

Module III: Model-based Design

Self Evaluation

1. Discuss the reason(s) for using models in HCI.
2. Explain how predictive models are different from prescriptive models.
3. Suppose a model mentions that “our reading pattern is from left-to-right”. Is it a predictive model or prescriptive model? Answer with justification.
4. What are the different types of predictive models? Discuss the key differences between them.
5. Mention the three categories of cognitive models with brief explanation of each.
6. Can we design an interactive system entirely using models? Discuss.
7. List all the operators of KLM along with their execution times.
8. What is a mental operator? How it is different from physical operators?
9. Discuss the steps involved in estimating task execution time using KLM.
10. How we can use KLM to compare competing designs? Discuss.
11. Construct the KLM for the example discussed in this lecture, taking the mental operator into account.
12. Construct KLM and compute the execution time for the task of closing an active window using the “X” button at the top-right corner of the screen.
13. Construct KLM and compute the execution time for the task of closing an active window using the “close” menu option from the “file” menu. Compare the execution time with the one computed in Q2 before. Which one is better?
14. Discuss the limitations of KLM.
15. Explain the concepts of Goals, Operators, Methods and Selection rules.
16. Discuss the key differences between KLM and (CMN)GOMS.
17. Mention the steps involved in constructing a (CMN)GOMS model for a task
18. Construct (CMN)GOMS model for the task of file deletion assuming
 - a. GUI-based file deletion
 - b. Command-line based file deletion
 - c. Compare the two. Which one is better?
19. Discuss the idea behind the Fitts’ law. Under which constraints does the law work?
20. How to measure difficulty of a target acquisition task? Discuss all the relevant concepts associated with the measurement.

21. What is throughput? How it can be used in the design of interactive systems?
22. Suppose a user is trying to select a file icon (having a square shape with side length = 50 mm) on the screen using mouse. The distance of the icon from the current pointer location is 35 cm. It takes about 2 sec to reach the icon. Calculate the ID and TP for this task.
23. Discuss how we can use the Fitts' law to compare alternate designs.
24. Discuss how the Fitts' law can be used to predict performance.
25. Compute the time required to select a button (dimension = 10mm×10mm) using mouse at a distance of 20 cm from the current pointer location (assume $a=0$, $b=0.204$).
26. What is the speed-accuracy trade-off in the Fitts' law? How we can take care of it?
27. Explain the Hick-Hyman law. Describe the predictive formulation of the law.
28. Suppose you are typing from a standard 104 keys keyboard. How long it takes for you to type each character on average?