Course Name:	Human Computer Interaction	Course Code:	CS 422
Program:	CS	Semester:	Spring 2020
Duration:	3 Hr + 30 Minutes for paper submission	Total Marks:	60
Paper Date:	10 July 2020	Weight	45
Section:	ALL	Page(s):	
Exam Type:	FINAL		

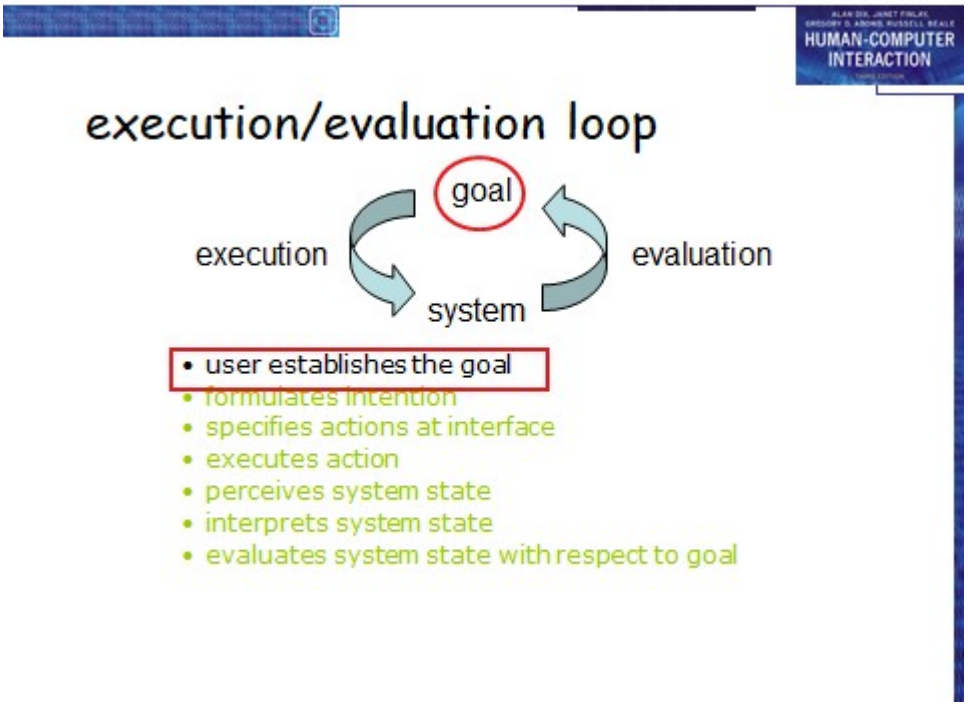
Student : Name:_____ Roll No._____
Section:_____

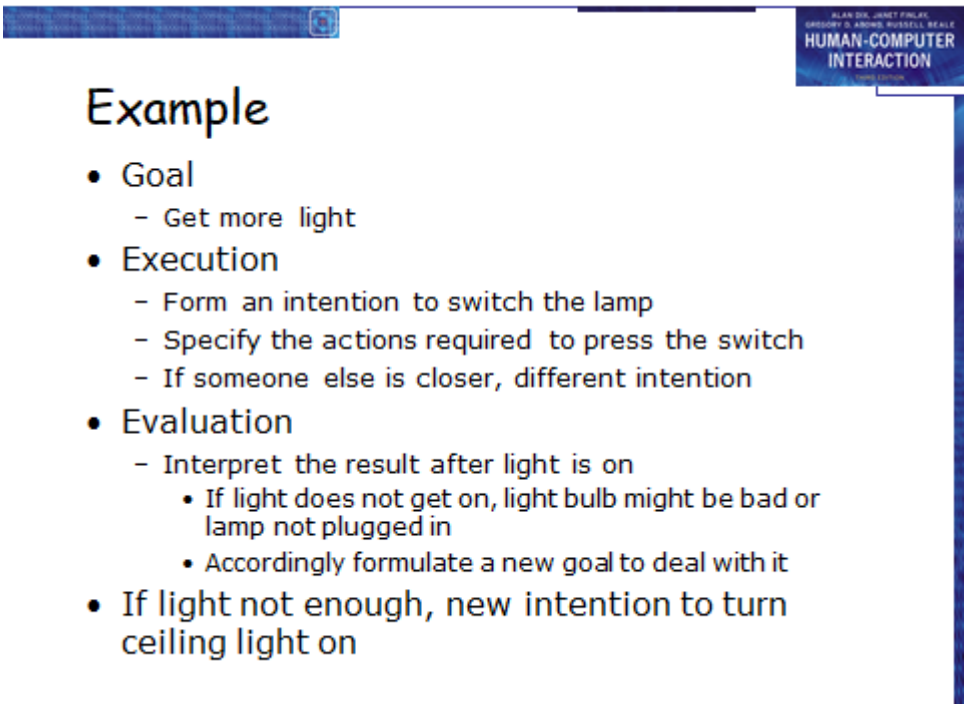
Instruction/Notes: **Do not exceed the line limit for your answers.**
All answers must be handwritten.

