

Assignment Two - TDT4137 - Kogark

NGOMSL and Mental Programming.

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Task 1.

Unit tasks are just top level users goals. This means that the goals are at a conceptual level.

A) Name some typical unit-task for a telephone app and model the top-level i NGOMSL

Typical examples of 'User goals' for the typical "telephone" app are

- Call x
- Send x a text message
- Add x to contact list
- Delete x from contact list

Some Unit tasks level goals are for instance if we want to call x; If we remember x's number.

- Open app.
- Navigate to numpad.
- Enter number.
- Press call button.

Or if x is one of my "stared" contacts.

- Navigate to my favorites.
- Find person.
- Press on persons tile.

Sketch of top-level method:

- Find the numpad
- Find the number of a piece of paper
- Enter the number on the numpad
- Hit the call button

Model top level in NGOMSL

Method to accomplish calling

- Step 1. Get next unit task information from marked-up manuscript
- Step 2. Decide: If no more unit tasks, then return with goal accomplished
- Step 3. Accomplish the goal of moving to the unit task location
- Step 4. Accomplish the goal of **performing the unit task**
- Step 5. Goto 1.

Selection rule set for the goal of performing the unit task

- If the task is call x using numpad, then accomplish the goal of **call number**
- If the task is call x using favorite, then accomplish the goal of **select favorite**
- Return with goal accomplished.

B) Model the unit task / goal : Call x.

Assumptions

- Number and name is written on a piece of paper.
- Person is also stored in contacts as a favorite.
- I assume recall / retain is act of M (mental act of thinking).
- I assume decide is a function of CP

Method to accomplish call number:

- Step 1. recall number
- Step 2. Retain number // retain so that we can use it when enter digits.
- Step 3. Accomplish the goal of enter digits.
- Step 4. Move finger to call button
- Step 5. Push call button.
- Step 6. Return with goal accomplished.

Method to accomplish enter digits:

- Step 1. Decide: if whole number is entered. return with goal accomplished.
- Step 2. Recall next digit.
- Step 3. Move finger to digit location on screen.
- Step 4. Press digit.
- Step 5. Go to step 1.

Method to accomplish call using favorite:

- Step 1. Recall name.
- Step 2. Locate name on screen.
- Step 3. Move finger to name.
- Step 4. Push name to call.
- Step 5. Return with goal accomplished.

C) Calculate execution time for the given alternatives:

- CP = 1.2 sec # see something
- B = 0.1 sec (Tap/push button)
- H = 0.4 sec (Home hands to the keyboard or mouse)
- K = 0.2 sec (Keystroke)
- M = 1.2 sec (verify that task is done)
- P = 1.1 sec (Point move to location)

$$T = \sum \text{KLM-operator-times} + 0.1 \text{ sec} * \text{NGOMSL statements executed}$$

Top level

Total statements including "headers" : 6

- #CB : 1
- #B :
- #H :
- #K :
- #M :
- #P :

$$\text{Operator time} = (1 * \text{CP}) \text{ Operator time} = (1 * 1.2) = 1.2 \text{ sec}$$

$$\text{Total time} = \text{Operator time} + (0.1 * \text{steps}) = 1.2 + (0.1 * 6) = 1.2 + 0.6 = 1.8 \text{ sec}$$

Rule set

Total statements including "headers and returns" : 3 (since all "if"s happen in parallel, all counts as one together)

call number

Total statements including "headers" : 7

- #CB :
- #B : 1
- #H :
- #K :
- #M : 2
- #P : 1

$$\text{Operator time} = (1 * \text{B}) + (2 * \text{M}) + (1 * \text{P})$$

$$\text{Operator time} = (1 * 0.1) + (2 * 1.2) + (1 * 1.1) = 3.6 \text{ sec}$$

enter digits

Total statements including "headers" : 6

(Since a number has 8 digits we have to repeat each "action" 8 times)

- #CB : 1 (decide) * 8 = 8
- #B : 1 * 8 = 8
- #H :
- #K :
- #M : 1 (recall) * 8 = 8
- #P : 1 * 8 = 8

Operator time = $(8 * CP) + (8 * B) + (8 * M) + (8 * P)$

Operator time = $(8 * 1.2) + (8 * 0.1) + (8 * 1.2) + (8 * 1.1) = 28.8\text{sec}$

Using numpad

Total statements including "headers" : 13 (call number + enter digits)

- #CB : $8 = (0 + 9.6) = 9.6 \text{ sec}$
- #B : $9 = (0.1 + 0.8) = 0.9 \text{ sec}$
- #H :
- #K :
- #M : $9 = (1.2 + 9.6) = 10.8 \text{ sec}$
- #P : $9 = (1.1 + 8.8) = 9.9 \text{ sec}$

Total Operator time = $(9.6 + 0.9 + 10.8 + 9.9)\text{sec} = 31.2 \text{ sec}$

Total time = Total Operator time + $(0.1 * \text{steps}) = 31.2 + (0.1 * 13) = 31.2 + 1.3 = 32.5 \text{ sec}$

Execution time with top level: $32.5 + 1.8 = 34.3 \text{ sec}$

Using favorites

Total statements including "headers" : 6

- #CB : 1 (locate)
- #B : 1
- #H :
- #K :
- #M : 1 (recall)
- #P : 1

Operator time = $(1 * CP) + (1 * B) + (1 * M) + (1 * P)$

Operator time = $(1 * 1.2) + (1 * 0.1) + (1 * 1.2) + (1 * 1.1) = 3.6\text{sec}$

Total time = Operator time + $(0.1 * \text{number of statements}) = 3.6\text{sec} + (0.1 * 6)\text{sec} = 4.2 \text{ sec}$

Execution time with top level: $4.2 \text{ sec} + 1.8 = 6 \text{ sec}$