User Interface notes

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Product Perspective

During lockdown, many people have taken up home exercise, often guided by YouTube programmes such as PE with Joe. This project will produce a computer program that takes the user through a set of timed exercises with pauses between the exercises, explaining to the user what they need to do at any point.

Functions

The product will provide the following features:

- *Warm up and cool down instructions.*
- *A series of timed exercises, showing the user how to carry out each exercise, and clearly indicating when each exercise should start and end, and how far the user is through the set of exercises.*
- *The exercises will be randomised, with no exercise being repeated during a session.*
- *The number of exercises, the length of the exercises, and the rest time between exercises should all be configurable by the user.*
- *It will keep a record of exercise sessions completed by the user.*

The functions for the program can be split into the following sections:

- Start-up – The start-up screen should be a single screen with three buttons:
  - Select preconfigured exercise routine
  - Create exercise routine
  - Review pervious exercises

  This can be a simple screen with three buttons and some text asking the user to select an option

- Configuring a set of exercises – configuring a set of exercises should allow you to select any number of the 30 available exercise as well as the length of time for each exercise, the pause between each exercise and the pause halfway through the

routine. I would suggest that this can be done in a single window where each exercise can be individually selected with checkboxes and each time selection could be done using either a dropdown menu or a text box (the text box would require additional error handling). Finally, the window would require a button at the bottom to finalise the selection and move the program along.

- Select preconfigured routine - *Existing sets of exercises will have a short description generated from their characteristics, e.g., 20 exercises of 30 seconds, with 30 seconds between exercises and a two-minute pause in the middle.*

  This statement in the requirements means that the ability to select different time lengths isn't needed in this window. This window should contain a list of each preconfigured routine along with a brief description of each, these routines could be selected using radio buttons to ensure only one can be selected and a button at the bottom to finalise the selection and move the program along.

- Options after selecting a set of exercises – Once the exercise has been selected either by creating a custom routine or selecting a premade routine, the program should display a window giving a full description of the routine selected including number of exercises, a list of the exercises selected, length of each exercise, length of each pause and length of halfway pause. Two buttons are also required to allow the user to either confirm the selection and start the routine or return to the start-up screen and select a new one.

- Warm up - The warm-up section of the routine should be consistent regardless of what exercise routine the user has chosen and should occur before the routine starts. The warm-up routine includes multiple stretches and should have a window for each stretch containing a timer, pause button, description of the action to be performed and possibly a diagram of the action. The total time of the warm-up should be three minutes (minus transition time). The user would require an indication that it is time to transition to the next stage as allowing time for the user to make the transition, this could use its own window.

- Carrying out exercises - Each exercise will require a window showing a description of how to perform the exercise with possibly an accompanying diagram. The window should also include a clear timer of how long is left in the exercise as well as a pause button that will pause the routine. The transition window should be used between each exercise. The requirements state that there are a maximum of 30 exercises so this section will require 30 unique windows following this format.

- Cool down – Similar to the warm-up the cooldown section of the routine should be consistent regardless of what exercise routine the user has chosen and should occur

after the routine has ended. The cooldown routine includes multiple stretches and should have a window for each stretch containing a timer, pause button, description of the action to be performed and possibly a diagram of the action. The transition window should be used between each stage. The total time of the cooldown should be three minutes (minus transition time).

- Exercise guidance – As stated in Carrying out exercises each warm-up, exercise, cooldown and transitionary window should include a timer, pause button, description of the action to be performed and possibly a diagram of the action. Some audio signals could be included too.

- Timing and progress guidance – during warm-up, cool-down and the actual exercise the program should display how long is left in the exercise and how many exercises remain (etc. exercise no. 13/25) and give a clear indication when the user should change exercise. These should be incorporated into every window shown during these stages.

- Pausing – The routine can be paused at any time displaying a paused window. The paused window should only need to display that the routine has been paused as include a button that will resume the routine at the user's command.

- Record keeping – after each exercise routine performed the date/time and details of the routine should be stored to be displayed to the user on request. Because the document states that this is to be a single user system there is no need to link the stored data to any particular user (i.e., no need for a login or organised storage system). Exercises can be added to the list as they are performed which should result in a suitably ordered list with the latest routine performed shown at the bottom.

By my initial estimates counting how many windows are required for each function of the program (start-up x 1, configure x 1, select preconfigured x 1, options after selecting x 1, warm-up x 10, exercise x 30, cooldown x 10, pause x 1, record x 1, transition x 1) I believe the program should roughly require a total of 57 unique windows for the user interface.

Users

The software will be used by exercise enthusiasts from 8 to 80 years of age. The user interface needs to be clear, with a set of exercises being simple to set up, and it should include both audio and screen-based feedback on what is happening during an exercise session. Once set up, an exercise session should run without any need for further interaction, but should allow the user to pause the exercise session if necessary.

This is assumed to be a single user system, so there is no need to make the user say who is using the software.

From the wide range of our typical users, it would probably be best to design the UI to best suit people who would have the hardest time using the system (i.e., older people with weaker eyesight) and use that design for all users rather than creating a different UI for different users.

The typical use case for this software (i.e., in an open space some distance from the programs visual output) would also suggest that making all information displayed by the UI as clear as possible.

Requirements

All performance requirements for the system as stated in the specs are as follows:

- ***PR1 Response of program to user input***
- ***Any user input should be appropriately reflected on the screen within one second.***
- ***PR2 Target computer for the software - The software produced should run correctly on standard Windows PCs within the Department of Computer Science.***