Modelling and testing

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Testing <https://cartographia.hu/> webpage

1. **Problem specification**

On the [Cartographia website](https://cartographia.hu/), users can purchase a variety of maps, including maps of continents, countries, and cities, as well as road maps and tourist maps. Additionally, globes, books, and wall maps are available for purchase. In this assignment, I will test selected functionalities of this website, such as logging in, logging out, updating account details, changing password, creating and deleting addresses, selecting product categories both when logged in and without logging in, opening products in a dialog or view screen, and adding items to the cart either logged in or as a guest.

The essence of the task is to create a model that represents the selected features and then apply test-generating algorithms to the completed model.

1. **Preconditions**

In order to test the account data, we will need a user account.

1. **Analysing the problem and create EFSM model**
   1. **About the system under test**
      1. **HomePage**

When you open the website, you’re directed to the **Not Signed In Main Page**.

A képen szöveg, képernyőkép, Webhely, Weblap látható

Automatikusan generált leírás

* + 1. **Login**

To navigate to the **Sign In Page** from the **Not Signed In Main Page**, click on the **Login** button. This will redirect you to the **Sign In Page**, where you'll need to enter your email address and password, then click the **Login** button to sign in.

If incorrect credentials are entered (such as a wrong email or password), the system will display an error message. When the correct credentials are provided, the system will grant access to the user account and automatically open the **Account Page**.

A képen szöveg, képernyőkép, Betűtípus, szoftver látható

Automatikusan generált leírás

* + 1. **Change Account Data**

If you're on the **Account Page**, you can access the **Change Account Data Page** to update your account details. The **Back** button on this page allows you to return to the **Account Page** without making any changes.

When updating information on the **Change Account Data Page**, ensure that all fields meet the required criteria (for example, the **name** field cannot be left empty). After entering valid information, clicking the **OK** button will save the changes and take you back to the **Account Page** with the updated data. If any field contains invalid information, an error message will appear, and you'll remain on the **Change Account Data Page** until all fields are corrected.

A képen szöveg, képernyőkép, szoftver, szám látható

Automatikusan generált leírás

* + 1. **Change password**

If we are on the **Account Page**, we can open the **Change Password Page** from there. We can navigate back to the **Account Page** using the **Back** button. If all data is entered correctly and we press the **OK** button, the password is changed, and we return to the **Account Page**. If the data is incorrect, an error message appears, and we remain on the current page.

A képen szöveg, képernyőkép, szoftver, Weblap látható

Automatikusan generált leírás

* + 1. **Address Book**

If we are on the **Account Page**, we can open the **Address Book Page** from there. Here, we have the option to delete and create addresses.

A képen szöveg, képernyőkép, szoftver, Weblap látható

Automatikusan generált leírás

* + - 1. **Create Address**

If we are on the **Address Book Page**, pressing the **New Address** button will open the **Create New Address Page**. We can return to the **Address Book Page** by clicking the **Back** button. If all information is entered correctly and we click **OK**, the new address will be created, and we will be redirected back to the **Address Book Page**. If the information is incorrect, the system will show an error, and we will remain on the **Create New Address Page**.

A képen szöveg, képernyőkép, szoftver, Weblap látható

Automatikusan generált leírás

* + - 1. **Delete Address**

If we are on the **Address Book Page**, we can delete an address. If the deletion is unsuccessful, the system will display an error, and we will remain on the **Address Book Page**. If the deletion is successful, the system will confirm that the deletion was successful, and we will stay on the **Address Book Page**.

* + 1. **Select Product Category and list results**

If we are logged in, selecting a product category from the menu will take us to the **Signed In Result Page**.

A képen szöveg, képernyőkép, szoftver, Weblap látható

Automatikusan generált leírás

* + - 1. **Open Item in Dialog (Signed In Item Dialog Page)**

If we are on the **Signed In Result Page**, we can open a selected product in a dialog. In this dialog, we can add the product to the cart. Closing the dialog will return us to the **Signed In Result Page**.

A képen szöveg, képernyőkép, szoftver, Weblap látható

Automatikusan generált leírás

* + - 1. **Open Item in View Page (Signed In Item View Page)**

If we are on the **Signed In Result Page**, we can open a selected product to view the **Signed In Item View Page**. On the **Signed In Item View Page**, we have the option to add the product to the cart. From here, we can navigate back to the **Signed In Main Page**.

A képen szöveg, elektronika, képernyőkép, Weblap látható

Automatikusan generált leírás

* + 1. **Open Cart (Signed In Cart Page)**

If we are logged in, we can access the **Signed In Cart Page**. From this page, we have the option to navigate back to the **Signed In Main Page**.

A képen szöveg, képernyőkép, Betűtípus, szoftver látható

Automatikusan generált leírás

* + 1. **Sign Out**

If we are logged in, the **Logout button** will be displayed. By pressing the button, we can log out and will be redirected back to the **Not Signed In Main Page**.

* + 1. **Select Product Category and list results (In case of we are not signed in)**

If we are not logged in, selecting a product category from the menu will take us to the **Not Signed In Result Page**.

* + - 1. **Open Item in Dialog (Not Signed In Item Dialog Page, in case of we are not signed in)**

If we are on the **Not Signed In Result Page**, we can open a selected product in a dialog. In this dialog, we can add the product to the cart. Closing the dialog will return us to the **Not Signed In Result Page**.

