Test plan – Evidencija Racunarske Opreme

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1. Introduction

This test plan details the process of testing the website Evidencija Racunarske Opreme located at the domain puppies-closet.com/evidencija. The test plan was based off the Software Specification document written by the creator of the website and which can be found alongside other documents in the main folder under the title Dokumentacija – Evidencija racunarske opreme.

The process of testing the website will be conducted using both manual and automated tests. The tools that are used are popular open-source applications and programs. The tools in question are:

- *Visual Studio Code* as a coding tool,
- *Selenium Webdriver* as a tool simulating webdrivers,
- *Postman API* as a tool for testing API requests,
- *Movavi Screen Recorder* as a tool for recording bug reports and *Ufile.io* for storing them,
- *Chrome DevTools* for website development,
- *Apache JMeter* for analysis and performance testing purposes.

It is important to note that API testing was not conducted on the website 'Evidencija racunarske opreme', but on the API service 'randouser.me' in order to demonstrate a minimum of five API tests written using Postman API and JavaScript. The API tests collection written for this service can be found in the folder titled 'API – randomuser.me'.

Automated tests scripts (-py) can be found in the folder 'Automated scripts – Evidencija racunarske opreme'. The performance tests conducted using Apache JMeter can be found in the folder 'JMeter tests – Evidencija racunarske opreme'.

Time commitment

Due to the high number of individual functionalities tied to the management and connection of employee, equipment, office and organization unit profiles, the highest amount of time was spent on conducting detailed individual manual tests. Because of this, a total of 112 manual tests were completed. The automated tests, written using Selenium Webdriver and Python, follow the previously conducted manual tests and demonstrate the testing of several functionalities together, including one full end-to-end test.

2. Software Specification Overview

All functionalities and features of the website are specified in the Software Specification Document. The website Evidencija Racunarske Opreme is a site that enables the assignment and decommissioning of computer equipment to employees of a company. The website can be accessed by both admin and user profiles, however, most of the features are accessible from the admin profile which was used to conduct most of the tests. Based on the documentation, seven modules were created.

I. Account management

Section of the website that allows the creation of new admin and user profiles, as well as changes and deletion of profiles. This module encompasses access features of both admin and user profiles.

II. Header and footer

Two sections of the website where navigation bars, links and documentation about customer support are located. The header includes all navigation bars and links to move through the site, while the footer includes access to customer support, user manuals and contact info.

III. Employees

Section of the website that enables the admin profile to manage, delete or create new employee profiles. This section allows the assignment and decommissioning of equipment to and from individual employees.

IV. Equipment

Section of the website that enables the admin profile to manage, create or delete new equipment statuses. This section allows the updating of all data tied to equipment, which office it is assigned to and its inventory and serial number.

V. Reports

Section of the website that allows the downloading and printing of reports tied to distribution of equipment in the company. Reports can be organized by office, organization unit or equipment that was assigned to certain employees.

VI. Type/Brand of equipment

Section of the website that allows the registration of new or changes to data of existing types and brands of equipment.

VII. Office/Organization unit

Section of the website that allows the registration and management of data on offices, organization units and its employees.

3. Modules and Flow Overview

In this segment, we will introduce concepts of test cases and bug priority. Bug priority is determined using a scale that lets the development team know what level of priority is assigned to a certain test case. The priority scale can be divided into four levels.

Levels of the priority scale are:

- Critical [C]: the website is not functional without this feature;
- High [H]: the website will be severely affected is this functionality malfunctions;
- Medium [M]: the website will function if this functionality is affected, but it requires the attention of the team;
- Low [L]: the website will operate normally without this function.

Priority	Number of functionalities
Critical	15
High	19
Medium	9
Low	5
Total	**48**

Modules overview:

The overview of website modules defines elements and functionalities of the website that are testable. The overview includes the priority tags assigned to each module and functionality.

1. Account Management:
    - 1.1. Admin validation
        - 1.1.1. Logging in as admin [C]
        - 1.1.2. Creation of new admin profile [C]
        - 1.1.3. Creation of new user profile [C]
        - 1.1.4. Changes to existing profiles [H]
        - 1.1.5. Deletion of existing profiles [H]
    - 1.2. User validation:
        - 1.2.1. Logging in as user [C]
        - 1.2.2. Access to information on employees (Can user profiles manage data?) [C]
        - 1.2.3. Access to information on equipment [C]
        - 1.2.4. Access to report printing [H]

2. Header and Footer:
    - 2.1. Header
        - 2.1.1. Employees: assignment and decommissioning of equipment [H]
        - 2.1.2. Equipment [H]
        - 2.1.3. Reports [H]
        - 2.1.4. Type/Brand of equipment [M]
        - 2.1.5. Office/Organization unit [M]
        - 2.1.6. Administration of users [H]
        - 2.1.7. Logout [C]
    - 2.2. Footer
        - 2.2.1. User manual [L]
        - 2.2.2. Reports of user issues [L]
        - 2.2.3. Contact [L]
3. Employees:
    - 3.1. Data entry for new employee [C]
    - 3.2. Graphic display of employees in organization units [L]
    - 3.3. Search tab for employees [M]
    - 3.4. List of employees [H]
    - 3.5. Changes to employee data [H]
    - 3.6. Assignment and decommissioning of equipment [C]
    - 3.7. Deletion of employee data [H]

4. Equipment:

4.1. Entry form to register new equipment [C]
4.2. Graphic display of type of equipment [L]
4.3. Search for equipment type [M]
4.4. List of equipment [H]
4.5. Change of information on equipment [H]
4.6. Deletion of information on equipment [H]

5. Reports:
5.1. Reports on assigned equipment per organization unit [M]
5.2. Reports on assigned equipment per office [M]
5.3. Reports on assigned equipment per employee [M]
5.4. Reports on available or decommissioned equipment [M]

6. Type/brand of equipment:
6.1. Changes to type of equipment [H]
6.2. Entry of new type of equipment [C]
6.3. Deletion of type of equipment [H]
6.4. Changes to equipment based on brand [H]
6.5. Entry of equipment based on brand [C]
6.6. Deletion of equipment based on brand [H]

7. Offices/Organizational units:
7.1. Changes to office data [H]
7.2. Entry of new office data [C]
7.3. Deletion of office data [H]
7.4. Changes to data on organizational units [H]
7.5. Entry of new data on organizational units [C]
7.6. Deletion of data on organizational units [H]

4. Coverage

The process of testing will be conducted using mainly manual testing techniques in accordance with common software testing practices. Testing practices used for this process will include black box testing, functional testing, exploratory testing, fuzz testing, negative testing.

Automated testing will be included for certain components, including the process of adding or deleting employee or equipment information, as well as testing functionalities tied to account management. For the creation of automated tests, VS Code will be used as a coding environment, while Selenium Webdriver will be used as a testing framework.

Testing of the website's API will be done using Postman. Apache Jmeter will be used for performance testing.

5. Findings

The website was tested in detail with a total of 112 manual tests and 10 automated tests using Selenium Webdriver and Python. API testing was conducted on a different site, since the original website does not have any API links embedded.

Out of the 112 manual test, 50 had a failed status, of which six were labeled as critical and 18 were labeled as high priority. The overall performance of the website indicates that it requires a lot of attention to fix some issues, for example the access of user profiles which have permissions that should not be allowed and the decommissioning of commissioned equipment.

The overall website architecture needs to be improved and issues regarding data entry for employee and equipment profile creation require work in order to make them more reliable. The website overall has not met an acceptable level of functionality in regards to the services it needs to provide.