Question **1**

Complete

Mark 3.00 out of 3.00

Flag question

Mark the **correct** statements about geospatial data

Select one or more:

- [x] **Line phenomena** have length, but essentially no width.
- [ ] Examples of **area phenomena** are communication networks and roads.
- [ ] **Surface phenomena** are termed three dimensional.
- [x] **Point phenomena** have no spacial extent.

Question **2**

Complete

Mark 3.00 out of 3.00

Flag question

Which color scales are appropriate to communicate which information?

Select one or more:

- [x] Map A is best suited to communicate population per square mile per state
- [x] Map C is best suited to communicate the bettering or worsening of average income per county since last year
- [ ] Map B is best suited to communicate population per square mile per state
- [ ] Map A is best suited to communicate the bettering or worsening of average income per state since last year

Question **3**

Complete

Mark 3.00 out of 3.00

Flag question

Map projections are concerned with mapping the positions on the globe (sphere) to positions on the screen (flat surface).

Mark the correct statements.

Select one or more:

- [x] **Conformal projection** retains the local angles on each point of a map correctly.
- [ ] **Conformal projection** does preserve areas.
- [x] **Plane projections** are *azimuthal* projections.
- [ ] In **plane projections** degrees of *longitude* are represented as circles around the projection center

Question **4**

Complete

Mark 3.00 out of 3.00

Flag question

Mark the correct statements regarding text visualisation.

Select one or more:

- [x] **Wordle** (word clouds) is an effective way to show the *frequency* of terms in text documents.
- [x] Text visualization is used to get an idea about the content of unknown text.
- [ ] **Wordle** (word clouds) are better suited than **Parallel Tag Clouds** to visualize pair-wise relations of different words.
- [ ] Text visualisation is used to visualise *patterns*, as well as the *formatting* (e.g., the typography, the font) of a document.

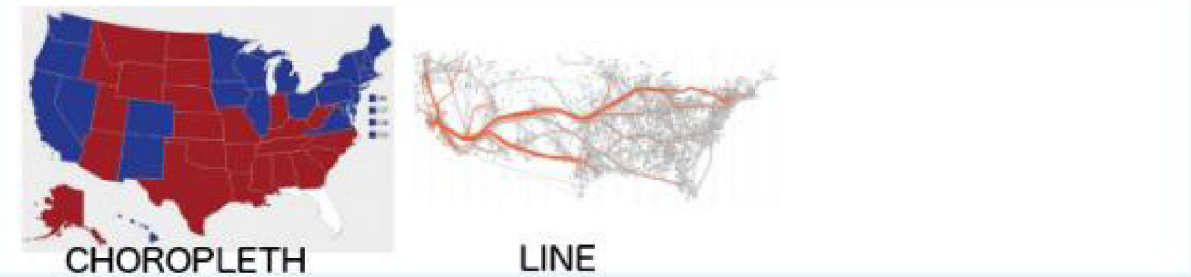
Question **5**

Complete

Mark 3.00 out of 3.00

Flag question

Mark the correct statements




Select one or more:

- [x] **Edge bundling** is a suitable technique to effectively avoid overlapping in line maps.
- [ ] **Line maps** maps are usually created by placing symbols where the described phenomenon occurs.
- [x] **Choropleth maps** are suitable to represent *area* phenomena.

Question 6

Complete

Mark 3.00 out of 3.00

Flag question

Concerning the layout of dynamic networks, mark the true sentences.

Select one or more:

- [x] a. Timeline node-link visualizations include juxtaposed, superimposed or integrated approaches.
- [ ] b. Dynamic layout scalability does not consider the number of frames (graphs) to visualize.
- [ ] c. Animations map the "time" dimension to "space".
- [ ] d. Animations are always made for online (streaming data) applications.
- [ ] e. Timeline visualization can be applied on node-link visualization only.

Question 7

Complete

Mark 3.00 out of 3.00

Flag question

Mark the true sentences about Cliques.

