CS 3205 Fall 2016
Exam 1
****ANSWER KEY****

1. (5) Name 5 different things you would change on the following website to improve its design:

Answer: +1 for each different item mentioned (so many would be correct as long as there are no repeats)
1. Create menu instead of having so many links
2. The contact information at the top could be placed on a separate "About Us" page
3. Pictures need to be resized and some eliminated (too many for a home page)
4. Select one or two pictures for the top (typically this is used for a company logo). Nine pictures in the header area makes it very confusing)
5. Content needs to be better organized (use of tables, borders, putting some information on other pages)

2. (2) Which one of these would NOT be found in a good HCI?
A. Common short cuts, like CTRL+Z for undo.
B. Icons that can have specific meanings.
C. A long command line to achieve a function
D. Sounds that convey meanings.

Answer C

3. (2) A persona in the context of goal-oriented interaction design: (mark all that apply)
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.
Answer: A & C

4. (10) Needfinding

What is the purpose of need finding in design work?

Answer: Identify user tasks, glean requirements (for new system or one that is being improved) (+1)

Discuss three needfinding techniques. Include at least one advantage and one disadvantage of each technique.

Needfinding 1:
Needfinding 2:
Needfinding 3:

Answer: Any 3 of the following (+3 for each)
Interviews
Adv – able to ask indepth questions
Disadv – timely and costly

Questionnaires/Surveys
Adv - able to reach many people at once
Disadv – not able to probe deeper or ask really indepth questions

Focus Groups
Adv – Group interviews
Disadv – can highlight areas of conflict, groupthink

Observation
Adv – Gain insights into stakeholders' tasks, good for understanding the nature and context of the tasks

Disadv - requires time and commitment from a member of the design team, and it can result in a huge amount of data

Studying Documentation
Adv - Good source of data about the steps, involved in an activity, and any regulations governing a task

Disadv – Lots of data and can get lost in the details, shouldn't be used in isolation so, you still will use other needfinding techniques

5. (3) What is a conceptual model?

Answer: A high-level description of how a system is organized and operates. A conceptual model enables designers to straighten out their thinking before they start laying out their widgets.

6. (8) What are the four parts of a conceptual model?

Answer:
Metaphors / Analogies - The major metaphors and analogies that are used to convey to the user how to understand what a product is for and how to use it for an activity.
Concepts (or Objects) - The concepts that users are exposed to through the product, including the task–domain objects they create and manipulate, their attributes, and the operations that can be performed on them

Relationships (between Concepts) - The relationships between those concepts, e.g. whether one object contains another, the relative importance of actions to others, and whether an object is part of another.

Mappings (or Operations) - The mappings between the concepts and the user experience the product is designed to support or invoke.

7. (6) What will happen if the designer's conceptual model differs from the user's conceptual model (mental model)? Make sure to express your answer with conceptual modeling terminology (i.e., the four parts from number 6).

   Answer: A mismatched conceptual model and mental model leads to a negative user experience (frustration and confusion).

   If the designer uses a metaphor that is too literal or unfamiliar to the user it can cause confusion on how to use the system.
   If concepts (based on a faulty metaphor) are used within the system it can cause confusion and frustration
   If the relationships between the concepts used in the system are not meaningful and consistent it can cause the user to have confusion and feel frustrated.
   If the mappings between the concepts and the user experience is not evident or doesn't exist it can cause confusion and frustration (good map – being able to revisit as website by looking at the history, ability to use bookmarks to visit a website).

8. (12) Another way of conceptualizing the design space is in terms of the interaction types that will underlie the user experience. In addition to instruction, name and describe the three other interaction types? Name an app/software/device that each interaction type described.

   Interaction type 1:
   Interaction type 2:
   Interaction type 3:
   Answer:
   ***Conversing*—where users have a dialog with a system**
   App/Software/device: Siri, search engines (many more)

   ***Manipulating*—where users interact with objects in a virtual or physical space by manipulating them, e.g. opening, holding, closing, placing.**
   App/Software/device: Xbox Kinnect, Autocad (many more)

   Exploring - where users move through a virtual environment or a physical space. Virtual environments include 3D worlds and virtual reality systems
   App/Software/device: Occulus Rift, various exploration games (many more)

9. (12) Discuss how the word processing software you use follows any six of the nine broad design principle's (be specific, mention the design principle and describe how a feature or function of your word processing software implements the principle).

