Introduction to JSON (JavaScript Object Notation)

- Psychometric Conference 2016

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Topic

- What is JSON?
- JSON Feature
- JSON Structure
- JSON Example
- JSON Parse Tools
- Online Editor Introduction

What is JSON?

- The JSON file (JavaScript Object Notation) is an open standard format that uses human-readable text to transmit data objects. It is the most common data format used for browser/server communication, largely replacing XML.

- JSON is a language-independent data format. It derived from JavaScript, but now code to generate and parse JSON-format data is available in many programming languages.

- JSON is a text format and the JSON filename extension is .json.

JSON Feature

- Lightweight data-interchange format
- Compared to XML → Simple format
- Easy for humans to read and write
- Easy for machines to parse and generate
- Programming language independent

```
{
  "firstName": "John",
  "lastName": "Smith",
  "isAlive": true,
  "age": 25,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021-3100"
  },
  "phoneNumbers": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
```

JSON Structures

- A collection of name/value pairs
  - An object, record, dictionary, hash table, keyed list, or associative array
- An ordered list of values
  - An array, vector, list, or sequence
- A JSON object begins with { (left brace) and ends with } (right brace)
- Each name is followed by **:** (colon) and the name/value pairs are separated by **,** (comma)

```
{
  "firstName": "John",
  "lastName": "Smith",
  "isAlive": true,
  "age": 25,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021-3100"
  },
  "phoneNumbers": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
```

JSON Example

- JSON:

Data Structure:

JSON Parse Tools

- the C family of languages, including C, C++ , C#, Java, JavaScript, Perl, Python

- SAS "PROC GROOVY"
  - http://support.sas.com/resources/papers/proceedings16/1660-2016.pdf

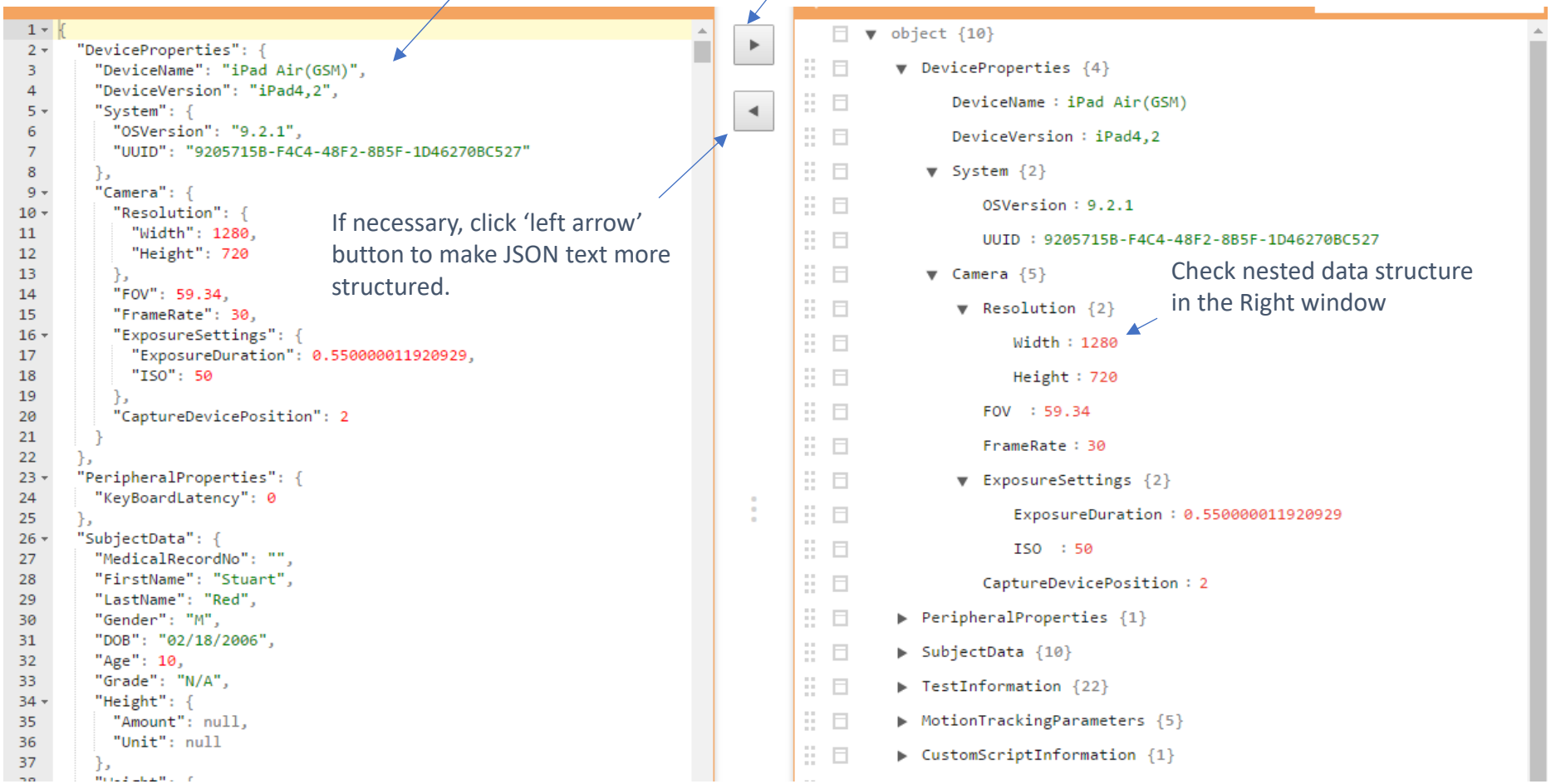
- R tools
  - 3 R-packages-"jsonlite", "rjson", "RJSONIO"
  - (*R-package comparison code is available in the folder*)

- Online Editor: http://www.jsoneditoronline.org/

Online Editor Introduction

Copy/paste JSON text in the Left window

Press ‘right arrow’ button to parse text



If necessary, click ‘left arrow’ button to make JSON text more structured.

Check nested data structure in the Right window

- Thank you !