Question 01
[10+10 Points]

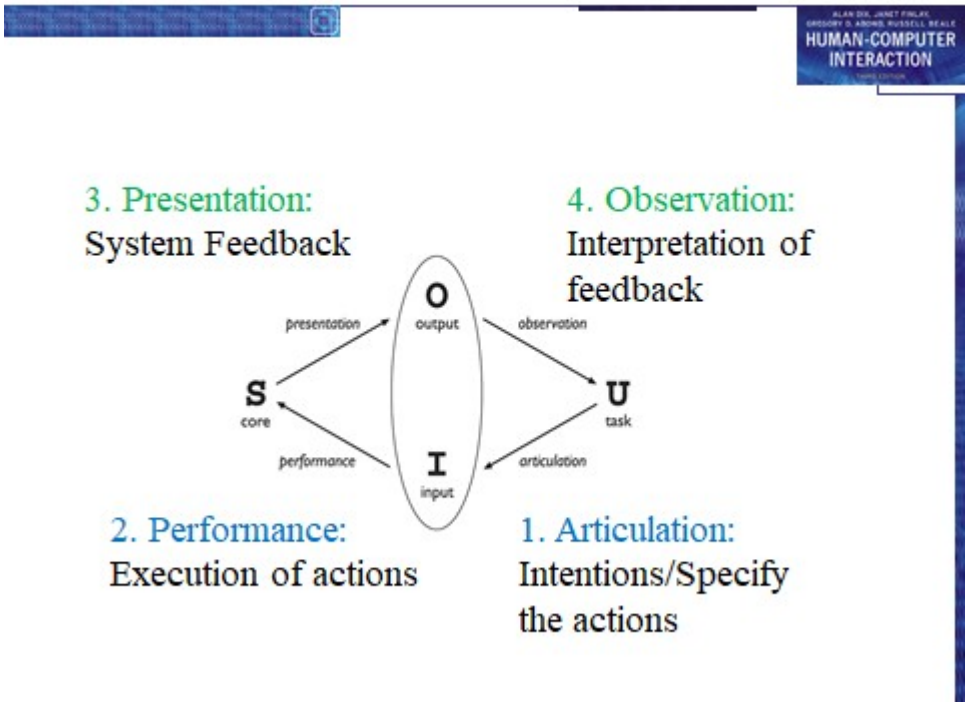
Establish a Goal for “Flex Student” Application and apply the following on that goal

