Arab Academy for Science, Technology & Maritime Transport

College of Computing and Information Technology

EXAMINATION PAPER- Fall 2022/2021

Course Title: Human computer Interaction **Date**: June 2022

Course Code: CS471 **Time allowed**: 2 Hours

Lecturer: Dr. Hatem Abdelkader **Start Time**: 9 am

Student's Name: ----------

Student's Department: ---------- **Reg.# :** ----------

Question #	Marks	
	Available	Actual
1	10	
2	10	
3	10	
4	10	
Total		
Lecturer	**Name**:	
	Signature :	
	Date:	

Examination Committee	Signature	Date

Question 1: Choose The Correct Answer (only 40 are required): (10 Marks)

1. Identify from among the following the attribute of usability.
   A .Learnability B. Usefulness C. Generalizability D. Subjective satisfaction
2. Unlike traditional observation, guided observation ……..
   A. set strict guidelines for session activities
   B. reduces error introduced by the experimenter
   C. sets strict guidelines for session length
   D. includes some interaction with participants
3. A persona in the context of goal-oriented interaction design ……..
   A.is used to role-play through an interface design
   B.is a real person
   C. represents a particular type of user
   D. should represent an average user
4. Which of the following fields is not an influence on Human Computer Interaction (HCI)? A. Ergonomics
   B. Cognitive psychology
   C. Computer science
   D. All of the above are an influence on HCI
5. The name of the document should be shown on the application's ……...
   A. menu bar B. title bar C. tool bar D. status bar
6. When software is poorly designed, the penalties are:
   a. More time to learn how things work
   b. More time to get things done
   c. More errors in getting things done
   d. Potential users will buy your competitor's product
   e. All of the above
7. the most important factor leading to the development of usable software is:
   a. An understanding of user needs
   b. The right development team
   c. In-house design standards
   d. Early usability testing
   e. Management buy-in
8. Post-test questionnaires (conducted after a usability test) are particularly useful for measuring
   a) Safety.
   b) Efficiency.
   c) Learnability.
   d) User satisfaction.
9. A pluralistic walkthrough
   a) Is usually conducted at the end of the development process.
   b) Is often conducted with low-fidelity designs.
   c) Requires having several alternate designs.
   d) Requires a fully functional prototype.
10. Providing accelerators (e.g. keyboard shortcuts) mostly addresses
   a) Utility.
   b) Efficiency.
   c) Learnability.
   d) Attitude (or likeability).

11.A method that does not require human participants serving as test users is the

a) Usability test.
b) Pluralistic walkthrough.
c) Rubin's comparison test.
d) Heuristic evaluation.

12.The cognitive walkthrough mainly evaluates a product's

a) Utility.
b) Efficiency.
c) Learnability.
d) Likeability..

13. An icon of a file folder, which users can drop _les on in order to move them into the folder, is an example of which of the following:

(a) The recognition rather than recall principle
(b) Direct manipulation
(c) A metaphor
(d) all of the above

14. Your new sound card is packaged in a plastic anti-static bag. The bag is sealed with a yellow sticker with a written warning not to expose the card to static electricity. The sticker is an example of:

(a) Perceptual constraint
(b) Cultural constraint
(c) Physical constraint
(d) Logical constraint

15. Which of the following statements is false?

(a) Norman's logical constraints are one way to implement Nielsen's principle of error prevention.
(b) The help and documentation called for by Nielsen's usability principle form part of Norman's definition of the system image.
(c) Norman's principle of feedback is one way to implement Nielsen's principle of recognition rather than recall.
(d) All of the above statements are true.

16. The process of forming general concept definitions from examples of concepts to be learned.

(a) Deduction (b) Abduction (c) Induction (d) Conjunction

17. A user-centered approach is characterized by ALL these elements EXCEPT for which one of the following?

a. Considers users' tasks and goals from inception through development
b. Uses a linear lifecycle model to clearly delineate tasks
c. Is based on empirical measurements of user performance
d. Is developed via an iterative design process

18. You drag a folder to make a copy of its contents. An animation appears on the screen, showing files moving from one folder to another. This is an example of which of the following:

(a) Visibility
(b) Mapping
(c) An affordance
(d) Feedback

19. Which of the following best describes what a conceptual model is used for?

a. Outlines the possible applications and prerequisite concepts for a product
b. Provides a diagram or prototype that embodies the design concept

c. Describes an abstraction or metaphor of the user interface
d. Defines the mappings between concepts and affinity diagrams

20. Which of the following is NOT a lifecycle model of software development?
a. Waterfall
b. Spiral
c. Star
d. Cluster

21. A central problem with the waterfall model is that: (multiple choice)
a. It does NOT allow for iterative design with user feedback
b. It does NOT allow for changes in requirements that ensue during development
c. It does NOT consider software designers' work practices
d. A and b only
e. All of the above

22. Which of the following is NOT true of the usability engineering lifecycle model?
a. In this model, usability goals are integrated into all phases of design
b. Both qualitative and quantitative goals are considered during design
c. Requirements analysis is one of the two major phases of the model
d. The practices that correspond to this model are very cost effective
e. All of the above

