第 25 回 IT ソフトウェア翻訳士認定試験

＜1次試験＞　2017年10月1日（日）10：00〜15：00

問題１・２の両方について解答のこと。選択ではありません。

＜問題１＞　全文を訳して提出してください。

What Digital Twin technology actually means

The concept of a virtual, digital equivalent to a physical product or the Digital Twin was introduced in 2003 at University of Michigan. At that time the introduced concept and digital representations of actual physical products were really new and immature; the information was limited, paper-based.

However, in the decade that has followed, the information technology supporting both the development and maintenance of the virtual product and the design and manufacture of the physical product has exploded. Virtual products are rich representations of products that are virtually indistinguishable from their physical counterparts.

Digital twins are a dynamic software model of a physical thing or system (Gartner Inc).

For better understanding the concept, let's take a look at the simple example. Imagine that we have the information or document that we need to save for the later use. Once the full document or the information

we need from the paper document is scanned and archived or used to drive whatever business process, we can do two things with the original paper: get rid of it or keep it, for instance for regulatory reasons. If we trash it, the paper-free dream, it's gone and all we have is that digital information; no copy. With a digital twin, as the name indicates, we have two versions of a 'thing': the physical one and the digital twin one.

The process and technology

The digital twin concept is built on three pillars:

• A physical product in real space,

• A virtual product in virtual space,

• The connection of data and information that ties the virtual and real products together.

Since the model was introduced, there have been changes and increases in the amount, richness and fidelity of information of both the physical and virtual products; for example, on the virtual side, there were added numerous behavioral characteristics so that we can not only visualize the product, but we can test it for performance capabilities. Also, there is an ability to create lightweight versions of the virtual model that allows today's simulation products to visualize and simulate complex systems and systems of systems, including their physical behaviours, in real-time and with acceptable compute costs.

<問題２> 全文を訳して提出してください。ただし、プログラム部分を除きます。

What is JSON? JavaScript Object Notation explained

JavaScript Object Notation is a schema-less, text-based representation of structured data that is based on key-value pairs and ordered lists. Although JSON is derived from JavaScript, it is supported either natively or through libraries in most major programming languages. JSON is commonly, but not exclusively, used to exchange information between web clients and web servers.

Over the last 15 years, JSON has become ubiquitous on the web. Today it is the format of choice for almost every publicly available web service, and it is frequently used for private web services as well.

The popularity of JSON has also resulted in native JSON support by many databases. Relational databases like PostgreSQL and MySQL now ship with native support for storing and querying JSON data. NoSQL databases like MongoDB and Neo4j also support JSON, though MongoDB uses a slightly modified, binary version of JSON behind the scenes.

Below we'll take a quick look at JSON and discuss where it came from, its advantages over XML, its drawbacks, when you should use it, and when you should consider alternatives. Let's start with an example:

```
{
  "firstName": "Jonathan",
  "lastName": "Freeman",
  "loginCount": 4,
  "isWriter": true,
  "worksWith": ["Spantree Technology Group", "InfoWorld"],
  "pets": [
    {
      "name": "Lilly",
      "type": "Raccoon"
    }
  ]
}
```

プログラム部分は
訳さなくて結構です。

The structure above clearly defines some attributes of a person. It includes a first and last name, the number of times the person has logged in, whether this person is a writer, a list of companies the person works with, and a list of the person's pets (only one, in this case). A structure like the one above may be passed from a server to a web browser or a mobile application, which will then perform some action such as displaying the data or saving it for later reference.

JSON is a generic data format with a minimal number of value types: strings, numbers, booleans, lists, objects, and null. Although the notation is a subset of JavaScript, these types are represented in all common programming languages, making JSON a good candidate to transmit data across language gaps.

以上