- Norman’s Model of Interaction





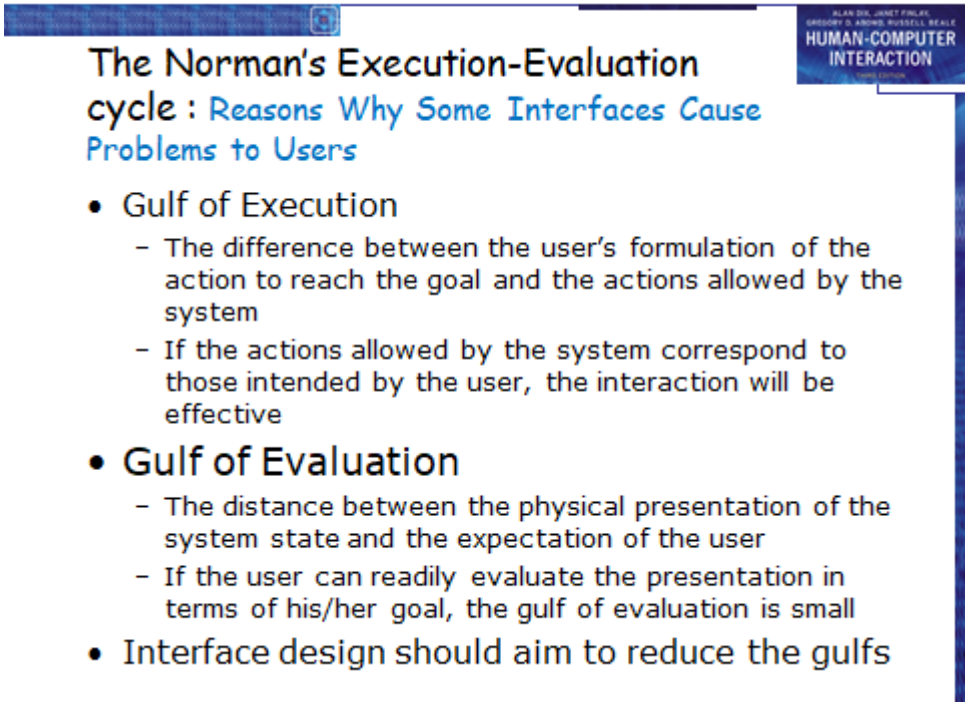
- Abowd and Beale Framework to that Goal.



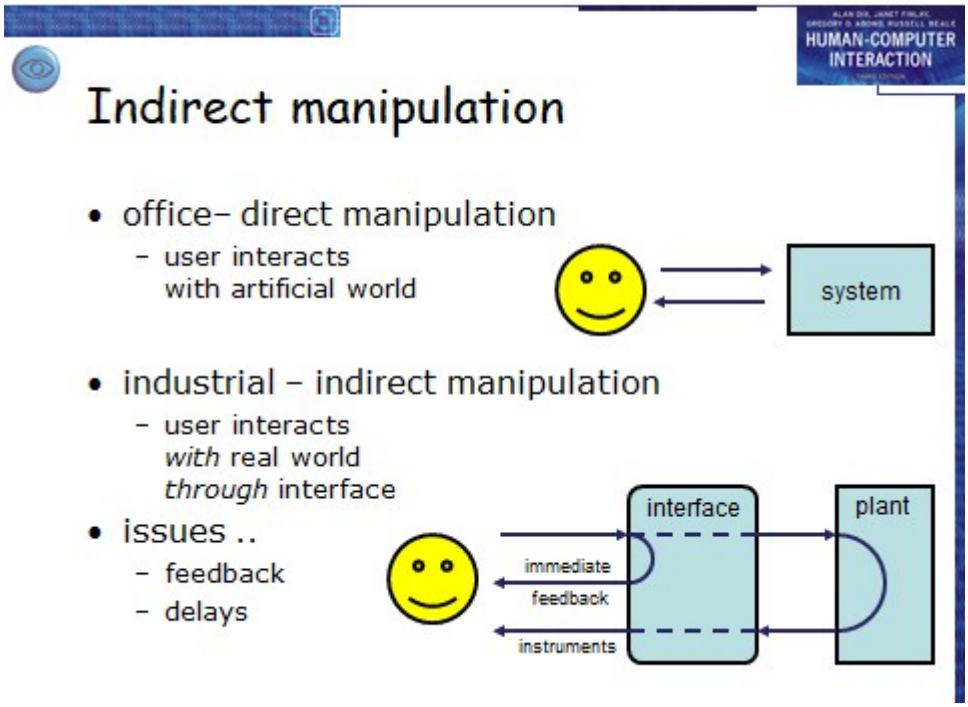
Establish any goal and task for flex application and apply this framework.

