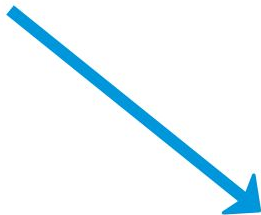


# REST API

**RE**presentational **State** Transfer



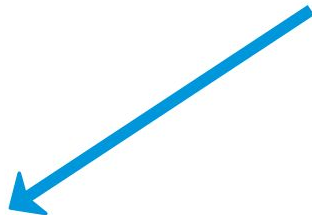
Data at a given point in time



**Application** **P**rogramming **I**nterface



Description of how to **use** software



Specification for how to transfer data between clients and servers

Client has no knowledge of underlying database

Short for **J**ava**S**cript **O**bject **N**otation

Language agnostic

Built on two structures:

1. Objects (like Python dictionary)
2. Arrays (like Python lists)

Object keys are strings

Values can be string, number, object, array, boolean, or null

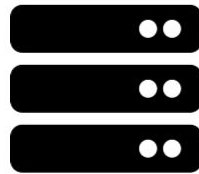
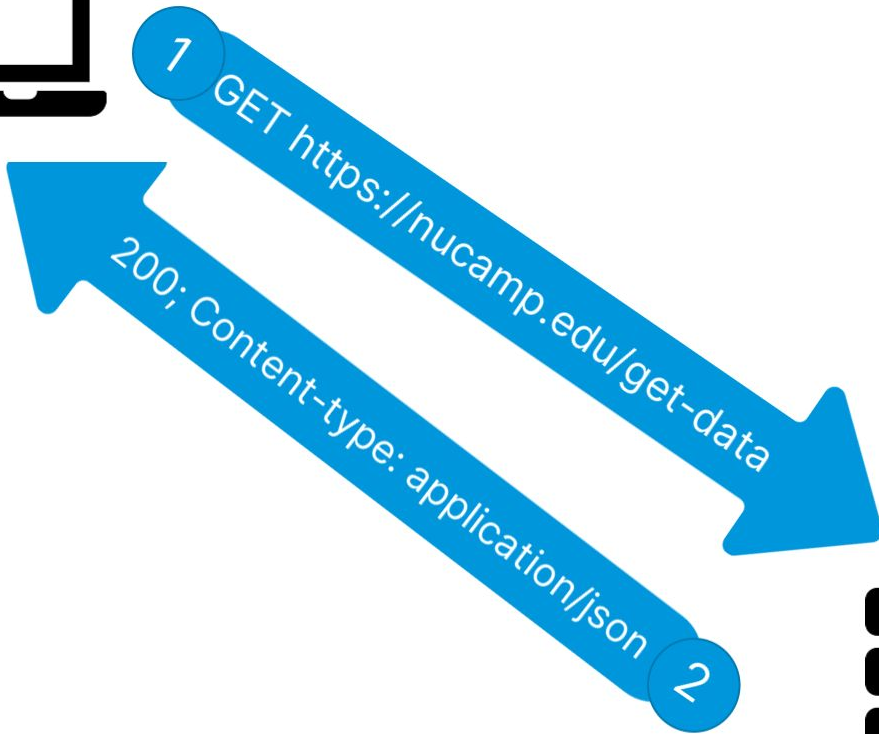
Number type includes integers and floats

# JSON example

```
{
  "dept_code": "MATH",
  "course_number": "101",
  "is_active": false,
  "start_date": {
    "day": 1,
    "month": 9,
    "year": 2031
  },
  "students": [
    {
      "first_name": "Alice",
      "middle_name": "Rose",
      "last_name": "Anderson"
    },
    {
      "first_name": "Bob",
      "middle_name": null,
      "last_name": "Brown"
    }
  ]
}
```

