

DOMANDE INTERACTIVE SYSTEM DESIGN

- 1) Which of the following 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 participants (X)
D) Testing environment not representative of real situations

- 2) A researcher published 5 articles. The bullet point show then number of citations received by each article. What is the researcher's H-Index? (Somma cit/n articoli)
 - Article 1: 0 cit, Article 2: 12 cit
 - Article 3: 1 cit, Article 4: 2 cit
 - Article 5: 2 cit**A) 3 (X)**
B) 0
C) 1
D) 2

- 3) 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?
A) The speed
B) The direction (X)
C) The time
D) The position

- 4) Which of the following function can both be calculated on an ordinal type variable?
A) Sum and median
B) Frequency distribution and standard deviation
C) Frequency distribution and median (X)
D) Mean and median

- 5) The scientific method referred to as “observation” has the following characteristics:
A) Low relevance, highly precision
B) High relevance, low precision (X)
C) High relevance, high precision
D) Low relevance, low precision

- 6) 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?
A) $x+ \rightarrow x+ ; z+ \rightarrow z+$
B) $x+ \rightarrow z+ ; z+ \rightarrow y-$
 $x+ \rightarrow x+ ; z+ \rightarrow y+ (X)$
C) $x+ \rightarrow x+ ; y+ \rightarrow y-$

- 7) What is “peer review”?
A) An interview with the end-users of a product
B) A process to select articles by a scientific community (X)
C) An experiment with human participants
D) A distributed system needing a specialized GUI

- 8) What is longitudinal experiment?
- A) An user-study that lasts multiple sessions (X)**
 - B) An user-study including more than one task
 - C) An user-study where a large number of participants are recruited
 - D) An user-study with more than one independent variable
- 9) A spatial relationship between a control and a display can be classified as “natural” when..
- A) There is a spatial transformation between one of the axes of the control and one of the axes of the display (X)**
 - B) The control and the display have the same number of degrees of freedom
 - C) There is a spatial congruence between all the axes of the control and all the axes of the display
 - D) There is no extra level (“third tier”) between the control and the display
- 10) Which of the following terms can be used to identify a possible value of an **independent variable**?
- A) Confounding variable
 - B) Factor
 - C) Level (X)**
 - D) Device
- 11) Which of the following controls supports a smaller number of a modes
- A) The “F9” key in Microsoft Word
 - B) The toolbar for mode switching in Microsoft Powerpoint
 - C) The “Navy key” button of Nokia 3210 (X)**
 - D) The “insert” key on a keyboard
- 12) What is “roll”?
- A) The translation along the horizontal (x) axis
 - B) The rotation around the vertical (y) axis
 - C) The rotation around the longitudinal (z) axis (X)**
 - D) The displacement along the vertical (Y) axis
- 13) What is a “control variable”?
- A) A variable whose values is kept constant during the execution of an experiment (X)**
 - B) A dependent variable
 - C) A variable whose value may vary randomly during the execution of an experiment
 - D) A variable whose value varies systematically with an independent variable
- 14) How many possible “effects” 3 independent variables can have on a dependent variable?
- A) 7 (X)**
 - B) 1
 - C) 3
 - D) 6
- 15) Which of the following is an advantage of the between-subjects design?
- A) A smaller number of participants must be recruited
 - B) There is no need to balance the groups
 - C) There is less variation due to the participants
 - D) There is no interference between experimental conditions (X)**

16) Which of the following measures can be calculated on a **nominal variable**?

- A) Standard deviation
- B) Frequency distribution (X)**
- C) Median
- D) Mean

17) The mouse was tested with other devices in the first 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 (X)**

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

- A) Microsoft Windows
- B) The mouse
- C) Vannevar Bush Memex
- D) Sketchpad by Ivan Sutherland (X)**

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

- A) Factor (X)**
- B) Level
- C) Confounding Variable
- D) Device

20) Consider 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)

- A) 9
- B) 10 (X)**
- 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 (X)**
- 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 (X)**

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

- A) Normal (X)**
- B) Exponential
- C) Uniform
- D) Ubuntu

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

- A) '60 (X)**
- 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 (X)**
- 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 (X)**
- D) Only in very rare cases

27) How many degrees of freedom has a pendulum?

- A) 0
- B) 1 (X)**
- 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 (X)**
- D) A control but not a display

29) What is "yaw" (imbardata in Italiano)?

- A) The rotation around the vertical (y) axis (X)**
- 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 (X)**

- 31) The observational method has the following characteristics:
- A) Low relevance, low precision
 - B) Low relevance, high precision
 - C) High relevance, low precision (X)**
 - D) High relevance, high precision
- 32) Considering the following output of a statistical software. Which of the following conclusion is wrong? (QUESTA NON LA SO)
- A) The null hypothesis can be rejected for $p < .001$
 - B) 16 participants completed the experiment
 - C) There was a significant effect of the test condition on 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 (X)**
 - 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 (X)**
 - B) Knee-controlled lever
 - C) Joystick
 - D) Lightpen
- 35) To which decade dates back the invention of the mouse?
- A) 40s
 - B) 60s (X)**
 - 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, Cognitive and Machine State
 - C) Perceptive, Cognitive and Motor (X)**
 - D) Model, View and Controller
- 37) Which was the first commercial computer having a GUI?
- A) Commodore 64
 - B) UNIVAC
 - C) Xerox Star (X)**
 - 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 (X)**
 - 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 vary randomly during the execution of an experiment
- D) A variable whose value varies systematically with an independent variable (X)**

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 (X)**

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 (X)**
- C) Independent variable

42) What is a scientific investigation that tests a hypothesis?

- A) Repeated Observation
- B) Model
- C) Controlled Experiment (X)**
- D) Theory of Science

43) All the things that we MUST keep the SAME in an experiment are called the ____.

For example: Does soil type affect plant growth? – we must keep plant type, age, amount of water, etc the same.

- A) Control variable (X)**
- B) Dependent variable
- C) Independent variable

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

- A) Hypothesis
- B) Theory
- C) Variable (X)**

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

- A) Yes
- B) No (X)**

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

- A) bar graph
- B) pie graph
- C) line graph (X)**
- D) plot chart

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

A) repeat/replicate (X)

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 (X)

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) (X)

B) Association for Computing Machinery (ACM)

C) Institute of Electrical and Electronics Engineers (IEEE)

D) Elseuder