Written exam (solutions to the examination)

Course: TDA493 / TIA106 Graphical Interfaces
Time: November 28th, 2018, 08:30-12:30 (4 hours)

Location: Lindholmen
Responsible teacher: Thommy Eriksson 0730-79 42 40
Time for teacher visits: 09:30 and 11:00
Examiner: Thommy Eriksson thommy@chalmers.se
Authorized aids: The only aids that are allowed at the written exam are drawing tools (pencils, pens, eraser). We recommend that you bring pencils of different colors.
Number of students registered to the written exam: 69
Time and place for marking the examination: by appointment with examiner

Grade limits and grading scale
The max points on the written exam is 100 points.

For students attending TDA493 (Chalmers version of the course), the grade levels are:
60 points = grade 3
73 points = grade 4
85 points = grade 5

For students attending TIA106 (University of Gothenburg version of the course), the grade levels are:
60 points = G
80 points = VG

The written exam is worth 2 credits (course element "0315 Examination"). The course grade you get is a combination of the grade on the written exam and the individual project, each weighted equally important. The written exam is given in English.

Point structure for the questions
For this exam in Graphical Interfaces, the first part will consist solely of multiple answer questions: in these questions, there can be more than one correct answer for each question. You are expected to pick **all** the correct alternatives for a full pot. If you miss any, you will not be awarded all the points. If you select one incorrect alternative you will get zero points for that question. See examples below.

The second part consists of two essay questions (small assignments). An error made here will **NOT** result in 0 points on the corresponding essay question.

Pick the answer(s) that fit the following statement: "This animal is a mammal" (1 point)

a) Whale
b) Crocodile
c) Bat
d) Shark
e) Dinosaur

Example 1 (1 point)

(a) Whale
b) Crocodile
(c) Bat
d) Shark
e) Dinosaur

Example 2 (0.5 points)

(a) Whale
b) Crocodile
c) Bat
d) Shark
e) Dinosaur

Example 3 (0 points)

(a) Whale
b) Crocodile
c) Bat
(d) Shark
e) Dinosaur

Example 4 (0 points)

a) Whale
(b) Crocodile
c) Bat
(d) Shark
e) Dinosaur

OBS: The whole exam is based on the course book "About Face" (COOPER, A., REIMANN, R., CRONIN, D., & COOPER, A. (2007). *About face 3: the essentials of interaction design*. Indianapolis, IN, Wiley Pub.). All questions will be graded according to the book rather than any other opinions or references.

01. How can we eliminate excise? (worth 4 points)
a) Minimize the need for navigation.
b) Ask users to confirm their actions.
c) Always ask the user to confirm major changes to the data the user is manipulating.
d) Reduce the number of places to go
e) Provide overviews.
f) Use modal error messages such as pop-up.
g) Use hierarchies.
h) Use skeuomorphism so that the use of a tool can be related to physical, real-life actions.
i) Properly map controls to functions.
j) Keep the number of windows and views to a maximum.

02. Which are some design principles presented in the course book for sovereign posture? (worth 4 points)
a) Sovereign interfaces should feature a conservative visual style.
b) Optimize sovereign applications for full-screen use.
c) Sovereign applications must be simple, clear, and to the point.
d) Sovereign applications should be limited to a single window and view.

03. What are some characteristics of toggle buttons? (worth 4 points)
a) They function on the same binary mechanics as check boxes.
b) They are a clear example of modal feedback
c) They are an imperative control
d) They lock in place until clicked again.

04. Which types of interaction design patterns are there? (worth 4 points)
a) Postural
b) Structural
c) Visual
d) Physical
e) Behavioral
f) Environmental

05. What is associated with "tap-ahead"? (worth 4 points)
a) An arrow button with clear pliancy hinting that takes you to the next card on a mobile platform.
b) A refinement on top of auto-complete.
c) Loading the result of an auto-suggest into the search box.
d) The safe assumption the user has that a tap on the right side of the screen is a move forward.
e) The display of popular options matching entered letters by the user.
f) There is no such term in Cooper!