- [ ] a. Cliques have a number of vertices (k) equal to m(m-1)/2, with m the number of edges (in the undirected case).
- [x] b. Given a graph G, Finding a clique of size at least 6 is a NP-Complete problem.
- [ ] c. A clique is a subset of vertices such that its induced subgraph is incomplete.
- [x] d. A clique is "maximum" if does not exist as a part of a larger clique.

Question 8

Complete

Mark 1.00 out of 3.00

Flag question

Concerning graph filtering and sampling, mark the true sentences.

Select one or more:

- [ ] a. Stochastic filtering techniques, applied on the same input, always yield the same result.
- [x] b. Graph filtering techniques ensure that the filtered graph is a subgraph of the original.
- [x] c. Pathfinder network scaling retains all edges that satisfy the triangle inequality.
- [ ] d. Graph sampling techniques creates "samples" of the graph so that those have properties similar to the ones of the whole graph.
- [x] e. Applying the MST technique on a graph yields a (possibly) cyclic sub-graph spanning all the vertices

Question **9**

Complete

Mark 3.00 out of 3.00

Flag question

Which of the following are treemap layout algorithms?

Select one or more:

- [x] a. Strip
- [x] b. Circular
- [x] c. Slice-and-Dice
- [ ] d. Rectilinear
- [ ] e. Multi-Level layout

Question **10**

Complete

Mark 2.00 out of 3.00

Flag question

Containment diagrams include

Select one or more:

- [ ] a. Voronoi diagrams
- [x] b. circular treemaps
- [x] c. rectangular treemaps
- [ ] d. rectilinear graphs
- [ ] e. adjacency matrices

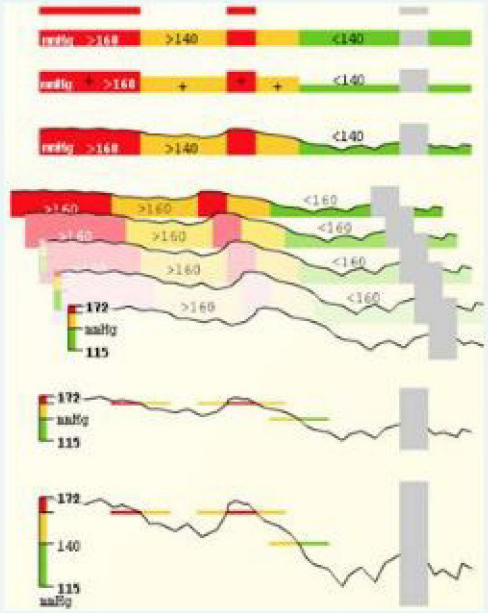
Question 11

Complete

Mark 3.00 out of 3.00

Flag question

Semantic zooming ...




Select one or more:

- a. shows different visual representations depending on the zoom level chosen by the user and the available space for the visualization.
- b. relies solely on geometric zooming.
- c. shows different visual representations depending on the color-coding chosen by the user.
- d. allows users to choose between a large scope (i.e., zooming out and seeing an overview of the big picture) or a more detailed view (i.e., zooming in and seing all details about a limited range of the data).

Question 12

Complete

Mark 3.00 out of 3.00

Flag question

Existing Focus+Context techniques can be done by ...

Select one or more:

- a. Eliding Data: Some items are omitted to give more contextual information to currently focused elements.
- b. Distorting Data: The data representation of the entire dataset is distorted to put the view focus on the contextualized regions.
- c. Superimposing Data Layers: The entire visualization is enhanced with annotations, on-demand tooltips and navigation overlays.
- d. Distorting Data: The data representation of the entire dataset is distorted to reduce the out-of-focus information from the view.
- e. Superimposing Data Layers: Focused areas are locally overlaid with additional context information.