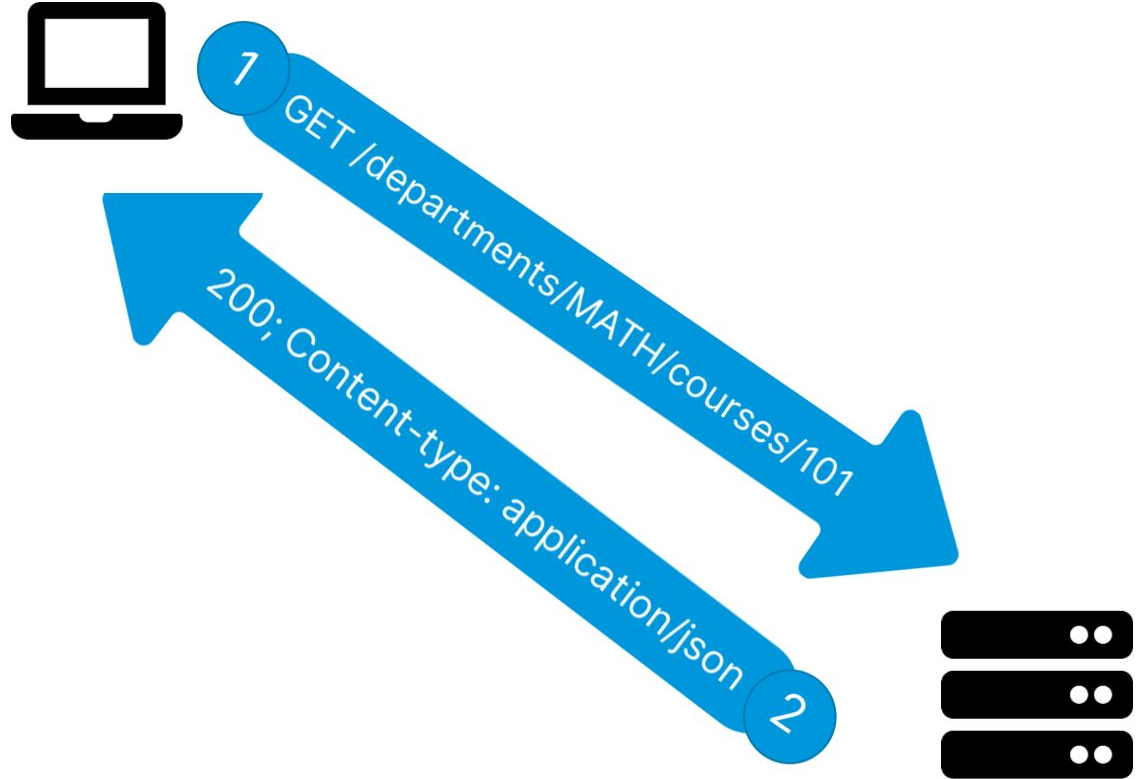
# JSON example

```
{
  "dept_code": "MATH",
  "course_number": "101",
  "is_active": false,
  "start_date": {
    "day": 1,
    "month": 9,
    "year": 2031
  },
  "students": [
    {
      "first_name": "Alice",
      "middle_name": "Rose",
      "last_name": "Anderson"
    },
    {
      "first_name": "Bob",
      "middle_name": null,
      "last_name": "Brown"
    }
  ]
}
```



# REST path conventions

```
{
  "dept_code": "MATH",
  "course_number": "101",
  "is_active": false,
  "start_date": {
    "day": 1,
    "month": 9,
    "year": 2031
  },
  "students": [
    {
      "first_name": "Alice",
      "middle_name": "Rose",
      "last_name": "Anderson"
    },
    {
      "first_name": "Bob",
      "middle_name": null,
      "last_name": "Brown"
    }
  ]
}
```



# REST path conventions

```
{
```

```
  "dept_code": "MATH",
```

```
  "course_number": "101",
```

```
  "is_active": true,
```

```
  "start_date": "2019-09-01",
```

```
    "day": "Monday",
```

```
    "month": "September",
```

```
    "year": 2019
```

```
},
```

```
"students": [
```

```
{
```

/departments/<dept\_code>/courses/<course\_num>

/departments/BIO/courses/210

/departments/PHYS/courses/140

/departments/PHYS/courses/141

/departments/CHEM/courses/210

/departments/PSYCH/courses/211

```
    "middle_name": null,
```

```
    "last_name": "Brown"
```

```
  }
```

```
]
```