23. Which of the following is NOT a primary reason for doing requirements analysis?
a. To translate prototypes into requirements for subsequent development
b. To ensure the clarity and specificity of communication about needs
c. To attempt to avoid future usability problems and user frustration
d. To reduce the time and costs involved in developing a system
e. To evaluate the functions of a system during testing

24. The very best kind of "Help" is:
a. Online tutorials
b. Online documentation
c. Reference manuals
d. A "Help" desk
e. Needing none at all

25. What should you never do during usability testing?
a. Assure the participants they are not the subject of the test
b. Keep the testing situation as ambiguous as possible
c. Use participants having different levels of computer experience
d. Ask the participants to talk about what they are thinking
e. Start out by showing the participants how the software works

26. What is the principal interaction mode for a Microsoft Kinect?
A. Haptic Interface
B. Mouse Pointer
C. Exploring and Browsing
D. Gesture and Body Movements

27. What are the goals of a good design?
A. Safety
B. Utility
C. Efficiency
D. All of the above

28. Which of the following questionnaire designs are particularly useful for exploratory studies?

A. Closed questions
B. Hypothetical questions
C. Questions with mutually exclusive options
D. Open-ended questions

29. Why is prototyping essential?
A. To get quick feedback on the product/application
B. None of the above
C. Experiment with multiple alternatives
D. It saves money and effort

30- What is the benefit of good design?
(a) Positive effect or performance (b) success (c) Both a & b (d) None

31. The basic principles underlying user-centric software design are:
a. Relatively new
b. Based on trial and error
c. More art than science
d. Nonexistent, good design is just applied common sense
e. Derived from empirical data regarding human performance characteristics

32. After determining what you want your application to do, the best next step in software development is to:
a. Establish standards for detail design
b. Perform task analysis
c. Allocate system functions
d. Get to know your target users
e. Define high-level architecture

33. User-centric software development requires the talents and participation of:
a. Programmers
b. User Interface Designers
c. Graphic Artists
d. Instructional Materials Developers
e. All of the above

34. The single best predictor of a software application's usability is its:
a. Consistency
b. Predictability
c. Self-evidency
d. Efficiency
e. Effectiveness

35. In the earliest stages of interface design,the best strategy for the use of color is:
a. Use color to focus attention and show relationships
b. Use only a few colors
c. Avoid saturated reds and blues
d. All of the above
e. Use no color at all

36. To satisfy novice and expert users, the best strategy for label and field alignment is:
a. Right align labels and left align fields
b. Left align both fields and labels
c. Left align labels and stagger fields
d. None of the above
e. Any of the above, depending on circumstances

37. The very best kind of "Help" is:

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d. A "Help" desk
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38. What should you never do during usability testing?
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40. The most important factor leading to the development of usable software is:
a. An understanding of user needs
b. The right development team
c. In-house design standards
d. Early usability testing
e. Management buy-in

Question 2: **(10 MARKS)**

1- Heuristic evaluation uses 10 guidelines or heuristics. State five

2-Define the terms 'deductive reasoning'; 'inductive reasoning'; and ' abductive reasoning' and provide an example of each related to HCI.

3- Walkthroughs are a common technique to carry out early usability testing.

(i) Briefly explain what a walkthrough is. Make sure you cover the benefits and limitations of a walkthrough.

(ii) There are different types of walkthrough. Briefly explain the differences between a Heuristic Walkthrough and a Cognitive Walkthrough. What are the benefits of each?

4- What is the difference between slips and mistakes?

5- Describe **one** circumstance when the actions for the cognitive walkthrough should be constructed and analyzed at the micro-level (e.g. mouse-clicks and keystrokes).

Question 3: **(10 MARKS)**

1- Give four Common interaction styles

2- What are the three stages for doing heuristic evaluation?

3- Give differences between speech synthesis and speech recognition

4- What are the different data gathering techniques?

5-Your team of usability experts wants to quickly identify potential usability problems **throughout** a Web site. Unfortunately, you have no time to recruit and use human participants. Which evaluation method do you use? Why?

Question 4 **(10 MARKS)**

1- A modern hotel has installed a sandwich making robot to supply room service sandwiches at any hour of the day. The hotel also has an automated delivery system that will take the completed

sandwich to a specified room. You have been asked to program a software agent interface that guests can phone to order sandwiches. Provide a hierarchical task description of the sandwich ordering process.

2-How would you use the GOMS Keystroke-Level Model (KLM)? Remember that the operators are K, P, H, M, which are respectively Keystrokes, Pointing, Homing, and Mental Preparation. You don't need to give all the heuristics for M.

3- You have conducted a contextual inquiry and task analysis of user behavior at a UCB bus stop and identified the following set of sample tasks that you want to implement in a kiosk: (a) Querying for the next bus, given a route name or destination name. (b) Finding out the best route to a shopping mall on the following Saturday (you don't know the station or line, just the name and city of the mall. The kiosk should figure out the routes and connections, and print a map for you).

a. Sketch a main page for the kiosk which enables the scenarios above (you don't have to include all the features the kiosk would have). Include labels as needed on icons

b. Sketch Scenario (a) using storyboarding.

c. Sketch scenario (b) using storyboarding