**DOMANDE INTERACTIVE SYSTEM DESIGN**

1. Which of the follwing factors may adversely affect the internal validity of an experiment?  
   A) A sample of participants not representative of the real users of the system  
   B) Experimental procedure not representative of the real use of the system  
   **C) Noisy environment that hampers concentration of the partecipants**D) Testing environment not representative of real situations
2. The clock metaphor was used in the scientific literature of HCI – for instance McQueen et al. (1995); Sèenz & Sanchez (2009) – to represent one of the following sizes. Which?
3. The speed
4. **The direction**
5. The time
6. The position
7. Which of the following function can both be calculated on an ordinal type variable?
8. Sum and median
9. Frequency distribution and standard deviation
10. **Frequency distribution and median**
11. Mean and median
12. The scientific method referred to as “observation” has the following characteristics:
13. Low relevance, highly precision
14. **High relevance, low precision**
15. High relevance, high precision
16. Low relevance, low precision
17. Which of the following expressions represents more faithfully the spatial relationship between the axes of **a mouse** and those of its pointer on a screen?
18. x+ -> x+ ; z+ -> z+
19. x + -> z+ ; z+ -> y-
20. **x+ -> x+ ; z+ -> y+**
21. x + -> x+ ; y+ -> y-
22. What is “peer review”?
23. An interview with the end-users of a product
24. **A process to select articles by a scientific community**
25. An experiment with human participants
26. A distributed system needing a specialized GUI
27. What is longitudinal experiment?
28. **An user-study that lasts multiple sessions**
29. An user-study including more than one task
30. An user-study where a large number of participants are recruited
31. An user-study with more than one independent variable
32. A spatial relationship between a control and a display **can be classified as “natural” when...**
33. There is a spatial transformation between one of the axes of the control and one of the axes of the display
34. The control and the display have the same number of degrees of freedom
35. **There is a spatial congruence between all the axes of the control and all the axes of the display**
36. There is no extra level (“third tier”) between the control and the display
37. A spatial relationship between a control and a display **can be classified as “learned” and not as” natural” when..**
38. **There is a spatial transformation between one of the axes of the control and one of the axes of the display**
39. The control and the display have the same number of degrees of freedom
40. There is a spatial congruence between all the axes of the control and all the axes of the display
41. There is no extra level (“third tier”) between the control and the display
42. Which of the following terms can be used to identify a possible value of an **independent variable**?
43. Confounding variable
44. Factor
45. **Level**
46. Device
47. Which of the following controls supports a greater number of a modes
48. The “F9” key in Microsoft Word
49. The toolbar for mode switching in Microsoft PowerPoint
50. **The “Navy key” button of Nokia 3210**
51. The “insert” key on a keyboard
52. What is “roll”?
53. The translation along the horizontal (x) axis
54. The rotation around the vertical (y) axis
55. **The rotation around the longitudinal (z) axis**
56. The displacement along the vertical (Y) axis
57. What is a “control variable”?
58. **A variable whose values is kept constant during the execution of an experiment**
59. A dependent variable
60. A variable whose value may vary randomly during the execution of an experiment
61. A variable whose value varies systematically with an independent variable
62. How many possible “effects” 3 independent variables can have on a dependent variable?
63. **7**
64. 1
65. 3
66. 6
67. Which of the following is an advantage of the between-subjects design?
68. A smaller number of participants must be recruited
69. There is no need to balance the groups
70. There is less variation due to the participants
71. **There is no interference between experimental conditions**
72. Which of the following measures can be calculated on **a nominal variable**?

A) Standard deviation

**B) Frequency distribution**

C) Median

D) Mean

17) The mouse was tester with other devices in the fist user-study of HCI history. Which was the obvious advantage of the mouse with respect to other tested pointing devices?

A) It enabled a “direct manipulation” of the graphical objects  
B) Its pointing times were significantly lower   
C) It had zero access time  
**D) Its error rate was much smaller**

18) Which system can be considered the first to adopt a “direct manipulation” interface?