Answer: (+2 for any six of the following principles)
Broad design principles:
-Simple and natural dialog (uses short phrases for tooltips, brief but thorough content in the help feature, etc.)

-Speak the user's language (uses word processing terms e.g. Layout to access margins, orientation, size, References to access reference a source, insert a table of contents, etc.)
-Minimize user's memory load (Toolbars, menus, etc.)
-Be consistent (consistent coloring, menu placement, tools among various programs, etc.)
-Provide feedback (tells you when you are saving or printing and many others)
-Provide clearly marked exits (Undo tool and short cut, x to close document/window etc.)
-Provide shortcuts (Ctrl +C – copy, Ctrl+X – cut, Ctrl + V – paste, etc.)
-Deal with errors in a positive manner (When trying to print a page that has narrow margins, it tells you this and allows you to change it so, all text will be printed, etc.)
-Provide help (has a help feature or can ask for help with functions or features, etc.)

10. (6) Describe 3 techniques a designer can use to avoid overloading the users' memory?
Answer: (+2 for each)
Menus, icons, choice dialog boxes vs commands, field formats
give input format (e.g. give calendar so user can select date from it)
generic commands (Ctrl+P, Ctrl+S)
context menus

11. (9) a. What is the difference between a usability goal and a usability requirement?
Answer:
Usability Goal: An abstract (often high-level) criteria by which a system must pass to be considered 'usable'.
Usability Requirement: A falsifiable, well-defined requirement for assessing a usability goal.

b. Provide an example of a usability goal for a book ordering system
Answer (examples of a couple of usability goals there are many others):
"Users can login quickly and efficiently."
"Users can quickly search for a book"
c. Provide an example of a usability requirement for a book ordering system.
Answer (examples :
"A customer will be able to locate, access, and view the list of books for a given Author within 5 seconds"
"95% of users will report, on a 1-5 Likert scale, that the system was enjoyable to use by rating the system as a 4 or 5."

12. (10)Matching

Answer	Term	Definition/example
A	Gulf of execution	A. distance from the user to the physical system
D	Framework	B. WIMP or WYSIWYG
E	Gulf of evaluation	C. Miller and the magic number 7
C	Theory	D. a set of steps, concepts, questions for guiding designer
B	Paradigm	E. distance from the physical system to the user

13. (6) Describe how the distributed cognitive approach is used to explain a cognitive activity. Identify three ways it can help a designer develop a better interface.

Answer: (+1.5 for description, +1.5 for each way it can help a designer develop a better interface)

Description

The distributed cognition approach studies the nature of cognitive phenomena across individuals, artefacts, and internal and external representations. Typically, it involves describing a cognitive system, which entails interactions among people, the artefacts they use and the environment they are working in. Information is transformed through different media (computers, displays, paper, heads)

(Examples of ways it can help a designer develop a better interface. There are more ways)

Identifying the how information is transformed can help the designer in the following ways:

To accommodate for internal and external distractions, the designer can use techniques to get the user to focus on important functions/information on the system (colors, pictures, placement of items, grouping and bordering items).

Using the cognitive theory in memory, the designer can use memory aids and other techniques that do not overload the users' short term memory (menus, recognition over recall).

Realizing the user will interact with others as well as the environment, the designer can help facilitate this interaction (discussions, posts, chat)

14. (4) How is user experience different than usability?

Answer:

Usability is concerned with the "effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments" (ISO 9241-11) whilst user experience is concerned with "all aspects of the user's experience when interacting with the product, service, environment or facility" (ISO 9241-210)

15. (5) In the context of a website, name and describe two perceived affordances

Answer: (+2.5 for each) perceived affordance (these are examples however, there are more)

-The perceived affordance of underlined text is that it indicates a hyperlink; and, that when followed (clicked), the user will link to information that relates to the hyperlinked word or phrase.

-A raised button/icon – for pushing (selecting)

-Buy it now button

-Add to shopping cart button