CMPT 381 Assignment 1: Basics of GUI Design and Development

Due: Friday, January 24, 11:59pm (handin closes Sunday, January 26, 11:59pm)

Overview

In this assignment you will design and build a user interface to demonstrate your skills with both the iterative design process (including personas, task descriptions, sketch-based prototypes, screen design, and task walkthroughs) and basic JavaFX development (including widgets, events, and layout). Part 1 covers the design elements, and Part 2 covers the coding of the interface.

Your job is to build a GUI for a milkshake vending machine (MSVM) called MilkshakeBuilder™. The machine does not sell pre-packaged milkshake drinks; instead, it builds milkshakes out of basic ingredients like ice cream, milk, chocolate syrup, fruit, etc. The vending machine has a 24-inch 1080p touchscreen on the front of the cabinet, and this touchscreen handles all interaction with the user other than paying (which you don't have to handle).

Part 1: Design of the MSVM GUI

1.A Personas

Based on your own experience (or talking with friends and family who like drinking milkshakes), come up with a persona description for a representative user of the MSVM. Two personas have already been provided (see below). Your persona description should have the same headings as the two provided personas, but should be substantially different in terms of content (the three personas should lead to different tasks and different interface design ideas).

Your persona should include the following headings:

- Name
- Demographics and Background
- Goals and Needs
- Motivations
- Experience with Technology

All information in your persona should be relevant to the design problem.

Name: Marlon

Demographics and Background: Marlon is 35 and has two children, ages 8 and 4. He is a coach for his daughter's soccer team.

Goals and Needs: Marlon sometimes takes the soccer team out for treats after a game (often without other parents to help), and when he does, he needs to be able to arrange the treats for all ten kids with a minimum of fuss. His goal is to make the transaction quick and painless.

Motivations: Keeping the soccer team together, not losing any kids, and keeping everyone happy.

Experience with Technology: Marlon is an expert at mobiles, tablets, but less familiar with mouse-and-windows PCs.

Name: Miriam

Demographics and Background: Miriam is a software developer and lives with two roommates. She is 31 years old, and loves cooking and gourmet food.

Goals and Needs: Miriam likes to try variants of things she's had before, and wants to have precise control over customizing her menus and her food.

Motivations: Trying new things, getting things perfect.

Experience with Technology: Miriam is a super-expert at mobiles, tablets, and mouse-and-windows desktop PCs.

Result for 1A: a written persona in a PDF document.

1.B Task Descriptions

Devise three task descriptions for the MSVM interface – one for each of the three personas (Miriam, Marlon, and the persona you create). Refer to the lecture notes for information on what goes into a task description, and include the following headings:

- Task Name
- Persona
- Importance and Frequency
- Description (one English paragraph)
- Items to Enter
- Constraints and Goals

Result for 1B: three written task descriptions in a PDF document.

1.C Interface Sketches

Based on the information in your personas and task descriptions, sketch five different interface ideas for the MSVM (but you will only hand in three). The sketches should be complete enough that you can carry out task walkthroughs with your tasks, and should cover a wide range of approaches (that is, don't sketch five variations on a single idea). Refer to the lecture notes about what you should try to achieve in your sketches, and remember that your ideas don't all have to be good ones (and that your artistic ability will not be evaluated).

Take photos of **three** of your five sketches to hand in. If your sketches have multiple screens or parts, put a title into the picture that indicates what the picture shows (e.g., write the label on paper and put it on the sketch before you take the picture). If there is a sequence to your sketches, indicate this in the name of the image (e.g., "sketch-1-1.png" is the first interface sketch, and is the first image in the sequence for the first UI).

Result for 1C: digital photos of your five sketched interfaces

1.D Walkthrough Results and Design Rationale

Write a one-page summary of what happened during your task walkthroughs, indicating for each of the three interfaces what happened when you attempted to carry out the task with that interface. Note any major problems you found.

For the design that you chose as the best design, write a one-page document stating how the interface satisfies the main elements of the three tasks, and any changes that you will make to that design for the final version.

Part 2: Building the GUI

Build your chosen interface design using JavaFX. You will not produce a complete system, but rather just build one of the main screens from your chosen interface design. Your GUI must be built programmatically (as shown in lectures and labs), not using FXML. You should create the widgets needed for your design and lay them out using container widgets (e.g., VBox and HBox), and attach basic events to your widgets to demonstrate the basic operation of the interface (but no real calculation needs to occur). For widgets that don't change things on the screen, print out a statement stating the interaction (e.g., "Pay Now button has been pressed").

What to hand in

This assignment is to be done individually; each student will hand in an assignment.

- Part 1: a zip file of your design documents and pictures (named something like abc123-cmpt381-assn1-design.zip)
- Part 2: a zip file of your IDEA project folder and a readme.txt file that indicates exactly what the marker needs to do to run your code. (Systems for 381 should never require the marker to install external libraries, other than JavaFX).

Where to hand in

Hand in your two files (one zip and one readme.txt) to the link on the course Moodle.

Evaluation

Marks will be given for: carrying out a valid design process that is clearly reported in the documents described above; and for producing a working GUI that correctly uses JavaFX widgets, events, and layout, and that corresponds to your design. Note that no late assignments will be allowed, and no extensions will be given, without medical reasons.