A) Microsoft Windows  
B) The mouse  
C) Vannevar Bush Mernex  
**D) Sketchpad by Ivan Sutherland**

19) Which of the following terms can be used as a **SYNONIM** of independent variable?

**A) Factor**B) Level  
C) Confounding Variable  
D) Device

20) Considered the following output of a statistical software. How many participants were recruited in the experiment? (C’è una tabella che non si vede bene, ma ci fidiamo)

Immagine che contiene testo, Carattere, schermata, numero

Descrizione generata automaticamenteA) 9  
**B) 10 (CELLA Subject DF +1 = 9+1 = 10)**C) it cannot be determined by these data  
D) 2

21) In which of the following subsections of a scientific paper is generally described the task carried out by the participants of an experiment?

**A) Procedure**  
 B) Apparatus  
 C) Participants  
 D) Design

22) What is the name of the central part of retina with highest visual activity?

A) Lens  
 B) Iris  
 C) Optic Nerve  
 **D) Fovea**

23) What frequency distribution generally have data from a human performance (eg. Text entry speed data)?

**A) Normal**   
B) Exponential  
C) Uniform  
D) Ubuntu

24) To which decade dates back the introduction of Ivan Southerland’s Sketchpad?

**A) ’60**B) ‘90  
C)’40  
D) ‘80

25) Which is the typical duration of saccades?  
 A) It depends on the subjects, but generally at least a couple of seconds  
 B) An unlimited duration of saccades  
 **C) They are rapid/quickly movements about 120 ms** D) Less than a millisecond

26) In which percentage of cases a human is able to correctly replicate a sequence of 7 numbers?  
 A) In almost all cases  
 B) In about 20% of cases  
 **C) In about 50% of cases**  
 D) Only in very rare cases

27) How many degrees of freedom has a pendulum?

A) 0  
 **B) 1**  
 C) 3  
 D) 6

28) A scrollbar slider can be classified as…  
 A) A device  
 B) A display but not a control  
C) Both a control and display  
 D) A control but not a display

29) What is “yaw” (imbardata in Italiano)?  
 **A) The rotation around the vertical (y) axis** B) The displacement along the vertical (y) axis  
 C) The rotation around the longitudinal (z) axis  
 D) The translation along the horizontal (x) axis

30) How do we call the delay between the occurrence of a single fixed stimulus and the initiation of a response assigned to it?

A) Limit time  
 B) Round trip delay  
 C) Mental retardation  
 **D) Simple reaction time**

31) The observational method has the following characteristics:  
 A) Low relevance, low precision  
 B) Low relevance, high precision  
 **C) High relevance, low precision**  
 D) High relevance, high precision

Immagine che contiene testo, Carattere, schermata, ricevuta

Descrizione generata automaticamente32) Considering the following output of a statistical software. Which of the following conclusion is wrong?   
 **A) The null hypothesis can be rejacted for p < .001** B) 16 partecipants completed the experiment  
 C) There was a significant effect of the test condition  
the dependent variable ..  
 D) The experiment had 4 test conditions

33) Which scientific method allows to establish a causal relationship among variables?  
 A) The correlational method  
 B) The deductive method  
 C) The experimental method  
 D) The observational method

34) The mouse was tested with other devices in the first user-study of HCI history. Which of the following devices **was not included** in the test?  
 **A) Trackball**  
 B) Knee-controlled lever  
 C) Joystick  
 D) Lightpen

35) To which decade dates back the invention of the mouse?  
 A) 40s  
 **B) 60s**  
 C) 80s  
 D) 90s

36) Which processors made up the model presented by Card, Moran and Newell presented in the essay “The Psychology of Human-Computer Interaction”?