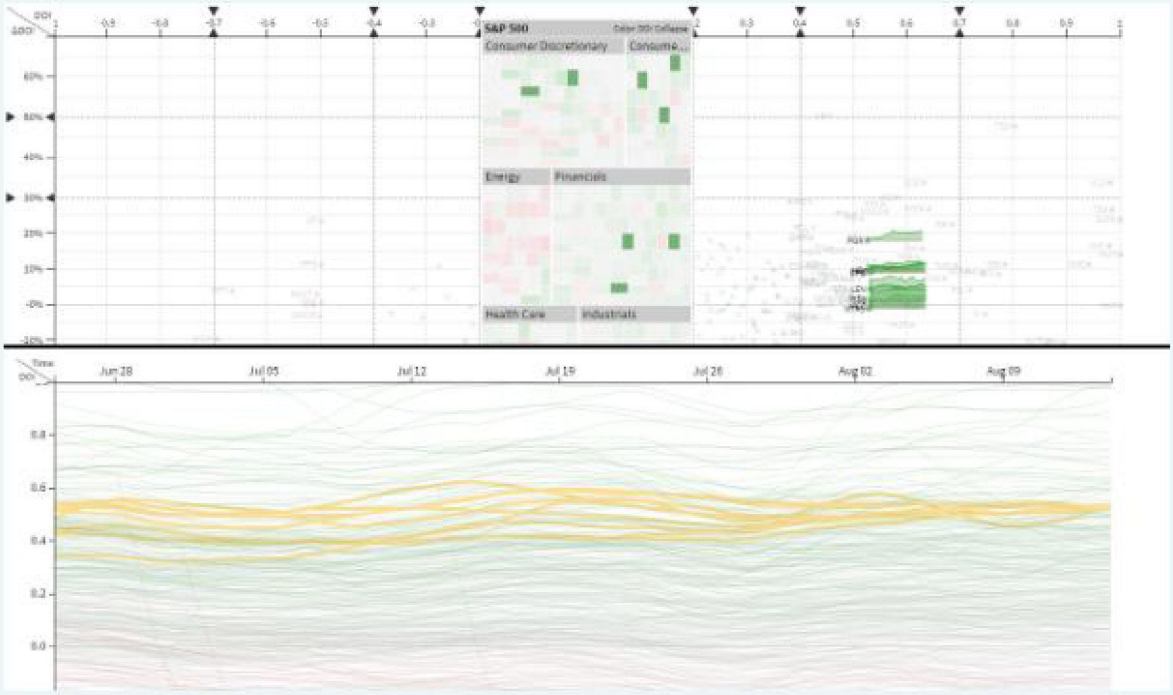
Question **13**

Complete

Mark 0.00 out of 3.00

Flag question

What levels of the Info-Vis Reference Model are influenced by interactive linking?




Select one or more:

- [ ] Data Tables - The data tables are filtered by the selection.
- [ ] Data Transformations - The data to produce the visualization is filtered.
- [x] Visual Structures - The selection changes the visual structure.
- [ ] Visual Mappings - The mapping to emphasize the selected data is changed.
- [ ] View Transformations - The view is transformed to emphasize the selected data.
- [x] Views - The selection switches the views for a different representation.
- [ ] Raw Data - The raw data is changed by the selection.

Question **14**

Complete

Mark 1.50 out of 3.00

Flag question

Interaction modeling is employed to ...

Select one or more:

- [ ] a. ... demonstrate interactions and tasks to users.
- [ ] b. ... validate effectiveness and user guidance of different interaction approaches.
- [x] c. ... capture requirements the system can be developed and evaluated against.

Question **15**

Complete

Mark 2.00 out of 3.00

Flag question

Coordinated Multiple View systems ...

Select one or more:

- a. always support semantic zooming
- b. combine different visualization techniques and apply them on different data representations
- c. use color-coding for trend detection
- d. are often supported by brushing & linking techniques
- e. use two or more distinct views to support the investigation of a single conceptual entity
- f. can not be supported by brushing & linking techniques

Question **16**

Complete

Mark 3.00 out of 3.00

Flag question

Tamara Munzner: Examples of analysis' actions are ...