(Note: Make clear diagram and mention steps in points.)

a) Elaborate Gulf of Execution and Gulf of evaluation with 2 examples.

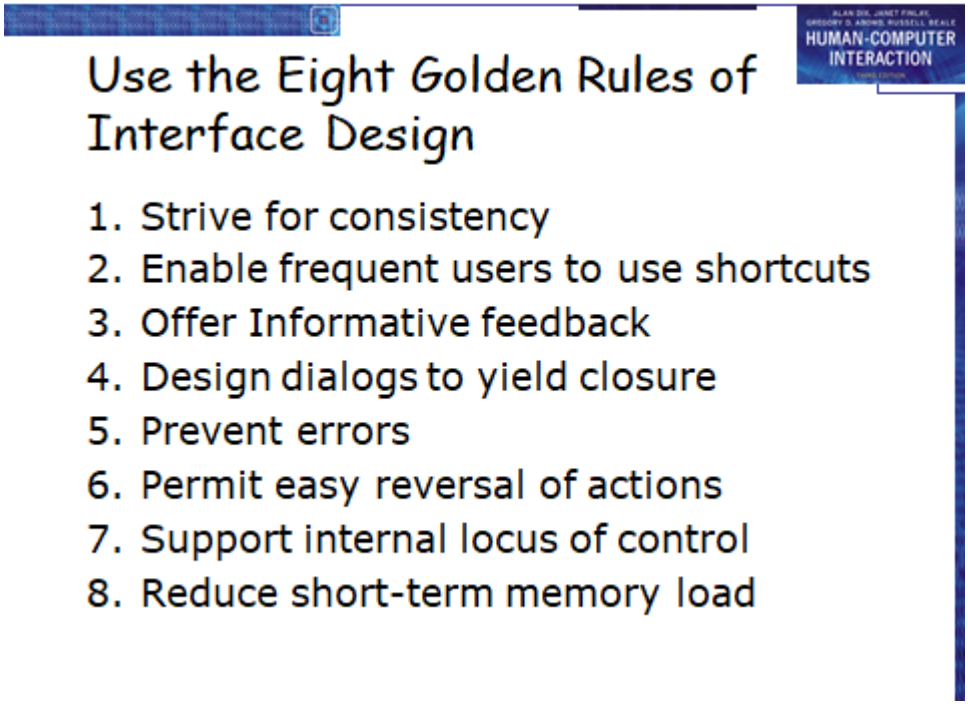


b) Give one example each for direct and indirect manipulation Interaction of HCI
(Line limit : 3 lines per example.)



Question 03
[12 Points]

Ben Shneiderman’s design rules and give one example from each rule for Flex Student Application. (Screenshots can be used for elaboration)



(Line limit : 3 lines per example. One screenshot per example.)

Question 04
[14 Points]

Flex student and Slate application, take one goal from each application and apply KLM GOMS model to calculate time or performance (apply heuristics if applicable).

a. p=1.1 sec point to an area on the screen
b. b=0.2 sec press a button
c. h=0.4 sec home the hand to and from keyboard
d. k=0.2 sec key press
e. m =1.3 sec mentally preparing

Answer depends on the example/task taken by the students for flex and slate applications.