A) CPU & GPU  
 B) Display, Congitive and Machine State  
 **C) Perceptive, Cognitive and Motor**  
 D) Model, View and Controller

37) Which was the first commercial computer having a GUI?  
 A) Commodore 64  
 B) UNIVAC  
 **C) Xerox Star**  
 D) Apple Macintosh

38) In Kantowitz and Sorkins (1983) model how many subsystem compose the human and the computer, respectively?  
 A) 3 and 4  
 **B) Both 3**  
 C) Both 4  
 D) 4 and 3

39) What is a “confounding variable”?  
 A) A dependent variable  
 B) A variable whose value is kept constant during the execution of an experiment  
 C) A variable whose value may very randomly during the execution of an experiment  
 D) A variable whose value varies systematically with an independent variable

40) The \_\_\_\_\_\_\_\_\_\_ is the one and only thing that we CHANGE in an experiment. For example:  
Does the type of soil affect plant growth? – The type of soil is the \_\_\_.  
 A) Control variable  
 B) Dependent variable  
 **C) Independent variable**

41) The \_\_\_\_\_\_ is the same thing as the result we are looking for in an investigation.  
Example: Does the type of soil affect plant growth? – Plant growth is an example of \_\_\_.  
 A) Control Variable  
 **B) Dependent variable**   
 C) Independent variable  
  
42) What is a scientific investigation that tests a hypothesis?

1. Repeated Observation
2. Model
3. **Controlled Experiment**
4. Theory of Science

43) All the thing that we MUST keep the SAME in an experiment are called the \_\_\_\_\_.   
For example: Does soilt type affect plant growth? – we must keep plany type, age, amount of water, ecc the same.  
 **A) Control variable**  
 B) Dependent variable  
 C) Independent variable

44) A \_\_\_\_\_ is any factor that can change in an experiment or change the outcome of the experiment

1. Hypothesis
2. Theory
3. **Variable**

45) Do all scientific investigations have to be a controlled experiment?

A) Yes  
 **B) No**

46) Scientist often puts their information (data) into a chart or graph. What kind of graph would show change over time in experiment?

A) bar graph  
 B) pie graph  
 **C) line graph**  
 D) plot hart

47) It is important for scientists to write down every step of their experiment so that other scientists can \_\_\_ it.

**A) repeat/replicate**  
 B) judge  
 C) tell about

48) it is so important to repeat scientific investigations for validity (to prove it’s true) and to record everything so other scientists can repeat them. When another scientist repeats and gets the same or similar results, they have \_\_\_ the investigation.

A) repeated  
 **B) replicated**  
 C) observed  
 D) completed

49) Which scientific association published a manual containing important information regarding the methodology to use in experiments with human participants?

**A) American Psychological Society (APA)**  
 B) Association for Computing Machinery (ACM)  
 C) Institute of Electrical and Electronics Engineers (IEEE)  
 D) Eluder

50) The scientific method referred to as “experimental” has the following characteristics:

**Risposta esatta: Low relevance, high precision**

**51 ESERCIZIO H-INDEX**

**A RESEARCHER PUBLISHED 7 ARTICLES. The table show the number of citations received by each article. What is researches’ H-Index?**

|  |  |
| --- | --- |
| **TITLE** | **CITATIONS** |
| TITLE 1 | 6 |
| TITLE 2 | 1 |
| TITLE 3 | 3 |
| TITLE 4 | 0 |
| TITLE 5 | 3 |
| TITLE 6 | 2 |
| TITLE 7 | 6 |

1. **0**
2. **3**
3. **4**
4. **6**

A researcher published 5 articles. The bullet point show then number of citations recevided by each article. What is the researcher’s H-Index? Un autore ha H-Index pari a x se x dei suoi n lavori hanno ricevuto almeno x citazioni ciascuno e le rimanenti pubblicazioni (n-x) hanno ricevuto ognuna non più di x citazioni. Pertanto un autore con H-Index=5 ha prodotto 5 lavori che sono stati ciascuno citati almeno 5 volte.)

* Article 1: 0 cit, Article 2: 12 cit
* Article 3: 1 cit, Article 4: 2 cit
* Article 5: 2 cit

1. 3
2. 0
3. 1
4. **2**