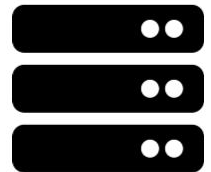
```
}
```



7

json

2



```
{  
  "dept_code": "MATH",  
  "course_number": "101",  
  "is_active": false,  
  "start_date": {  
    "day": 1,  
    "month": 1,  
    "year": 2019  
  },  
  "student": {  
    "middle_name": "Rose",  
    "last_name": "Anderson",  
    "first_name": "Bob",  
    "middle_name": null,  
    "last_name": "Brown"  
  }  
}
```



1

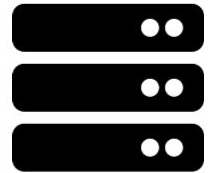
GET /departments

## Route Parameters

/departments/<dept\_code>/courses/<course\_num>

Content-Type: application/json

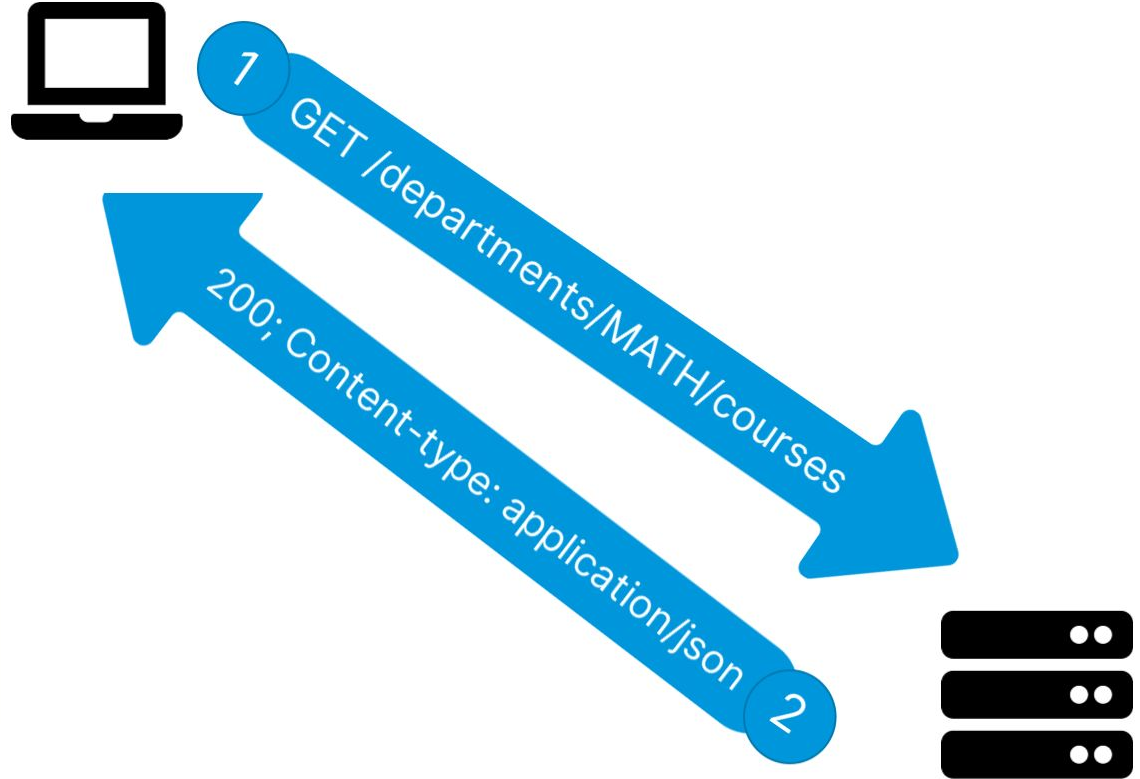
2



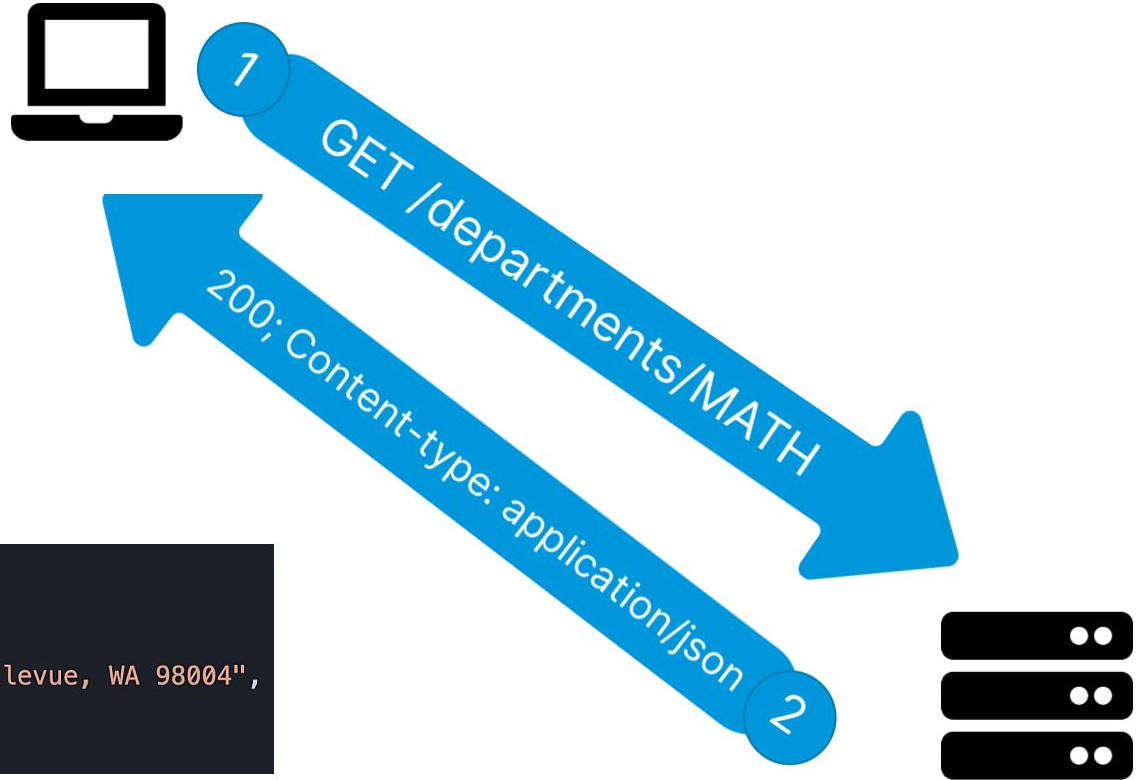


# REST path conventions

```
[  
  {  
    "number": 101,  
    "name": "Calculus I"  
  },  
  {  
    "number": 102,  
    "name": "Calculus II"  
  },  
  {  
    "number": 217,  
    "name": "Linear Algebra"  
  }  
]
```

