dialogue notations

what to do when

From Formalism to Physicality, Alan Dix, UPC North, 30 April 2008

what is dialogue?

- conversation between two or more parties
  - usually cooperative
- in user interfaces
  - refers to the *structure* of the interaction
  - syntactic level of human–computer 'conversation'
- levels
  - lexical – shape of icons, actual keys pressed
  - syntactic – order of inputs and outputs
  - semantic – effect on internal application/data

structured human dialogue

- human-computer dialogue very constrained
- some human-human dialogue formal too …

Minister: do you *man's name* take this woman …
Man: I do
Minister: do you *woman's name* take this man …
Woman: I do
Man: With this ring I thee wed
(places ring on womans finger)
Woman: With this ring I thee wed *(places ring ..)*
Minister: I now pronounce you man and wife

lessons about dialogue

- wedding service
  - sort of script for three parties
  - specifies order
  - some contributions fixed – "I do"
  - others variable – "do you *man's name* …"
  - instructions for ring
    concurrent with saying words "with this ring …"
- if you say these words are you married?
  - only if in the right place, with marriage licence
  - syntax not semantics

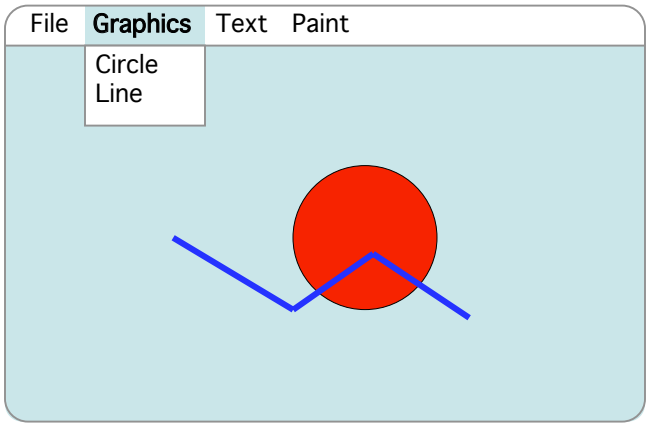
… and more

- what if woman says "I don't"?
- real dialogues often have alternatives:

Judge: How do you plead guilty or not guilty?
Defendant: *either* Guilty *or* Not guilty

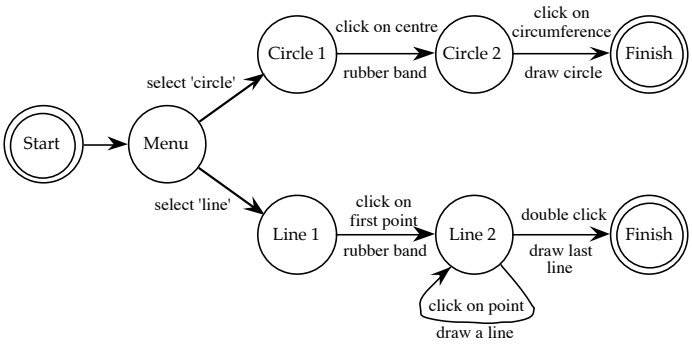
  - the process of the trial depends on the defendants response
- focus on normative responses
  - doesn't cope with judge saying "off with her head"
  - or in computer dialogue user standing on keyboard!

a simple graphics package



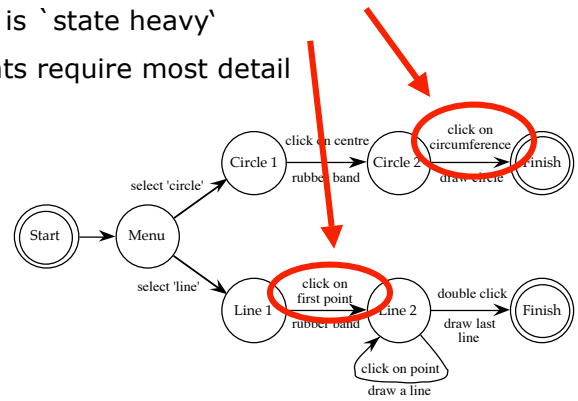
state transition networks (STN)

