CMPUT 301
User Interfaces and Software Design
Winter 2000
Section B1 Final Exam
April 26, 2000
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Name:
ID:

1. The exam contains 9 questions.
2. You may not use any textbooks or notes or any other materials during the exam.
3. You have 2 hours to complete it.
4. At the end you must return this question sheet with your paper.

Good Luck!

Question 1	(20 points)	
Question 2	(8 points)	
Question 3	(8 points)	
Question 4	(10 points)	
Question 5	(10 points)	
Question 6	(10 points)	
Question 7	(12 points)	
Question 8	(12 points)	
Question 9	(10 points)	

(Question 2: 8 points)

Give examples of violations of the principles of consistency and error prevention. Discuss two examples for each principle.

(Question 3: 8 points)

Use the Task-Action-Grammar method to design a set of commands for a spreadsheet application. The set should contain commands for inserting and deleting a new column or row, and inserting and deleting a number of cells in an existing column or row.

(Question 4: 10 points)

You want to display the time from the computer clock on a widget on the user's display, in a manner that would allow the user to change the number and type of clock widgets that s/he wants to use. Identify an applicable design pattern (there are more than one), explain why the pattern is applicable, and show how it should be applied by drawing the class and interaction diagram of the pattern in the context of your problem.

(Question 5: 10 points)

You are designing a family tree editor. In this system a *person* has two parents, a *mother* and a *father*. A person can *calculate_ancestors* for a given number of generations by invoking the same operation (i.e., *calculate_ancestors*) on its parents. Design a class hierarchy to represent the above types. Indicate the relevant methods for each class (for the method of interest, i.e., *calculate_ancestors*, describe in pseudo-code how it will be implemented) inheritance and composition relations among classes, as well as abstract classes and interfaces. Which pattern applies here?

(Question 6: 10 points)

Describe Fitts' law. Describe an experiment that you could use to evaluate its validity (you can design your own or talk about one of the experiments mentioned in class). Give an example for how it could be used for user interface evaluation.

(Question 7: 12 points)

Your task is to design a "family pictures" viewer. The viewer should enable the user to browse through a large set of pictures organized in folders, to select one or multiple pictures for detailed viewing, and to copy/move pictures from one folder to the other. (NOTE: you may draw the interface for the viewer if you want.)

1. What principle would you choose to organize the pictures in folders?

2. How many windows would you have and what technique would you use to coordinate the operations between them?

3. How would you implement the copying/moving actions?

Discuss and explain your answers.

(Question 8: 12 points)

Identify three user-interface evaluation methods using usability experts. For each of these methods, discuss its process (what materials it requires and how it is carried out) and what are its advantages and disadvantages.

(Question 9: 10 points)

The forms below are taken from two web applications for travel planning. They differ slightly (a) on the exact task they enable the user to perform and (b) on the widgets they provide for interaction. Identify these differences and explain which form is better and why.

QUICK ROUNDTRIP FLIGHT SEARCH

Leaving from

Departing (MM/DD/YY) Time
5/16/00   evening ▼

Travelers

1 adult ▼

Going to

Returning (MM/DD/YY) Time
5/18/00   evening ▼

Go

This search is limited to adult roundtrip coach | morning | afternoon | evening | earch options...

CURRENT HIGHLIGHTS

& Entertainment - Netscape

Home   Search   Netscape   Print   Security   Shop   Stop

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Courses | Modules | Reference | Languages | News | People | SE | AI | CELLES

Your Canadian Rockies Vacatio

| Morning |
| Afternoon |
| Evening |
| 12:00 am |
| 1:00 am |
| 2:00 am |
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| 4:00 am |
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| 3:00 pm |
| 4:00 pm |
| Morning |

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Start Date:
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Arriving In:

End Date:
Apr ▼ 25 ▼

Travelers:
1 ▼

⊙ **Round Trip**   ○ **One Way**

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