Select one or more:

- a. say
- b. listen
- c. discover
- d. read
- e. enjoy
- f. present
- g. annotate

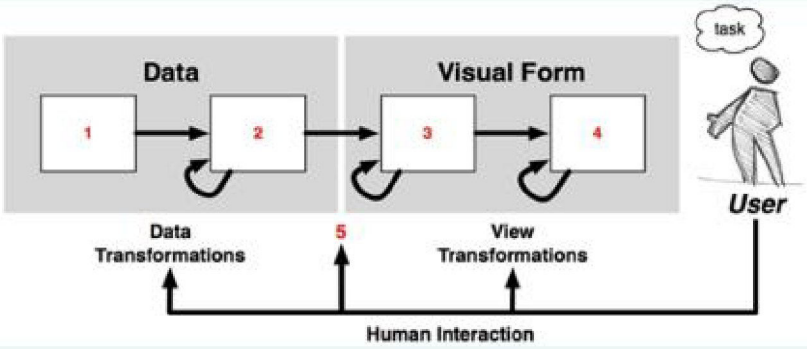
Question **17**

Complete

Mark 3.00 out of 3.00

Flag question

Assign the correct titles to the numbered stages / transitions of the InfoVis reference model




Select one:

- a. 1=Visual Mappings; 2=Raw Data; 3=Data Tables; 4=Visual Structures; 5=Views
- b. 1=Raw Data; 2=Visual Structures; 3=Data Tables; 4=Visual Mappings; 5=Views
- c. 1=Raw Data; 2=Data Tables; 3=Visual Structures; 4=Views; 5=Visual Mappings

Question **18**

Complete

Mark 3.00 out of 3.00

Flag question

The first action in the "Knowledge Crystallization Loop" is ...

Select one:

- a. ... visualize data
- b. ... archive huge amount of data
- c. ... forage for data

Question **19**

Complete

Mark 3.00 out of 3.00

Flag question

The visualization design triangle [Miksch & Aigner 2014] specifies ...

Select one or more:

- a. environment
- b. user
- c. task
- d. hardware
- e. data
- f. software

Question **20**

Complete

Mark 3.00 out of 3.00

Flag question

Information Visualization is defined as...

Select one:

- a. ... the use of computer-supported, interactive, visual representations of abstract data to amplify cognition.
- b. ... the use of paper-based, visual representations of abstract data to amplify cognition.
- c. ... the use of computer-supported, static representations of data to amplify cognition.

Question **21**

Complete

Mark 3.00 out of 3.00

Flag question

Chernoff Faces

Select one or more:

- a. their features are not likely to be perceived equally strong
- b. encode only one data value with multiple graphical features
- c. are not suspected to convey emotions
- d. use facial features to communicate data values

Question **22**

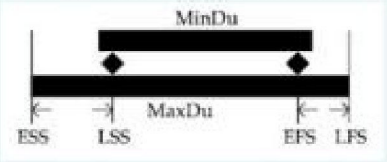
Complete

Mark 3.00 out of 3.00

Flag question

Glyph or icon based techniques

(Figure: example of a glyph: The *Time Annotation Glyph* represents temporal constraints of a medical treatment plan -- ESS: earliest starting shift, LSS: latest starting shift, EFS: earliest finishing shift, LFS: latest finishing shift, MaxDu: maximum duration, MinDu: minimum duration)




Select one or more:

- a. do not represent one meaning as a whole but encode multiple data values
- b. are composed of graphical primitives
- c. cannot represent multiple data values at once