06. How do we support flow in design? (Harmonious Interactions)? (worth 4 points)
a) Follow user's mental models
b) Avoid modeless feedback
c) Report minor changes in the system
d) Hide the ejector seat lever
e) Ask questions rather than provide choices
f) Optimize for responsiveness but accommodate latency.
g) Always display all available information

07. How can we eliminate excise? (worth 4 points)
a) Mechanical representations shouldn't be translated into the digital world.
b) Maximize the need for navigation.
c) Ask users to confirm their actions.
d) Always ask the user to confirm major changes to the data the user is manipulating.
e) Reduce the number of places to go
f) Use modal error messages such as pop-up.
g) Use skeuomorphism so that the use of a tool can be related to physical, real-life actions.
h) Properly map controls to functions.
i) Keep the number of windows and views to a minimum

08. What accessibility guidelines are there (as mentioned in Cooper)? (worth 4 points)
   a) Override user-selected system settings
   b) Keep layouts and task flows consistent
   c) Use flash, flicker, or blink of visual elements to draw attention
   d) Do not burden the interface with text equivalents for visual elements
   e) Use simple, clear, brief language.
   f) Avoid display options for those with limited vision

09. What are valid guidelines for designing for touch interaction? (worth 4 points)
   a) Properly scale hit areas for finger use.
   b) Utilize drag and drop whenever possible, since it works well with gestures across the screen.
   c) Avoid drag and drop.
   d) Design the app so that the user is prompted to hold the smartphone using both hands.
   e) Utilize powerful gestures such as double finger swipe.
   f) Use cascading menus.
   g) Keep the user's workflow as linear as possible.
   h) Avoid menu bars.
   i) Avoid animations at all cost.

10. What are the disadvantages of using metaphors? (worth 4 points)
   a) Helps users understand how an interface works by using things from the real-life.
   b) They do not scale well (304)
   c) They rely too much on cultural background
   d) We can fully rely on the ability of the users to recognize them
   e) They are not helpful to first-time users

11. What are invisible commands? (worth 4 points)
   a) Invisible commands are commands from other systems, and are not initiated by the user with the advantage of a high level of automation.
   b) Invisible commands are commands for which the interface offers little locus.
   c) Invisible commands is a term for icon buttons where the icon is so intuitive that the user does not need any pre-knowledge to understand it.
   d) Invisible commands are commands for real-time manipulation controls that are hidden behind a right-click, for example.
   e) Invisible commands are commands that are used extensively by intermediate and expert users.

12. What is typical for a transient posture? (worth 4 points)
   a) A transient application typically involves several system and databases communicating with each other, making the data so to speak transcend the boundaries of a single application.
   b) The application so to speak comes and goes, presenting a single function with a constrained set of controls.
   c) When an application has a transient posture, the graphical interface has low learnability, meaning it is difficult to remember how to use the application next time the user uses it.

13. Why are grids useful when designing a graphical interface? (worth 4 points)
   a) They help define a clear visual structure
   b) They help randomise position of elements
   c) They help mitigate the effects of color-blindness.
   d) They can be a defining aspect of the aesthetic appeal.
   e) They allow flexibility on placement of the screen header, for example.
   f) They help users learn where to find key interface elements
   g) They limit the amount of screen space available.
   h) They contribute to less iteration and "tweaking" of interface designs.

14. What are some ways to help users learn a new interface? (worth 4 points)
   a) Present guided tours that go on for at least 2 screens
   b) Offer users a gallery of ready-to-use templates.
   c) Show permanent tooltips
   d) Start the application always in a blank state for adaptability
   e) Always avoid wizards as they violate the principle of provide choices rather than ask questions
   f) Avoid tooltip overlays as they do not help users remember controls and functions.

