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System testing is a type of testing and a final stage of the software development life cycle, that evaluates the complete system or software application as a whole. The focus of system testing is on validating the system's compliance with the requirements specification, verifying that it meets the functional and non-functional requirements, and ensuring that it is reliable, efficient, and maintainable. The testing in this case is manual since the system being tested is not complex.

It is worth noting that even in the event of the application being turned off and subsequently reopened, the system status should be automatically saved, allowing the user to resume their progress seamlessly.

In system testing, it is very important that all the events are added once. This way, it can be sure that all the additional events behave correctly and in the later stages when the events are being edited, there is enough diverse data to test the system.

Every input field should also be tested with characters or negative numbers to know that error prevention works correctly.

1. First time use

Upon initial use of the application, all users are required to complete steps 1-3 in a standardized manner. Once the service terms have been accepted, subsequent visits to this section are unnecessary. Users may initiate a new budget from the front page at any time.

Table 1.

	Markings
1. Landing page has button, check that button brings you to the next page where it says "tervetuloa". Button is always enabled.	Ok
2. Service agreement is readable and can be closed.	No service agreement, page is not responsive, checkbox ok
3. Service agreement checkbox is clickable and when it is checked the button "forward" enables and leads to the frontpage.	Ok
4. Frontpage "siirry budjetoimaan" button leads to naming the budget. Navbar is disabled.	Ok
5. When the input field is pressed, the keyboard will appear, allowing the user to enter text to name their budget. Pressing the enter key on the keyboard will hide the keyboard and enable the "ready" button. If the text field is empty, the "ready" button will be disabled. The navbar will be disabled.	Navbar moves up with the keyboard leaving the name input field behind
6. Toast message informs that the budget is created and transfers the user to the transition page. Navbar is disabled.	Ok

<p>7. On the transition page, which displays a pig logo and the message "Next, we'll add your expenses!", (<i>seuraavaksi lisäämme menos</i>) there are two push-buttons. The "previous" (<i>edellinen</i>) button will take the user back to the previous naming page, while the "next" (<i>seuraava</i>) button will take them to the page where they can add living expenses. The navbar will be disabled on this page.</p>	<p>Page not responsive, Buttons are over the text, Back-button lead to frontpage (front page named budget button does not work), next-button ok</p>
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2. Regular pre-defined expenses or incomes

These are the functionalities that should always appear while doing the budget inserting path. This is a step-by-step path that a user always takes while creating a new budget. There are in total 8 + 1 steps. Eight steps for adding expenses and one for adding incomes.

The dropdown menu for additional expenses or incomes is in table 3.

Table 2.	Basic event functionalities				Other functionality		
	Calendar	Input field	Deletion	Readding event	Back-button	Forward-button	Progress bar
ASUMINEN				Dropdown not implemented	ok	ok	ok
Vuokra/Vastike	Ok (but, does not add date)	Ok (error ok)	ok				
Vesi	ok (but, does not add date)	Ok (error ok)	ok				
Netti	ok (but, does not add date)	Ok (error ok)	ok				
KULKEMINEN				Dropdown not implemented	ok	ok	ok
Julkinen liikenne	Ok (but, does not add date)	Ok (error ok)	ok				
Polttoaine	Ok (but, does not add date)	Ok (error ok)	ok				

LAINAT JA OSAMAKSUT				Dropdown not implemented	ok	ok	ok
Asuntolaina		Ok (error ok)	ok				
Opintolaina		Ok (error ok)	ok				
TERVEYS JA HOIVA				Dropdown not implemented	ok	ok	ok
Päivähoito		Ok (error ok)	ok				
VAKUUTUKSET				Dropdown not implemented	ok	ok	ok
Kotivakuutus		Ok (error ok)	ok				
Tapaturmavakuutus		Ok (error ok)	ok				
Sairauskuluvakuutus		Ok (error ok)	ok				
Matkavakuutus		Ok (error ok)	ok				
MUUT TOISTUVAT KULUT				Dropdown not implemented	ok	ok	ok
Päivittäistavarat		Ok (error ok)	ok				

Lemmikki		Ok (error ok)	ok				
Suoratoistot		Ok (error ok)	ok				
Harrastus		Ok (error ok)	ok				
Hupiraha		Ok (error ok)	ok				
Säästöön		Ok (error ok)	ok				
SATUNNAISET KULUT				Dropdown not implemented			
-							
TULOT				Dropdown not implemented	ok	-	ok
Palkka							
Asumistuki	Empty	-	-				
Työttömyyskorvaus	Empty						
Toimeentulotuki	Empty	-	-				
Opintotuki	Empty						
Eläke	Empty	-	-				

System testing note:

- Buttons back and forward move up with the keyboard.
- Insurance-page (*vakuutukset*) not responsive, the calendar-input field icons are sifted to the right.
- Transition-page not responsive: buttons are over the “seuraavaksi lisäämme tulosi”-text.
- Income-page has “next”-button (*seuraava*) which should not be there. It supposed to be “ready” (*valmis*). By pressing the next button, it leads to the front page.
- After budget deletion, the previously inputted amounts appears
 - But if every event is deleted, the events does not appear even after creating a new budget

3. Pre-defined additional expenses or incomes

The nature of additional expenses sets them apart from regular expenses as regular expenses are not readily subject to modification.

The additional expenses can be classified into **two categories**:

- those that are **pre-defined** and only **allow for modification of their frequency**,
- and those that are **not pre-defined** and **allow for modification of both their frequency and name**.

The recurring drop-down menu system is in detail in **table 5**.

Ready button is only enabled when all the information is filled: amount, date, frequency and months.