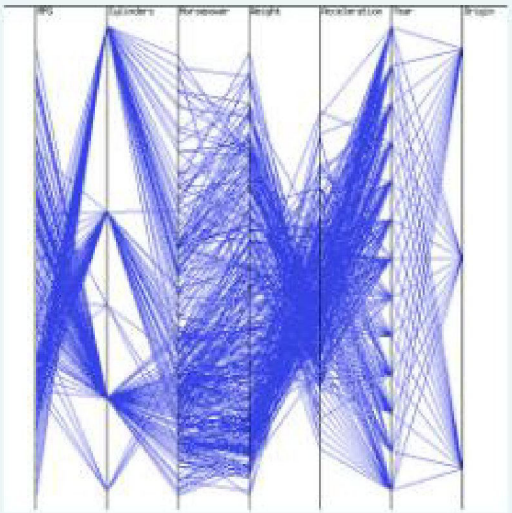
Question **23**

Complete

Mark 3.00 out of 3.00

Flag question

Parallel Coordinates



Select one or more:

- a. are less suited to visualize complex relations between two dimensions than scatterplots
- b. represent each data item by a (polygonal) line
- c. the ordering of the axes does not influence the visibility of relations between two data dimensions
- d. are suited to represent a maximum of 3 dimensions

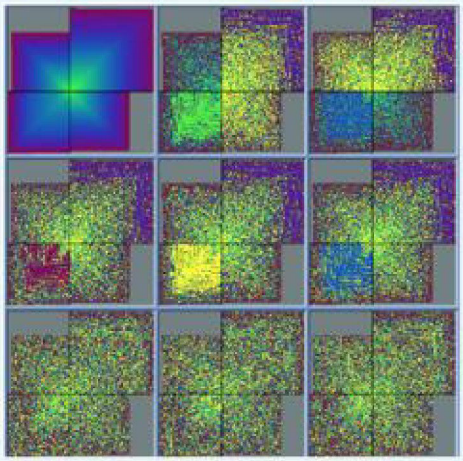
Question **24**

Complete

Mark 2.00 out of 3.00

Flag question

Pixel-Based Techniques



Select one or more:

- a. data attributes are mapped to color
- b. different attribute values of one data item are presented by at least one pixel in separate subwindows
- c. are suited for high-dimensional data sets

Question **25**

Complete

Mark 3.00 out of 3.00

Flag question

Visual variables of marks...

Select one or more:

- a. length is well suited to represent nominal values
- b. include position
- c. color hue is well suited to represent nominal values
- d. shape is well suited to represent quantitative values
- e. include texture

Question **26**

Complete

Mark 2.00 out of 3.00

Flag question

The fovea is ...

Select one or more:

- a. a location in the eye where the optic nerve is connected
- b. the region in the eye with the sharpest vision
- c. a region in the back of the brain
- d. a region where rods and cones are most densely packed
- e. an area corresponding approximately to the size of a thumb at arms length

Question **27**

Complete

Mark 3.00 out of 3.00

Flag question

The Gestalt principle shown is called:

Select one or more:

- a. Enclosure
- b. Closure
- c. Symmetry
- d. Similarity
- e. Proximity

Question **28**

Complete

Mark 1.00 out of 3.00

Flag question

Which of the following statements regarding preattentive processing are true?

Select one or more:

- a. Preattentive processing is fast and is performed in parallel, within 250ms.
- b. Preattentive processing requires attention and works with short-term memory.
- c. The combination of two preattentive attributes is again perceived preattentively.
- d. Preattentive attributes are features of a visual scene that pop-out.
- e. Preattentive attributes are perceived very quickly because they don't need to be learned but are "hardwired" in the brain.

Question **29**

Complete

Mark 0.00 out of 3.00

Flag question

Along which scale are T-Shirt sizes measured?

Select one:

- a. quantitative - interval
- b. nominal
- c. quantitative - ratio
- d. ordinal

Question **30**
Complete
Mark 3.00 out of 3.00
Flag question

The 'Lie Factor'/Perceptual Distortion of a graphic is...
(remark: only one answer possible)

Select one:

- a. size of effect in data / data ink
- b. size of effect shown in graphic / size of effect in data
- c. data ink / total ink

Question **31**
Complete
Mark 3.00 out of 3.00
Flag question

Which of the following statements about animation (mapping time to time) are correct?