15a. What does WIMP stand for? (2 points)
   a) windows, icons, menus, and pointer.
   b) windows, interfaces, menus, and pointer.
   c) windows, icons, maps, and pointer
   d) windows, interfaces, maps, and pointer.

15b. What is a ToolTips? (2 points)
   a) a modal pop-up that shows a clear description of which options are available.
   b) a user interface idiom that adds a pedagogical vector to icon buttons
   c) a form of permanent text labeling
   d) a well-timed transient window that lasts for a minute or so

Essay assignment 01 (worth 20 points)

You have certainly come in contact with plenty of coffee machines! Your mission is to design a touch display that will replace the one shown in the picture. You are given an area of 20x15 cm (see next page) and no physical buttons should be used. You are allowed to assume a very responsive rich in color touchscreen. We want you to fully describe how you included the concept of "mental model".

You are expected to:

a) Design at least 3 different screens or states for the given touch display showing how a user can order a cappuccino. On the next page you can see the size of the screen!

b) Include a motivation for your design including how you considered user mental models and user goals as described in chapter 1. Keep the motivation short and sweet, not much more than three sentences should make it.

You are allowed to give your answer or draw the first screen on the given template on the next page. Do not forget to tell us how many screens you drew and make sure we do not miss any!

Note: The colors are not visible in this print out, but color may be important in your design! In this case, the hot water button was red, and the cold water and sparkling water button were blue. All the other buttons are white.

Screen template: A rectangle of 15x20 cm
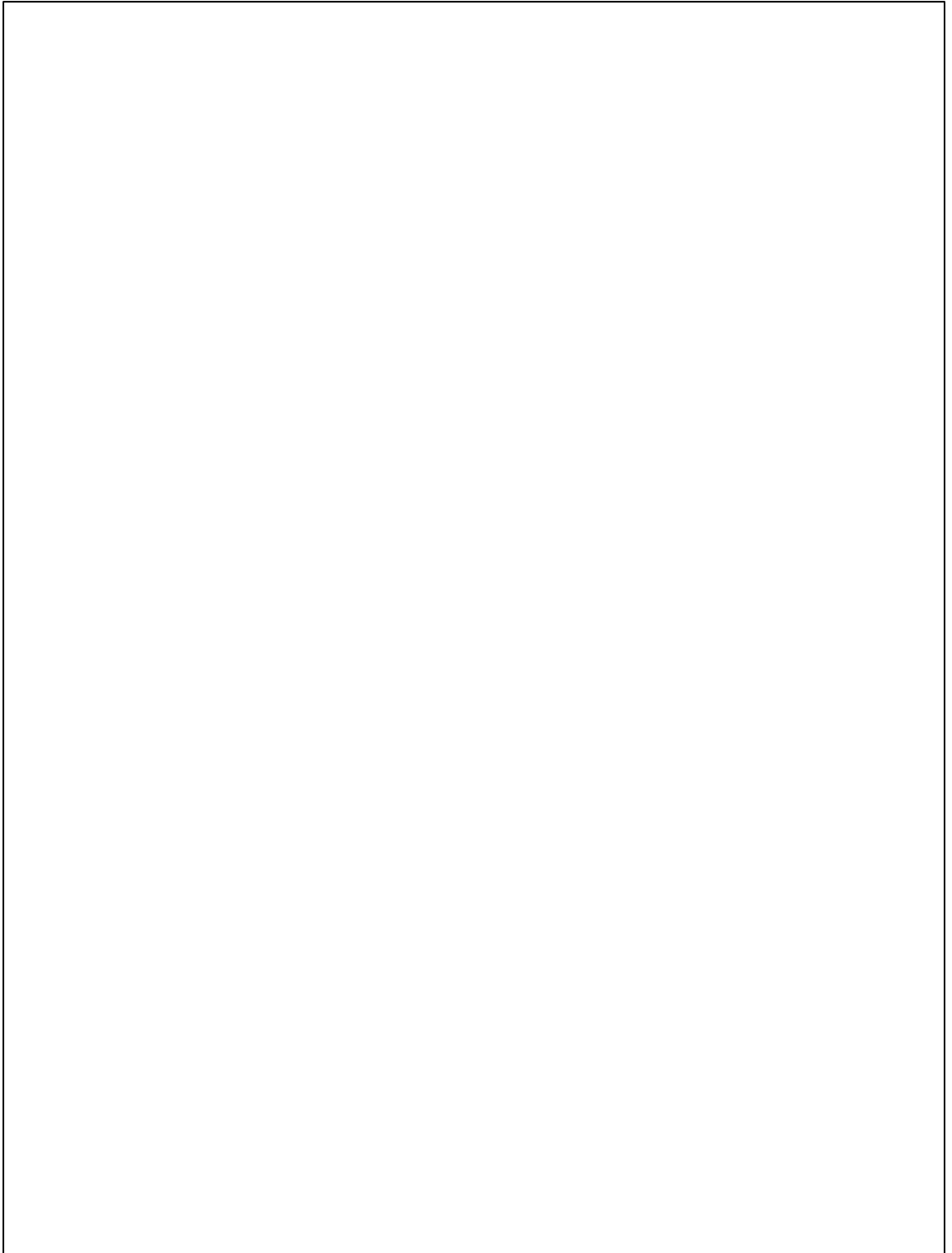
Essay assignment 02 (worth 20 points)