Question 05
[6 Points]

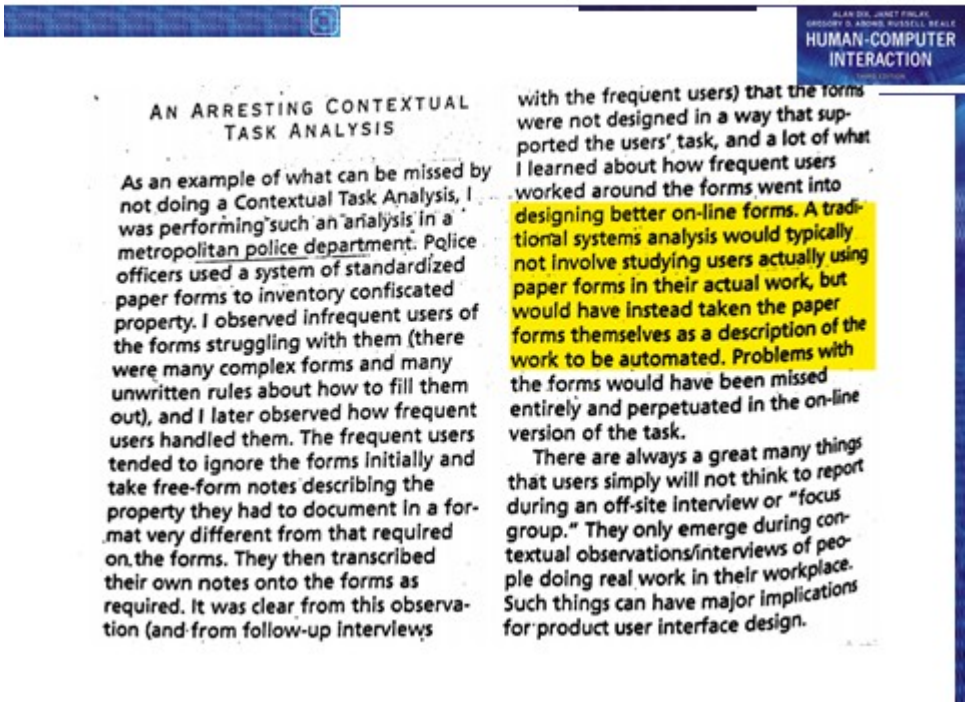
State how each of the interaction styles is appropriate for applications/interactions. Give one application example for each

- Natural Language
  - Common **examples** are real-time production scheduling, robot motion planning and decision making, most game playing situations, and speech recognition for **natural language interfaces**.
- Three–dimensional interfaces
  - For **example**, the Microsoft Kinect tracks the 3D positions of multiple body parts to enable 3D UIs, while the Apple iPhone tracks its own 3D orientation, allowing 3D interaction. There are many different technologies used for spatial tracking; we describe some of these in a later section.
- Touch
  - Smartphone, Touch screen laptops, Touch screen ATM

(Line limit : 4 lines for each style + example)

Question 06
[5 Points]

What is the importance of Contextual task analysis and what could be missed if we do not perform Contextual Task Analysis for any application design. Explain with one example that is not already discussed in class or book.
(Line limit : 5 lines)



HUMAN-COMPUTER INTERACTION

AN ARRESTING CONTEXTUAL TASK ANALYSIS

As an example of what can be missed by not doing a Contextual Task Analysis, I was performing such an analysis in a metropolitan police department. Police officers used a system of standardized paper forms to inventory confiscated property. I observed infrequent users of the forms struggling with them (there were many complex forms and many unwritten rules about how to fill them out), and I later observed how frequent users handled them. The frequent users tended to ignore the forms initially and take free-form notes describing the property they had to document in a format very different from that required on the forms. They then transcribed their own notes onto the forms as required. It was clear from this observation (and from follow-up interviews with the frequent users) that the forms were not designed in a way that supported the users' task, and a lot of what I learned about how frequent users worked around the forms went into designing better on-line forms. A traditional systems analysis would typically not involve studying users actually using paper forms in their actual work, but would have instead taken the paper forms themselves as a description of the work to be automated. Problems with the forms would have been missed entirely and perpetuated in the on-line version of the task.

There are always a great many things that users simply will not think to report during an off-site interview or "focus group." They only emerge during contextual observations/interviews of people doing real work in their workplace. Such things can have major implications for product user interface design.