Select one or more:

- a. direct comparison of parameters between different points in time is possible
- b. probably the most natural form of mapping
- c. well suited for following trends and movements
- d. remembering trends and changes
- e. not well suited for analytic and explorative tasks

Question **32**
Complete
Mark 3.00 out of 3.00
Flag question

Which of the following task are time-oriented

Select one or more:

- a. value of a data element
- b. temporal location
- c. sequence
- d. rate of change
- e. lookup

Question **33**
Complete
Mark 3.00 out of 3.00
Flag question

Scale is ..

Select one or more:

- a. ordinal
- b. qualitative
- c. continuous
- d. alphanumeric
- e. discrete

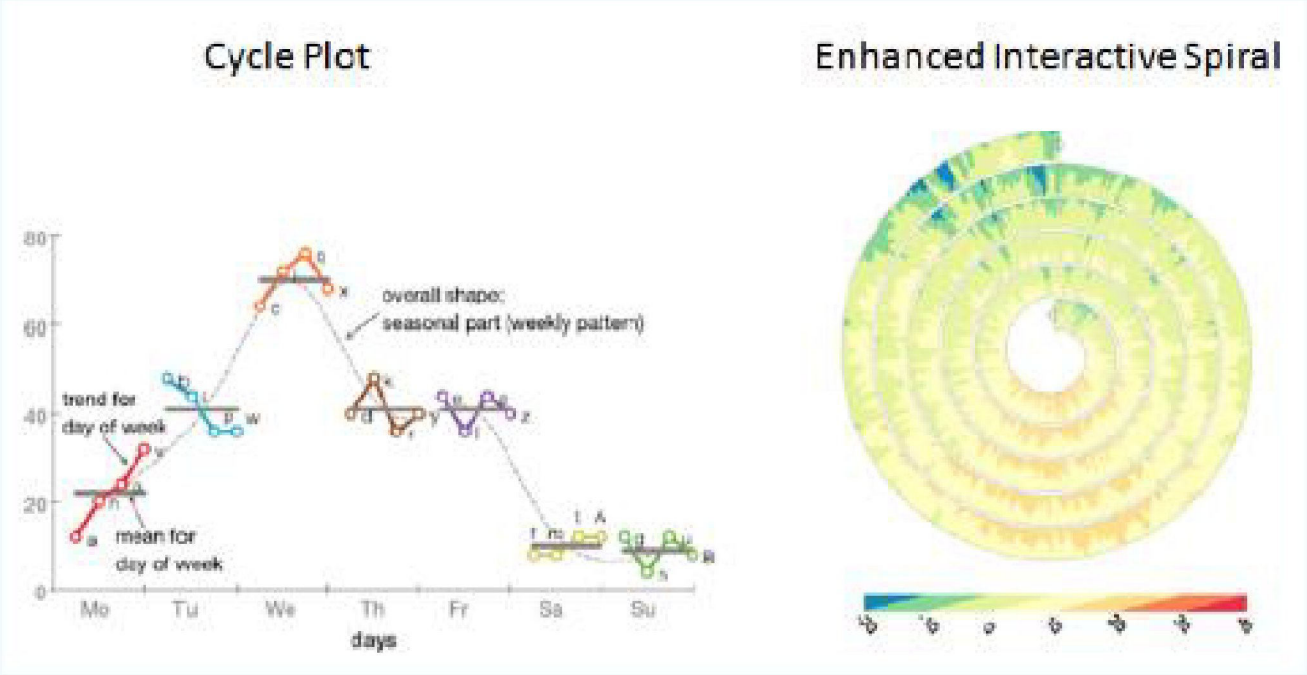
Question **34**

Complete

Mark 3.00 out of 3.00

Flag question

The shown techniques are well suited to represent:




Select one or more:

- [x] a. time instant
- [ ] b. time interval
- [x] c. cyclic time
- [x] d. univariate data
- [ ] e. multivariate data

