Dissertation section plan: Evaluation

A user evaluation of the tool was used to assess whether the tool has fulfilled the following goals:

* Improving understanding of JSON files, allowing students to understand concepts such as nesting, and introducing objects to students who are unaware of OOP.
* Improving the accessibility of JSON files, allowing visually impaired programmers who would otherwise use screen-readers get to grips with the contents of a JSON file quickly.

First evaluation: introduce JSON file formats to several first year university computer science students, and use the tool to assist in the description of JSON files. Introduce the concepts of depth, nesting and objects to students. Evaluate success of the tool through a survey that participants complete after the session.

Second evaluation: show programmers with some experience of handling json files, screenreader transcripts from reading out JSON files. Ask programmers to answer a series of questions about the file, and record answer error rates. Do A/B testing, with the A group using the tool, and the B group not using the tool. Compare the error rates of those who used the tool vs those who didn’t use the tool

Task 1 question: using json screenreader transcript, and jsonTalk tool: can a user accurately reproduce the json file? Does the tool accuractely represent a json file? Does the tool allow for users to quicker determine the contents of a json file?

Task 1 method : give users a page with the transcript for two different json files, with different levels of nesting. Show users how to use the tool. Ask user to either type or write out what the json file would look like. Use jsonDiff to compare the answer to the actual file. Compare jsonDiff average values across the two groups. Time participants.

Task 2 question: can users accurately determine the levels of nesting in a json file with no visual cues? Does the tool effectively describe nesting levels of the file?

Task 2 method: present user with json file transcript of a heavily nested json file. Ask user to write down the depth of 3 different key/value pairs. A group uses tool, B group doesn’t. Average out success rate, compare across the groups.

Task 3 question: does the tool accurately represent and highlight common object structures within the document?

Task 3 method: present user with json file transcript of json file which has some duplicate structure objects (same keys), ask groups to identify how many duplicates there are of a certain object.

{

"store": {

"book": [

{

"category": "reference",

"author": "Nigel Rees",

"title": "Sayings of the Century",

"price": 8.95

},

{

"category": "fiction",

"author": "Evelyn Waugh",

"title": "Sword of Honour",

"price": 12.99

},

{

"category": "fiction",

"author": "Herman Melville",

"title": "Moby Dick",

"isbn": "0-553-21311-3",

"price": 8.99

},

{

"category": "fiction",

"author": "J. R. R. Tolkien",

"title": "The Lord of the Rings",

"isbn": "0-395-19395-8",

"price": 22.99

}

],

"bicycle": {

"color": "red",

"price": 19.95

}

},

"expensive": 10

}

"Object, name: 'store', brace open. Object, name: 'store', brace open. Property: 'book', value: Array, bracket open. Object, brace open. Property: 'category', value: 'reference', comma. Property: 'author', value: 'Nigel Rees', comma. Property: 'title', value: 'Sayings of the Century', comma. Property: 'price', value: 8.95, brace close, comma. Object, brace open. Property: 'category', value: 'fiction', comma. Property: 'author', value: 'Evelyn Waugh', comma. Property: 'title', value: 'Sword of Honour', comma. Property: 'price', value: 12.99, brace close, comma. Object, brace open. Property: 'category', value: 'fiction', comma. Property: 'author', value: 'Herman Melville', comma. Property: 'title', value: 'Moby Dick', comma. Property: 'isbn', value: '0-553-21311-3', comma. Property: 'price', value: 8.99, brace close, comma. Object, brace open. Property: 'category', value: 'fiction', comma. Property: 'author', value: 'J. R. R. Tolkien', comma. Property: 'title', value: 'The Lord of the Rings', comma. Property: 'isbn', value: '0-395-19395-8', comma. Property: 'price', value: 22.99, brace close, bracket close, comma. Property: 'bicycle', value: Object, brace open. Property: 'color', value: 'red', comma. Property: 'price', value: 19.95, brace close, brace close, comma. Property: 'expensive', value: 10, brace close."