MAKERERE UNIVERSITY

SCHOOL OF COMPUTING AND INFORMATICS TECHNOLOGY

CSC 3101 – USER INTERFACE DESIGN MARKING GUIDE

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1. Briefly explain four of the Eight Golden Rules of Interface Design. State an example you have seen on a device, computer interface or web site that violates those rules. **(8 Marks)**

   A. Strive for consistency – Refers to the use of consistent sequences of actions for similar situations, use of identical terminology for prompts, menus, help screens, consistent color and layout among others. **(2 Marks)**

   B. Cater to universal usability – Refers to recognition of the diversity of users so as to design for a wider user group while taking into account Novice to Expert user differences, age ranges, disabilities and technological diversity among others. **(2 Marks)**

   C. Offer informative feedback – Means that systems should be built in such a way that for every user action, there is feedback generated. **(2 Marks)**

   D. Design dialogs to yield closure – Sequences of actions should be organized into groups with a beginning, middle and end. Informative feedback at the completion of a group of actions gives users the satisfaction of accomplishment, a sense of relief, etc. **(2 Marks)**

   E. Prevent errors – Systems should be designed in such a way that users cannot make serious errors. For example gray out menu items that are not appropriate and do not allow alphabetic characters in numeric entry fields. **(2 Marks)**

   F. Permit easy reversal of actions – As much as possible, actions should be reversible. This relieves anxiety as the user knows that errors can be undone. **(2 Marks)**

   G. Support internal locus of control – Experienced users desire the sense that they are in charge of the interface and that it responds to their actions. They do not want surprises or changes in familiar behavior. **(2 Marks)**

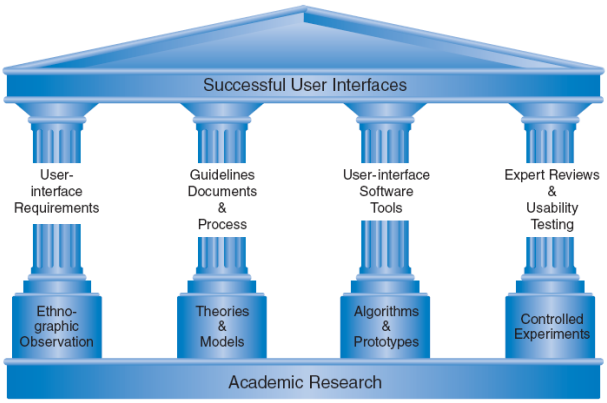
   H. Reduce short term memory load – Requires that designers avoid interfaces in which users must remember information from one screen and then use that information on another screen. **(2 Marks)**

2. In certain interfaces, it is necessary to inform users of an abnormal condition or time-dependent information. It is important that the display of this information catches the

user's attention. Suggest five ways a designer can successfully attract attention. **(10 Marks)**

- *Intensity* - Use *two* levels only, with limited use of high intensity to draw attention. **(2 Marks)**
- *Marking* - Underline the item, enclose it in a box, point to it with an arrow, or use an indicator such as an asterisk, bullet, dash, plus sign, or X. **(2 Marks)**
- *Size* - Use up to four sizes, with larger sizes attracting more attention. **(2 Marks)**
- *Choice of fonts* - Use up to three fonts. **(2 Marks)**
- *Inverse video* - Use inverse coloring. **(2 Marks)**
- *Blinking* - Use blinking displays (2-4 Hz) or blinking color changes with great care and in limited areas. **(2 Marks)**
- *Color* - Use up to four standard colors, with additional colors reserved for occasional use. **(2 Marks)**
- *Audio* - Use soft tones for regular positive feedback and harsh sounds for rare emergency conditions. **(2 Marks)**

3. Draw a sketch of the four pillars of successful user-interface development. Also provide a brief description of each pillar. **(8 Marks)**



- **User Interface Requirements** – Soliciting and clearly specifying user interface requirements is a major key to success in any development activity. Various methods exist i.e. ethnographic observations but the end result is the same. **(2 Marks)**

- **Guidelines, Documents and Processes** – Early in the design, the designers are required to generate a set of working guidelines. Each project has different needs but guidelines should be considered for words, icons and graphics, screen layout, color, training, etc. **(2 Marks)**

- **User Interface software tools** – Designers should give users a realistic impression of what the final interface will look like using software prototyping tools i.e. PowerPoint, Flash and Ajax, Adobe PageMaker or Illustrator, Visual Basic/C++, etc. **(2 Marks)**

