# JS Advanced: Exam 18 March 2018

Problems for exam preparation for the [“JavaScript Advanced” course @ SoftUni](https://softuni.bg/courses/javascript-advanced). Submit your solutions in the SoftUni judge system at <https://judge.softuni.bg/Contests/756/>. //TODO: Change to current exam contest

# Problem 2. Payment Package (Unit Testing)

You are given the following **JavaScript class**:

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| PaymentPackage.js |
| **class** PaymentPackage {  constructor(name, value) {  **this**.name = name;  **this**.value = value;  **this**.VAT = 20; *// Default value* **this**.active = **true**; *// Default value* }   **get** name() {  **return this**.**\_name**;  }   **set** name(newValue) {  **if** (**typeof** newValue !== **'string'**) {  **throw new** Error(**'Name must be a non-empty string'**);  }  **if** (newValue.length === 0) {  **throw new** Error(**'Name must be a non-empty string'**);  }  **this**.**\_name** = newValue;  }   **get** value() {  **return this**.**\_value**;  }   **set** value(newValue) {  **if** (**typeof** newValue !== **'number'**) {  **throw new** Error(**'Value must be a non-negative number'**);  }  **if** (newValue < 0) {  **throw new** Error(**'Value must be a non-negative number'**);  }  **this**.**\_value** = newValue;  }   **get** VAT() {  **return this**.**\_VAT**;  }   **set** VAT(newValue) {  **if** (**typeof** newValue !== **'number'**) {  **throw new** Error(**'VAT must be a non-negative number'**);  }  **if** (newValue < 0) {  **throw new** Error(**'VAT must be a non-negative number'**);  }  **this**.**\_VAT** = newValue;  }   **get** active() {  **return this**.**\_active**;  }   **set** active(newValue) {  **if** (**typeof** newValue !== **'boolean'**) {  **throw new** Error(**'Active status must be a boolean'**);  }  **this**.**\_active** = newValue;  }   toString() {  **const** output = [  **`Package:** ${**this**.name}**`** + (**this**.active === **false** ? **' (inactive)'** : **''**),  **`- Value (excl. VAT):** ${**this**.value}**`**,  **`- Value (VAT** ${**this**.VAT}**%):** ${**this**.value \* (1 + **this**.VAT / 100)}**`** ];  **return** output.join(**'\n'**);  } } |

### Functionality

The above code defines a **class** that contains information about a **payment package**. An **instance** of the class should support the following operations:

* Can be **instantiated** with two parameters – a string name and number value
* Accessor name – used to get and set the value of name
* Accessor value – used to get and set the value of value
* Accessor VAT – used to get and set the value of VAT
* Accessor active – used to get and set the value of active
* Function toString() – return a string, containing an overview of the instance

When creating an instance, or changing any of the property values, the parameters are validated. They must follow these rules:

* name – non-empty string
* value – non-negative number
* VAT – non-negative number
* active – Boolean

If any of the requirements aren’t met, the operation must throw an error.

***Scroll down for examples and details about submitting to Judge.***

### Examples

This is an example how this code is **intended to be used**:

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| Sample code usage |
| *// Should throw an error* **try** {  **const *hrPack*** = **new** PaymentPackage(**'HR Services'**); } **catch**(err) {  **console**.log(**'Error: '** + err.**message**); } **const *packages*** = [  **new** PaymentPackage(**'HR Services'**, 1500),  **new** PaymentPackage(**'Consultation'**, 800),  **new** PaymentPackage(**'Partnership Fee'**, 7000), ]; **console**.log(***packages***.join(**'\n'**));  **const *wrongPack*** = **new** PaymentPackage(**'Transfer Fee'**, 100); *// Should throw an error* **try** {  ***wrongPack***.active = **null**; } **catch**(err) {  **console**.log(**'Error: '** + err.**message**); } |
| Corresponding output |
| Error: Value must be a non-negative number  Package: HR Services  - Value (excl. VAT): 1500  - Value (VAT 20%): 1800  Package: Consultation  - Value (excl. VAT): 800  - Value (VAT 20%): 960  Package: Partnership Fee  - Value (excl. VAT): 7000  - Value (VAT 20%): 8400  Error: Active status must be a boolean |

### Your Task

Using **Mocha** and **Chai** write **JS unit tests** to test the entire functionality of the PaymentPackage class. Make sure instances of it have all the required functionality and validation. You may use the following code as a template:

|  |
| --- |
| describe(**"*TODO* …"**, **function**() {  ***it***(**"*TODO …*"**, **function**() {  *//* ***TODO:*** …  });  *//* ***TODO:*** …  }); |

### Submission

Submit your tests inside a describe() statement, as shown above.