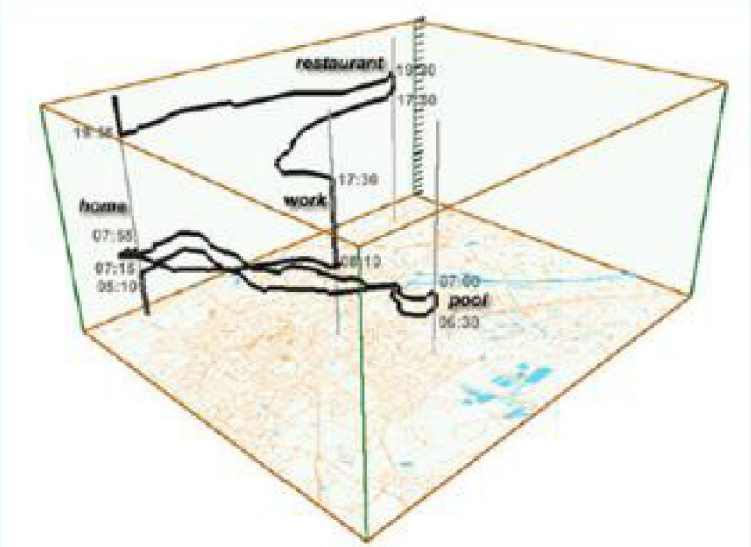
Question **35**

Complete

Mark 3.00 out of 3.00

Flag question

The shown technique is well suited to represent:




Select one or more:

- a. univariate data
- b. spatial
- c. cyclic time
- d. time instant
- e. multivariate data

Question **36**

Complete

Mark 0.00 out of 3.00

Flag question

For data aggregation and data summary representations, which statements are **correct**?

Select one or more:

- a. Violin-plots as summary representation show more details about the structure as box-plots.
- b. Scatterplots of 2 dimensional data allow to confirm expected patterns.
- c. Summary statistics of 2 dimensional data (mean, variance, correlation) are always different for different datasets.
- d. Box-plots as summary representation show enough detail to distinguish different raw data characteristics.

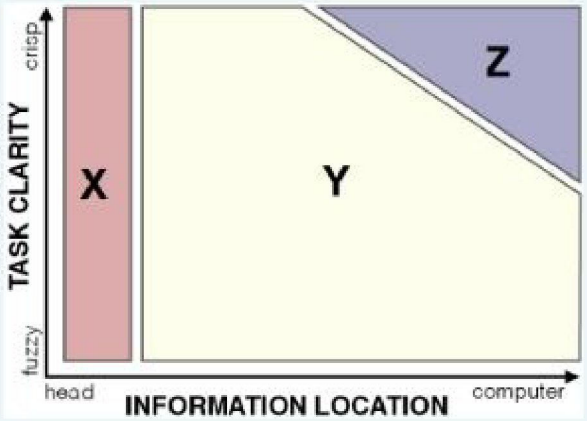
Question **37**

Complete

Mark 3.00 out of 3.00

Flag question

According to the design study methodology (Sedlmair et al. 2012), when does a visualization design study offer a good solution for a given problem?




Select one:

- a. Area "Y": either some of the required information is in the head of the user, or the task is not defined in a very clear way, or both.
- b. Area "X": all the required information is in the head of the user
- c. Area "Z": the required information is available to the computer and the task is defined in a clear way.

Question **38**

Complete

Mark 3.00 out of 3.00

Flag question

Summative evaluation

Select one:

- a. describes assessment methods after the implementation phase.
- b. is used for problem analysis.
- c. describes assessment methods during analysis and design phases.

