



Xi'an Jiaotong-Liverpool University  
西交利物浦大學

CSE214	EXAMINER	DEPARTMENT	TEL
		CSSE	

**2<sup>nd</sup> SEMESTER 2019/2020 RESIT EXAMINATION**

**BACHELOR DEGREE – YEAR 3**

**HUMAN-CENTRIC COMPUTING**

**Time allowed: 2 hours**

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**INSTRUCTIONS TO CANDIDATES**

NAME OF CANDIDATE: ..... ID: .....

USUAL SIGNATURE: .....

READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

1. The total number of points (100%) is 100.
2. This exam has a total number of 16 questions on 3 pages.
3. The number in the brackets indicates the marks for each question.
4. Use short answers, usually a bulleted list of key points is sufficient.
5. Only solutions written in English will be accepted.

**THIS PAPER MUST NOT BE REMOVED FROM THE EXAMINATION ROOM.**

# Exam Human-Centric Computing

## Question 1: Design Life Cycle (4 points)

- a) Which are the three stages of the “Design Life Cycle,” in what order are they typically performed? (3 points)
- b) At which of these stages does one start? (1 point)

## Question 2: Task-Centered Design (7 points)

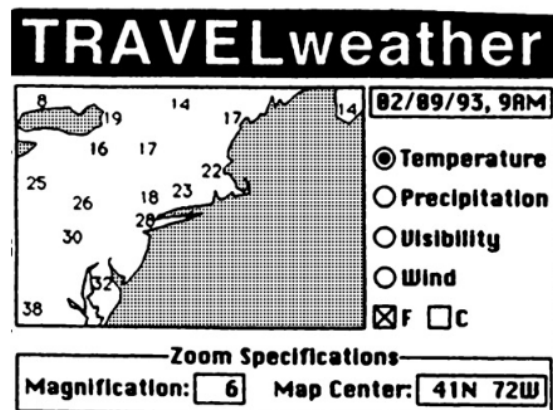
- a) What are the three goals of the Task-Centered Design approach (the approach is *systematically* used for ..., ..., and ...)? (3 points)
- b) List the four phases of the task-centered design process (bulleted list of points). (4 points)

## Question 3: Design Principle: Adaptable Interface and Shortcuts (6 points)

Explain why it is important to create adaptable interfaces and to provide shortcuts (bulleted list of points, at least 3).

## Question 4: Design Principles and Heuristics (10 points)

A TravelWeather system (screenshot on the right) provides weather information for the current day. The user begins by entering the location (longitude and latitude) in the area labeled “map center” and the system will center the map on those coordinates. If the user types anything in the map center box other than a valid set of coordinates (an integer from 0–90 followed by the letter N or S, then an integer from 0 to 179 followed by the letter W or E), the system will show an alert dialog box with the following error message: “Geographic boundaries exceeded.” The program can be exited by simultaneously pressing the control and the “at” sign (the person has to hold down three keys: the “control,” the “shift,” and the “2/@” key). Based only on this brief description, list the design flaws of this system being sure to indicate which heuristic(s) was/were violated and also say why (for at least five different heuristics).



## Question 5: Participatory Design (8 points)

Name at least two advantages and two disadvantages of participatory design.

## Question 6: User Involvement (8 points)

List four ways of involving the user when employing a user-centered focus to system design.

## Question 7: Low- and High-Fidelity Prototypes (8 points)

- a) What are examples for low-fidelity prototypes, what are examples for high-fidelity prototypes ( $\geq$  two each) (4 points)
- b) What are the advantages of each category ( $\geq$  two each)? (2 points)
- c) What are the disadvantages of each category ( $\geq$  two each)? (2 points)

**Question 8: Paper Prototypes (6 points)**



Paper prototypes are also used next to storyboards in HCI.

- a) What is the difference to storyboards? (3 point)
- b) How are paper prototypes used in HCI? (3 points)

**Question 9: Usability (8 points)**

- a) What is usability? (2 points)
- b) Which aspects of usability are important (name at least three points)? (6 points)

**Question 10: Think Aloud Technique (6 points)**

- a) Briefly describe the “think aloud” technique (2 points)
- b) Name an advantage and a disadvantage (4 points).

**Question 11: Dependent and Independent Variables (8 points)**

What are dependent variables and independent variables in controlled experiments?

**Question 12: Large Screen Application Domains (3 points)**



Name at least three application domains of large, multi-touch screens.

**Question 13: Small Screens (4 points)**

- a) What are issues arising from the small screen size for input on small devices (name at least two)? (2 points)
- b) What techniques are used to deal with small screen size for output (name at least two)? (2 points)

**Question 14: 3D Displays and Collaboration (4 points)**

What are differences with respect to co-located synchronous collaboration between Virtual Reality settings and true volumetric displays? Name at least two properties of in which the two settings differ and how this affects co-located synchronous collaboration.

**Question 15: Java Swing: Swing and AWT (5 points)**

- a) What's Java Swing? (3 points)
- b) What's AWT? (2 points)

**Question 16: Java Swing: Events (5 points)**

- a) What is an event in Swing? (2 points)
- b) What is an event handler in Swing? (3 points)

End of the Paper