- **Expert Reviews & usability testing** – Designers recognize that they need to carry out tests before releasing products to users. A variety of expert review methods are used e.g. surveys, automated analysis tools, interviews, controlled experiments, etc. **(2 Marks)**

4. Describe at least three different types of expert review methods. **(6 Marks)**

   A. Heuristic evaluation – The expert reviewers critique an interface to determine conformance with a short list of design heuristics. **(2 Marks)**

   B. Guidelines review – The interface is checked for conformance with organizational and other guidelines documents. **(2 Marks)**

   C. Consistency inspection – The experts verify consistency across a family of interfaces, checking the terminology, fonts, color schemes, layout, input and output formats, etc. **(2 Marks)**

   D. Cognitive walkthrough – The experts simulate users walking through the interface to carry out typical tasks. **(2 Marks)**

   E. Metaphors of human thinking – The experts conduct an inspection that focuses on how users think when interacting with an interface. They consider metaphors for five aspects of human thinking. **(2 Marks)**

   F. Formal usability inspection – The experts hold a courtroom- style meeting with a moderator or judge to present the interface and to discuss its merits and weaknesses. **(2 Marks)**

5. Describe **three** principles of direct manipulation. **(6 Marks)**

   A. Continuous representations of the objects and actions of interest with meaningful visual metaphors. **(2 Marks)**

   B. Physical actions or presses of labeled buttons, instead of complex syntax. **(2 Marks)**

   C. Rapid, incremental, reversible actions whose effects on the objects of interest are visible immediately. **(2 Marks)**

6. i) Give two benefits of direct manipulation over command line interfaces. **(4 Marks)**

   A. Novices can learn basic functionality quickly, usually through a demonstration by a more experienced user. **(2 Marks)**

   B. Experts can work extremely rapidly to carry out a wide range of tasks, even defining new functions and features. **(2 Marks)**

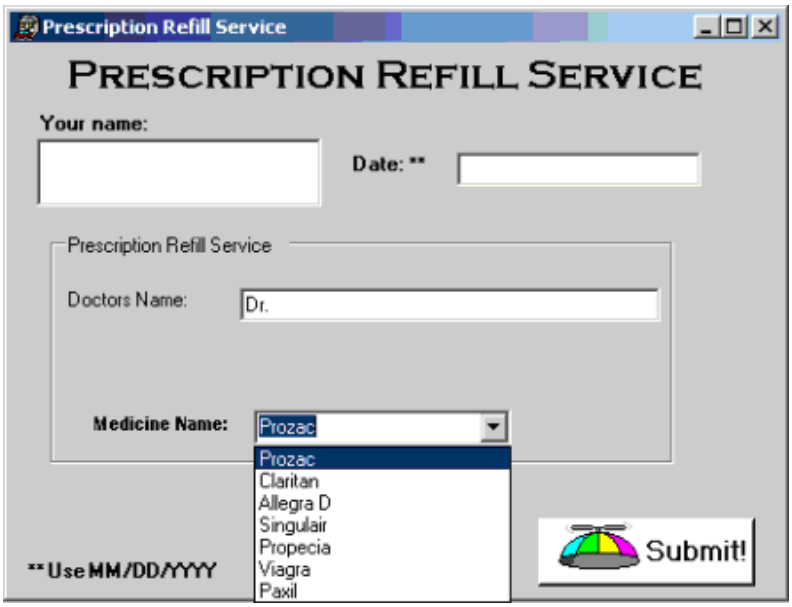
   C. Knowledgeable intermittent users can retain operational concepts. **(2 Marks)**
   D. Error messages are rarely needed. **(2 Marks)**

   E. Users can see immediately if their actions are furthering their goals, and if not, they can simply change the direction of their activity. **(2 Marks)**

ii) List two problems of direct manipulation. **(4 Marks)**

- Spatial or visual representations are not necessarily an improvement over text particularly for blind or vision impaired users who need special software. **(2 Marks)**
- DM designs may consume valuable screen space and force valuable information off the screen. **(2 Marks)**
- Users must learn the meanings of visual/graphical representations i.e. a graphic icon may be meaningful to the designer but not to the user because for instance it may require much more learning time that a word/text. **(2 Marks)**
- For an experienced typist, taking their hand off the keyboard to move a mouse may take more time than typing the relevant text. **(2 Marks)**
- A finger pointing to the device may block the display. **(2 Marks)**

7. Refer to the following interface to answer the question below:



Name two ways you could update the above interface to support the principles of direct manipulation. Draw a sketch of your redesign. **(4marks)**

END