Samtrygg is a website where you can both list your house or apartment for rental, but also find houses or apartments. The first image is the page you can use to check how much you may charge for leasing your accommodation, the second one how to search for accommodation. We expect you to find problems with the design and annotate them, but also to fix some issues.

You are allowed to give your answer on the given screen dumps and/or on separate papers. Make it easy for you to explain your answer, and easy for the graders to read them.

You are expected to:

a) Analyze 5 problems with the current design in terms of **controls and dialogs, in particular entry controls**. Motivate why they are problematic.

b) Suggest 2 changes to 2 of the problems you previously found. In order to be allowed points you need to motivate the changes (not much more than one sentence should be enough).
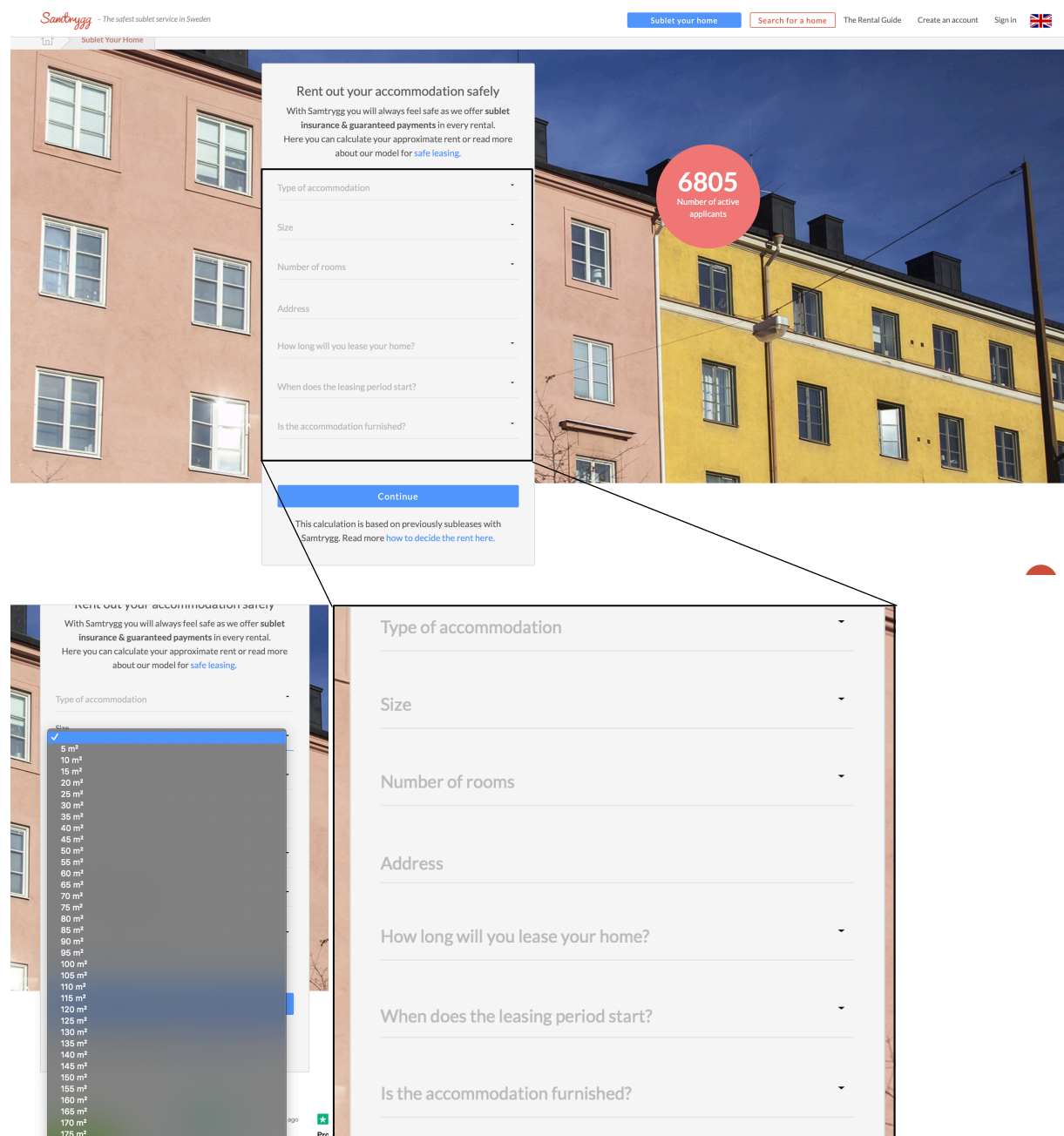

Image A: Two screendumps of the "sublet your home" page. Second screen shows what happens when pressing the "size" category. Third screen is a zoom in on the list.

Sublet your home Search for a home The Rental Guide Create an account Sign in

Search

Rent your accommodation safe & smooth
Samtrygg

accommodations for rent in Sweden

as long as you're creditworthy. We value your security first and foremost -
own payments or frauds.