Table 3								
Title	Basic event functionalities			Frequency		Buttons		Other
	Pop-up	Input field	Calendar	Recurring (5 opt)	Month selection	Cancel-button	Ready button	Can be deleted
ASUMINEN								
Kiinteistövero								
Jättemaksu								
KULKEMINEN								
Ajoneuvovero								
Matka								
LAINAT JA OSAMAKSUT								
Luotto / laina								
Maksusopimus								
Osamaksu								
TERVEYS JA HOIVA								
Lääkkeet								
Terveyskulu								
VAKUUTUKSET								
Autovakuutus								
Liikennevakuutus								
Lapsivakuutus								
Lemmikkivakuutus								
Urheiluvakuutus								
MUUT TOISTUVAT KULUT								

MUUT TOISTUVAT KULUT									
Muu kk kulu									
SATUNNAISET KULUT									
Muu kulu									
TULOT									
Muu tulo									

System testing note:

- There is no implemented dropdown menu where these events can be added – no system testing can be performed.

5. Recurring

The recurring selection feature encompasses five distinct options, all of which are consistently available to the user. Upon selecting one of the options, the corresponding number of months is automatically designated as the recurring period.

Table 5					
	Pre-selection				
	Only one month selected	Every month selected	Every other month selected	Every third month selected	Custom selection of months
No recurrence					
Every month					
Bimonthly					
Trimonthly					
Custom					

System testing note:

- There is no implemented dropdown menu where these events can be added – no system testing can be performed.

6. Nav bar functionalities

In certain cases, the functionalities of the navbar are disabled. For instance, when the user is inserting their first budget or when they are editing an event and a pop-up window is open, the navbar will be disabled.

Table 6.		
Koti (Home)	brings the user always to the frontpage when not disabled	Ok
Vuosi (Year)	brings the user always in yearly cumulative view when not disabled	Ok
KK (Month)	brings the user to the monthly view when not disabled	-
Muokkaa (Edit)	brings the user always to the edit page when not disabled	Ok

System testing note:

- **KK brings the user to the same page as the yearly view.**

Home

In the front page the user can select a budget they have created or create a new budget.

Yearly view

The yearly cumulative view enables the user to see their budget for the entire year in a single overview. In the event of the budget exceeding its limit, the corresponding values are highlighted in a soft red hue, while values below the budget threshold are highlighted in a light blue shade.

Monthly view

The monthly view operates under the same principles as the yearly view, although with a more detailed breakdown of events. Users can selectively view specific months for a more detailed breakdown of their budget.

Edit view

1. The **name of a budget can be easily modified** by selecting the "change name" (*muuta nimeä*) button, which prompts a keyboard to appear for the user to input their desired text into the designated field. Upon completion, pressing "enter" causes the keyboard to disappear and the "save" (*tallenna*) button to appear. After clicking "save", a toast message briefly confirms the change. Note that the name may contain a maximum of 16 characters.
2. To **delete a budget**, users may select the "delete budget" (*poista budjetti*) button, which prompts a pop-up for confirmation. If "yes" is selected, the entire budget is deleted, and the user is returned to the front page with a toast message confirming successful deletion.

System testing note:

- Name modification ok, saving name ok.
- After deleting a budget, deletion does not impact all the input data when creating a new budget.

Categories

Selecting any of the available categories will lead to the corresponding edit page for that selection, which includes a list of events previously added by the user.

Table 7.	
	Opens editing page
Living (<i>asuminen</i>)	ok
Travel (<i>kulkeminen</i>)	ok
Depth (<i>lainat</i>)	ok
Health (<i>terveys</i>)	ok
Insurance (<i>vakuutus</i>)	Ok
Other (<i>muut/kk</i>)	Ok
Random (<i>satunnaiset</i>)	Ok
Income (<i>tulot</i>)	ok

System testing note:

- Page not scrollable, does not show income category which is in the bottom of the page.

Edit page in selected categories

If a user wants to edit any of the expenses or incomes they have added, they can navigate through the edit page and select the corresponding category.

All the events added should be listed under the corresponding category.

Pre-defined events:

1. By selecting (pressing) the input field user is brought to a dialog where they can modify the amount and a date
2. User can cancel the modification or save the event
3. A pop-up appears where the user can select from three options:
 - a. Current month events
 - b. Current month events and future events
 - c. All the events (past and future)
 - This pop-up window can cancel or
 - saved when the selection is done
 - A toast message informs if the modification is successful

Pre-defined additional events:

1. By selecting (pressing) the input field user is brought to a dialog where they can modify the amount, a date, and frequency
2. User can cancel the modification or save the event
3. A pop-up appears where the user can select from three options:
 - d. Current month events
 - e. Current month events and future events
 - f. All the events (past and future)
 - This pop-up window can cancel or
 - saved when the selection is done
 - A toast message informs if the modification is successful

Custom additional events:

4. By selecting (pressing) the input field user is brought to a dialog where they can modify the amount, a date, name of the event and frequency
5. User can cancel the modification or save the event
6. A pop-up appears where the user can select from three options:
 - g. Current month events
 - h. Current month events and future events
 - i. All the events (past and future)
 - This pop-up window can cancel or
 - saved when the selection is done
 - A toast message informs if the modification is successful

Event deletion

The event can be deleted by pressing the garbage-icon.

1. A pop up will appear to confirm the selection
 - a. Current month events
 - b. Current month events and future events
 - c. All the events (past and future)
 - i. This pop-up window can cancel or
 - ii. saved when the selection is done
 - iii. A toast message informs if the modification is successful

System testing note:

- **There is no implemented edit page where these events can be edited after selection of the category – no system testing can be performed**

