cleaner.

{

"device\_id": "vacuum\_living\_room\_1",

"timestamp": "2023-11-15T14:35:20Z",

"status": "cleaning",

"battery\_percent": 73,

"current\_location": {

"room": "living\_room",

"x\_coord": 2.5,

"y\_coord": 3.1

},

"dust\_bin\_level": 45,

"current\_mode": "auto",

"schedule": {

"next\_clean": "2023-11-15T20:00:00Z"

},

"error\_status": null

}

1. A TV program change request for a TV.

{

"request\_id": "tv\_req\_456",

"timestamp": "2023-11-15T14:36:40Z",

"device\_id": "living\_room\_tv",

"user\_id": "family\_member\_3",

"current\_channel": "HBO",

"requested\_channel": "National Geographic",

}

1. The request message to set an air-conditioning setting.

{

"request\_id": "ac\_set\_789",

"timestamp": "2023-11-15T14:37:15Z",

"device\_id": "bedroom\_ac\_unit",

"requested\_settings": {

"power": "on",

"mode": "cool",

"temperature\_c": 22,

"fan\_speed": "medium",

"swing": "auto"

},

"scheduled\_duration\_minutes": 120,

"energy\_saving\_mode": true,

"request\_source": "mobile\_app"

}