Search

Bra 357 omdömen på Trustpilot

Rental period

Move-in date

Minimum number of months

| 1 month | 24 month |

1 7 13 18 24

☐ Until further notice

Maximum rent

2 000 SEK 50 000 SEK

2 000 14 000 26 000 38 000 50 000

Minimum number of rooms

1 10

1 3 6 8 10

Minimum size

1 m² 300 m²

1 76 151 225 300

Kind of accomodation
X Tenancy
X Co-op apartment
X House
X Single room

Extras
X Unfurnished
X Furnished
☐ Pet friendly
☐ Available parking

Apply Reset

Rental period

Move-in date

Minimum number of months

| 1 month | 24 month |

1 7 13 18 24

☐ Until further notice

Maximum rent

2 000 SEK 50 000 SEK

2 000 14 000 26 000 38 000 50 000

Minimum number of rooms

1 10

1 3 6 8 10

Minimum size

1 m² 300 m²

1 76 151 225 300

Kind of accomodation
X Tenancy
X Co-op apartment
X House
X Single room

Extras
X Unfurnished
X Furnished
☐ Pet friendly
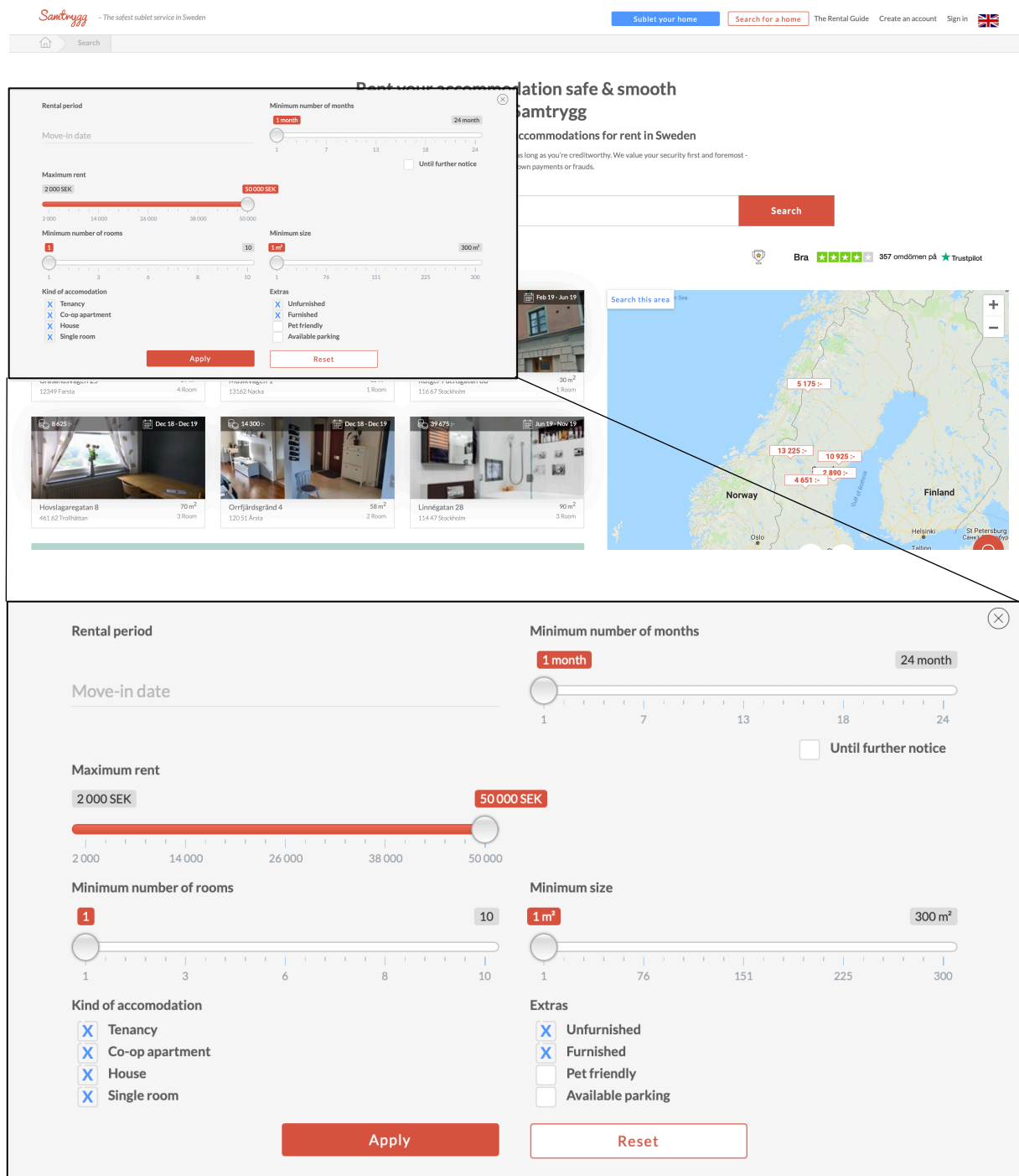☐ Available parking

Apply Reset

Image B: Contextual position of "search for a home" screen, with a zoomed in version as well (so you can read!)

Note: The colors are not visible in this print out but they actually had very little to communicate in the original design. We want the focus of this answer to be on proper choice of controls, so you may ignore color.