

# Written exam (solutions to the examination)

**Course:** TDA493 / TIA106 Graphical Interfaces

**Time:** December 19th, 2017, 08:30-12:30 (4 hours)

**Location:** M building at Johanneberg

**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:** 14

**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.

You will get your results via Progress tool (Mål och framsteg) in Chalmers PingPong.

## 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

**01. How is a formative usability test done? (worth 4 points)**

- a) Actual users vote for which interface they prefer, after they have first tested different functional versions of an application.
- b) Ask participants to perform explicitly defined tasks while thinking aloud, early enough to allow adjustments in the design. (p.142)
- c) End the design process with a formal usability test that measures specific values, with the purpose of identifying possible solutions to problems that have appeared during the design process.
- d) Perform user testing on an already implemented and released application to create a formal usability report.

**02. What are significant traits for smart products? (worth 4 points)**

- a) Smart products remember details
- b) Smart products forget errors
- c) Smart products put idle cycles to work
- d) Smart products remember details
- e) Smart products do not assume anything
- f) Smart products always present functionality in the same way
- g) Smart products should not anticipate needs

**03. What is an example of dynamic hinting? (worth 4 points)**

- a) The button changes its appearance when the user hovers over it
- b) The button changes its appearance when the user presses it
- c) There is a sudden change in appearance when there is an internal system change that affects the pliancy.
- d) The cursor changes to a double-headed arrow showing the axis in which the window edge can be stretched when it passes over a window's frame.

**04. How would you characterize a sovereign posture? (worth 4 points)**

- a) The application monopolizes the users' attention for long, continuous periods of time. (p.208)
- b) An application having a sovereign posture is considered by the majority of users to be a perfect interface, creating deep emotional bonds with a user fan group.
- c) The application so to speak comes and goes, presenting a single function with a constrained set of controls.

**05. 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

**06. 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. (p.213)
- 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.

**07. 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

**08. What are the advantages of using metaphors?** (worth 4 points)

- a) Helps users understand how an interface works by using things from the real-life
- b) They scale well
- c) They are consistent with each other
- d) We can fully rely on the ability of the users to recognize them

**09. What is the difference between saturation and hue?** (worth 4 points)

- a) Hue is how strong the color is (weak, strong), saturation is what kind of color it is (red, green).
- b) Saturation is how strong the color is (weak, strong), hue is what kind of color it is (red, green).
- c) Saturation is how bright the color is (bright, dark), hue is what kind of color it is (blended, mono).

**10. What is modeless feedback?** (worth 4 points)

- a) Modeless feedback is a term used during the framework and requirement phase of the design process, meaning that the analysis have shown that the system needs to give feedback back to the user but the designer have not yet decided on the aesthetics – for example the typography – of the actual feedback control.
- b) Information – from the system to the user – that is continuously displayed, requiring no special action or mode shift on the user's part in order to view and make sense of the feedback. (p.358)
- c) Information – from the system to the user – that is temporarily displayed, requiring special action and/or a mode shift on the user's part in order to view and make sense of the feedback.

**11. Why are grids useful when designing a graphical interface?** (worth 4 points)

- a) Because it helps define a clear visual structure (p.414)
- b) Because grids help randomise position of elements
- c) Because they allow flexibility on placement of the screen header, for example.
- d) Because it helps users to learn where to find key interface elements (p.417)
- e) Because they limit the amount of screen space available

**12. What are some ways to help users learn a new interface?** (worth 4 points)

- a) Present guided tours that go on for at least 15 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) Use tooltip overlays to help users remember controls and functions.

**13. When designing a smartphone interface with touch interaction, it is a good idea to...** (worth 4 points)

- a) properly scale hit areas for finger use. (p.516)
- b) utilize drag and drop whenever possible, since it works well with gestures across the screen.
- c) avoid drag and drop. (p.516)
- 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. (p.516)
- h) avoid menu bars. (p.535)
- i) avoid animations at all cost.

**14. How can error messages be eliminated or at least improved?** (worth 4 points)

- a) Error messages can be enhanced by providing audio feedback
- c) Error messages should be modal
- e) Error messages can be enhanced through the acknowledgement of the user
- f) Error messages can be eliminated by making errors impossible
- g) Error messages can be improved by showing which information was lost

**15. What is an accelerator?** (worth 4 points)

- a) Accelerators is a modern form of a wizard, a looped sequence of dialogs.
- b) Accelerators is a form of menu that opens up, cascades, into sub-levels of menus. The purpose is to speed up the time it takes to learn the interface by providing a clear overview.
- c) Accelerator is a synonym to keyboard shortcuts.
- d) Accelerators are an easy way to invoke functions by using the keyboard (instead of the mouse). (p.452)

**Essay assignment 01** (worth 20 points)

Your task is to produce wireframes for a website – similar to Doodle or the PingPong function Invitations – where students can book supervision with teachers. Remember to include information such as the room and other extra functions that you would have considered useful. You may choose to show any steps at any point in the process. Consider designing for “Undo, Redo, and Reversible Histories” as presented in Cooper et al. chapter 15. Be specific about how you approach Undo, as well as other features, in your interface. Point out at least three controls that you chose which are specific to web. You are expected to produce at least 5 different screens.

A: Logical Structure (2 points) - Did the student show the screens in a logical sequence with a thought out scenario?

B: Web Controls (6 points) - Did the student mention and apply correctly 3 different controls specific for web?

C: Undo-Redo (6 points) - Is the implemented undo and redo model well developed?

D: Argumentation (2 points) - Was the interface well argued for?

E: Good Controls (2 points) - Were the controls used well chosen, in general?

F: Goal Oriented (2 points) - Was the interface design with the specific given goal in mind?

**Essay assignment 02** (worth 20 points)

Analyze the following screen dumps taken from the learning management system Canvas and annotate them, giving examples of both **good** and **problematic** design choices.

For each item you note, **argue** (with one sentence) why you consider it good or problematic, and **refer** to a term, concept, or guideline brought up by Cooper in the course book.

Focus your analysis on metaphors and pliancy hinting, on visual attributes and hierarchies, as well controls and navigation.

Note that captions explain each screen dump briefly. 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.

For each good or problematic design choice, the student should argue for or against the design choice (give 1 points) and refer to a term, concept, or guideline from the course book (give 0,5 point).



The screenshot displays the SpeedGrader interface. At the top, the document title is "Hand-in Treatment for Pitch" with a due date of "Sep 5 at 8am - TIG094 H17". The interface shows a document titled "Ny lärplattform" with text about Chalmers, Göteborgs Universitet, and SUNET. A red line points from the settings icon in the top left to the "SpeedGrader Options" dialog box. The dialog box has a close button (X) and contains the following options:

- Sort student list:
  - by student name (alphabetical)
  - by student name (alphabetically)**
  - by the date they submitted the assignment
  - by submission status (needs grading, not submitted, etc)
- ☐ Hide student

At the bottom of the dialog are "Cancel" and "Save Settings" buttons. The right sidebar shows submission details: "Submitted: Nov 7 at 10:03am" with a "LATE" status, "Submitted Files: (click to load)" with a link to "treatment.pdf", and "Assessment" with a grade of "out of 0". Under "Assignment Comments", there are two comments: "here is my treatment, a bit late" and "Det här är en media-kommentar." with a video thumbnail. A "Submit" button is at the bottom right.

*This screen dump shows the SpeedGrader; this is the interface used to review and comment on different hand-ins. The box at the bottom ("SpeedGrader Options") show the dialog that opens when the settings icon is clicked. The drop shadow and the red line is not a part of the actual interface, they are added to the screen dump to make the illustration more clear.*