Question **39**

Complete

Mark 3.00 out of 3.00

Flag question

For ethnographic observations / in situ observational studies it is true that…

Select one or more:

- a. the observer is not allowed to ask questions
- b. an interview guideline has to be created upfront
- c. observations might also be collected using video and audio recordings
- d. users are observed in their working environment in practice
- e. they are primarily conducted after the new tool is used by users

Question **40**
Complete
Mark 3.00 out of 3.00
Flag question

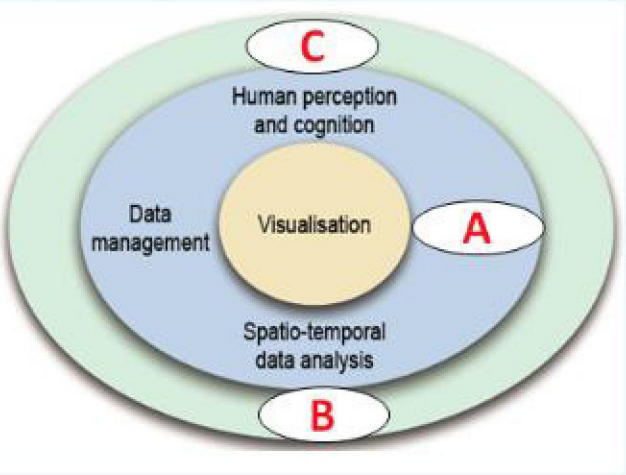
What is required for the ISO standard for human-centered design processes?

Select one or more:

- a. a clear understanding of the users, their tasks, and their requirements.
- b. The users provide the requirements and are only asked in the final evaluation after deployment.
- c. An iterative design process with active involvement of the users.
- d. Require an multidisciplinary design team.

Question **41**
Complete
Mark 3.00 out of 3.00
Flag question

**Components** of Visual Analytics: Assign the correct terms to A, B, and C (in red letters)




Select one or more:

- a. Planning
- b. Workflow Management
- c. Virtual Reality
- d. Infrastructure
- e. Data Mining
- f. Evaluation

Question **42**
Complete
Mark 3.00 out of 3.00
Flag question

**Selected** goals of Visual Analytics are designing and creating methods to enable users to ...

Select one or more:

- a. provide timely, defensible, and understandable assessments
- b. detect the expected and discover the unexpected
- c. merge images in an efficient way

Question 43
Complete
Mark 3.00 out of 3.00
Flag question

Guidance is ...

Select one:

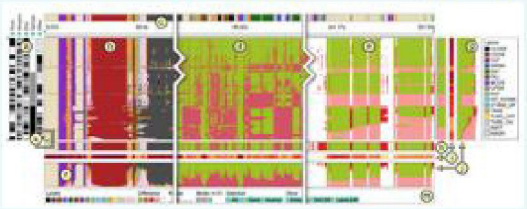
a. a computer-assisted process that aims to interplay argument mining and visualization

b. a computer-assisted process that aims to actively resolve a knowledge gap encountered by users during an interactive Visual Analytics session

c. a computer-assisted process that aims to investigate the expressiveness and effectiveness of Visual Analytics solutions

Question 44
Complete
Mark 3.00 out of 3.00
Flag question

VISSECT - Activity Recognition by Visual Analytics enables ...



Select one:

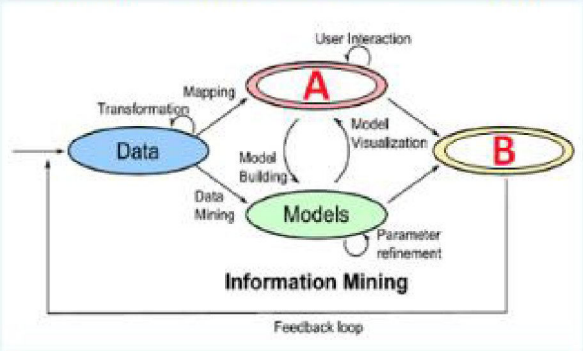
a. enables visual exploration and interplay analysis of visual exploration of trail-and-error procedures

b. visual workflow management

c. visual exploration and interplay analysis of parameters and segmentation and labeling algorithms

Question 45
Complete
Mark 3.00 out of 3.00
Flag question

**Visual Analytics – Process** [Keim, et al. 2008]: Assign the correct terms to A and B (in red letters)




Select one or more:

a. Guidance

b. Statistics

c. Visualization

d. Knowledge