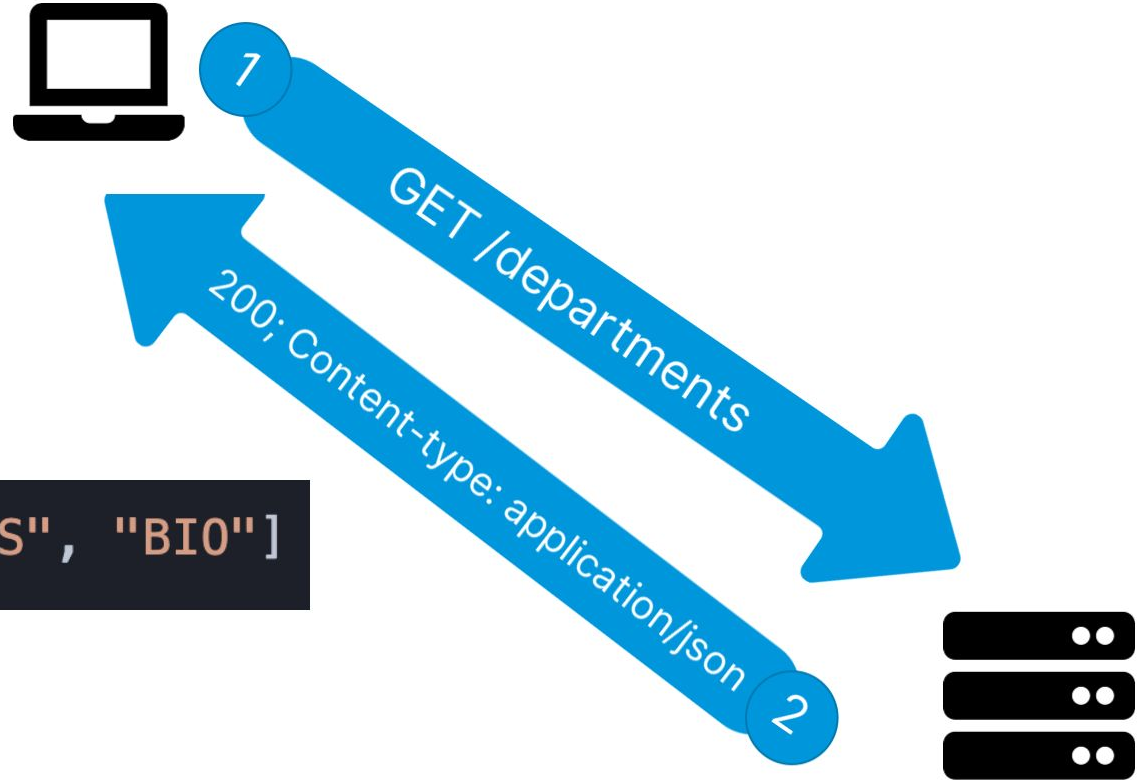


# REST path conventions

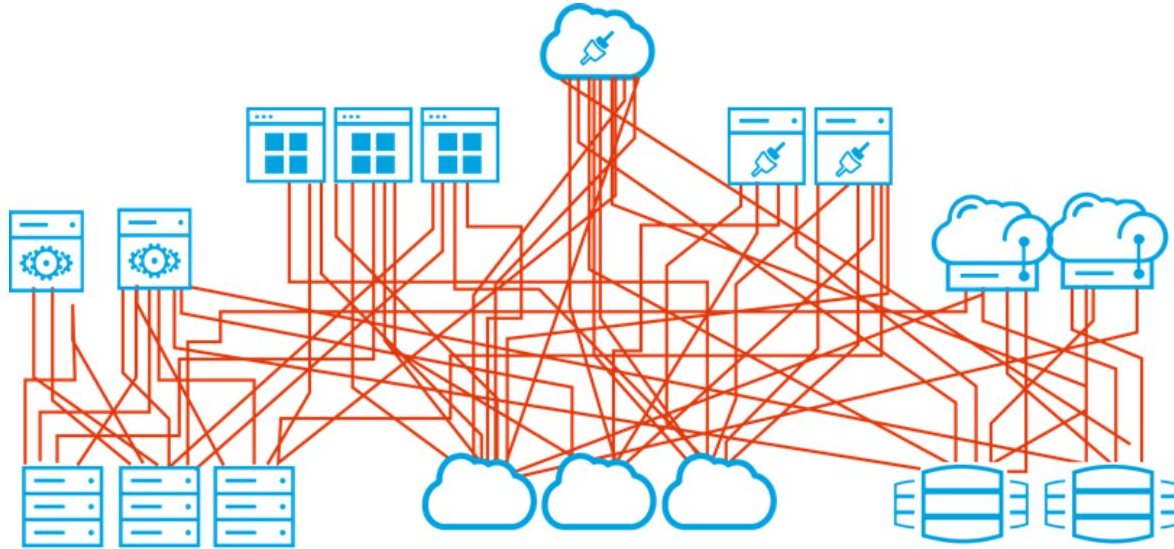


```
{  
  "code": "MATH",  
  "name": "Mathematics",  
  "mailing_address": "123 Math Bldg Bellevue, WA 98004",  
  "email": "math@nucamp.edu"  
}
```

# REST path conventions



# Interoperability



Using standards like JSON, REST, and HTTP allow networked components to communicate easily