* + - 1. **Open Item in View Page (Not Signed In Item View Page, in case of we are not signed in)**

Ha a Not Signed In Result Page-en vagyunk, akkor egy kiválasztott terméknek meg tudunk nyitni a Not Signed In Item View Page-et. A Not Signed In Item View Page-en a terméket be tudjuk tenni a kosárba. Innen vissza tudunk vanigálni a Signed In Result Page-re.

If we are on the **Not Signed In Result Page**, we can open a selected product in the **Not Signed In Item View Page**. On the **Not Signed In Item View Page**, we can add the product to the cart. From there, we can navigate back to the **Not** **Signed In Main Page**.

* + 1. **Open Cart (Not Signed In Cart Page, in case of we are not signed in)**

If we are not signed in, we can open the **Cart Page**. From there, we can navigate back to the **Not Signed In Main Page**.

* + 1. **Not Signed In Main Page**

If we are not signed in, we can reach the **Not Signed In Main Page** from any state.

* + 1. **Signed In Main Page**

If we are signed in, we can reach the **Signed In Main Page** from any state.

* 1. **The created EFSM model**

A képen sor, diagram, origami látható

Automatikusan generált leírás

|  |  |
| --- | --- |
| v\_NotSignedInMainPage | Main page (in case of not signed in) |
| v\_NotSignedInResultPage | List products from a selected product category (in case of not signed in) |
| v\_Cart | Cart (in case of not signed in) |
| v\_ItemViewPage | View page of selected item (in case of not signed in) |
| v\_ItemInDialogPage | Dialog page of item (in case of not signed in) |
| v\_SignInPage | Sign In Form |
| v\_AwaitLoginResponse | Wait state for login response |
| v\_AccountPage | Here you can see your account details |
| v\_SignedInMainPage | Main Page (in case of logged in) |
| v\_SignedInResultPage | List products from a selected product category (in case of logged in) |
| v\_SignedInCart | Cart (in case of logged in) |
| v\_SignedInItemViewPage | View page of selected item (in case of logged in) |
| v\_SignedInItemDialogPage | Dialog page of item (in case of logged in) |
| v\_ChangeAccountDataPage | Here you can change account data |
| v\_AwaitChangeAccountDataResponse | Wait state for save account data |
| v\_ChangePasswordPage | Here you can change password |
| v\_AwaitChangePasswordResponse | Wait state for save new password |
| v\_AddressBookPage | Here you can see your Addresses |
| v\_CreateNewAddressPage | Form Page for create new address |
| v\_AwaitCreateAddressResponse | Wait state for address creation response |
| v\_AwaitDeleteAddressResponse | Wait state for address deletion response |

For a higher resolution version of the model, you can access it [here](https://github.com/MaduraMate/Modelling-and-testing-homework/blob/main/HomeWork-iosymbols.json). This model can be opened in GraphWalker.

1. **Technical details**

For model creation, I used *Graphwalker*. For test generation, I used the Modell 》Test 》Relax framework.

1. **Test generation algoriths on model**
   1. **Random transition walk with 50, 80 and 100 percent (run two times)**

A képen szöveg, képernyőkép, Betűtípus, szoftver látható

Automatikusan generált leírásA képen szöveg, képernyőkép, Betűtípus látható

Automatikusan generált leírásA képen szöveg, képernyőkép, Betűtípus, szoftver látható

Automatikusan generált leírás

Most relevant data from csv file:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| modell\_name | state\_count | transition\_count | method | duration\_real | test\_sequence\_length | achived\_percent |
| HomeWork | 21 | 80 | Random | 0,0003061 | 98 | 50 |
| HomeWork | 21 | 80 | Random | 0,0002912 | 93 | 50 |
| HomeWork | 21 | 80 | Random | 0,0012838 | 746 | 80 |
| HomeWork | 21 | 80 | Random | 0,0022729 | 1428 | 80 |
| HomeWork | 21 | 80 | Random | 0,019546 | 12671 | 100 |
| HomeWork | 21 | 80 | Random | 0,0357642 | 23295 | 100 |

* 1. **Transition tour (with and without Graphwiz):A képen szöveg, képernyőkép, szoftver, Multimédiás szoftver látható

     Automatikusan generált leírásA képen szöveg, képernyőkép, szoftver, Multimédiás szoftver látható

     Automatikusan generált leírás**

Most relevant data from csv file:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| modell\_name | state\_count | transition\_count | method | duration\_real | test\_sequence\_length | graphviz\_enabled |
| HomeWork | 21 | 80 | TT | 0,0056035 | 152 | false |
| HomeWork | 21 | 80 | TT | 0,0052248 | 152 | true |

**3.3 All-transition-state**

A képen szöveg, képernyőkép, menü látható

Automatikusan generált leírás

Most relevant data from csv file:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| modell\_name | state\_count | transition\_count | method | duration\_real | test\_sequence\_length |
| HomeWork | 21 | 80 | ATS | 0,0191841 | 452 |

You can check the Graphviz and csv results [here](https://github.com/MaduraMate/Modelling-and-testing-homework).

Sources:

1. [Graphwalker](https://graphwalker.github.io/)
2. [Cartographia](https://cartographia.hu/)
3. [Modell 》Test 》Relax Framework](https://modeltestrelax.org/)
4. Class materials