- circles - states
- arcs - actions/events



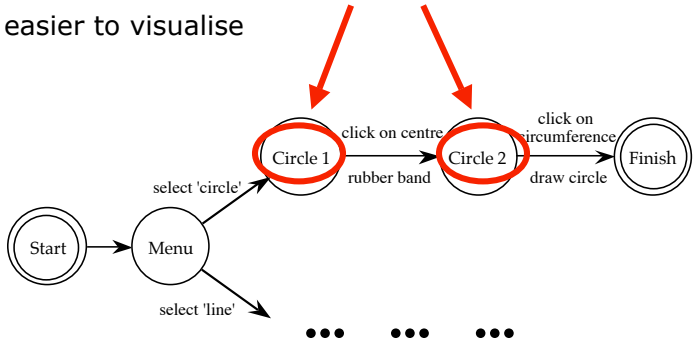
state transition networks - events

- arc labels a bit cramped because:
  - notation is `state heavy'
  - the events require most detail



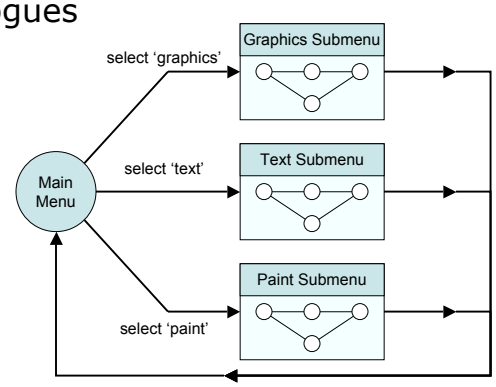
state transition networks - states

- labels in circles a bit uninformative:
  - states are hard to name
  - but easier to visualise



hierarchical STNs

- managing complex dialogues
- named sub-dialogues



action properties

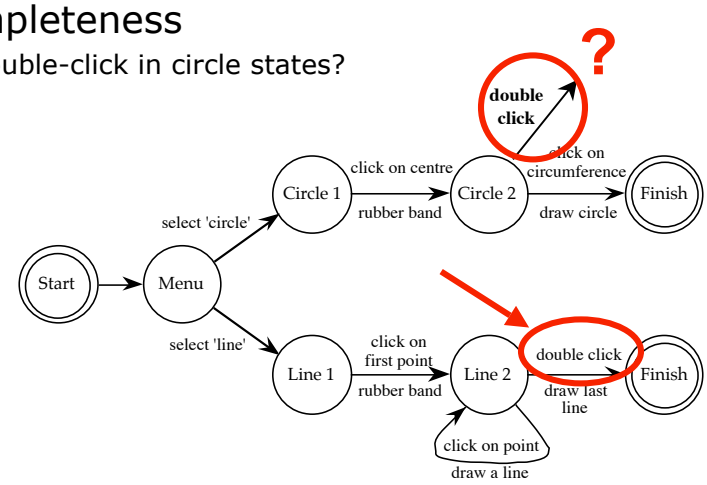
- completeness
  - missed arcs
  - unforeseen circumstances
- determinism
  - several arcs for one action
  - deliberate: application decision
  - accident: production rules
- nested escapes
- consistency
  - same action, same effect?
  - modes and visibility

state properties

- reachability
  - can you get anywhere from anywhere?
  - and how easily
- reversibility
  - can you get to the previous state?
  - but NOT undo
- dangerous states
  - some states you don't want to get to
    e.g. digital watch: time/alarm set, button press for 2 secs

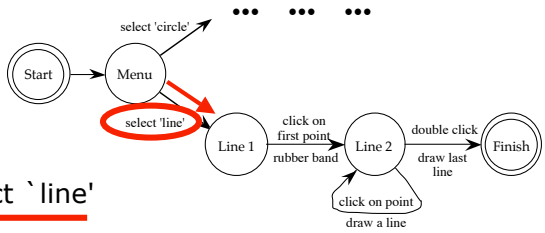
checking properties (i)

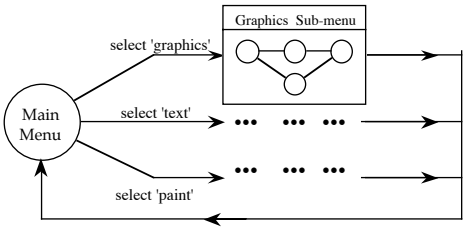
- completeness
  - double-click in circle states?



checking properties (ii)

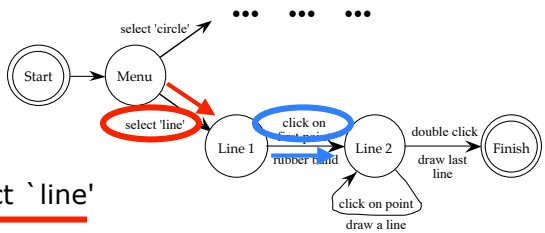
- Reversibility:
  - to reverse select `line'

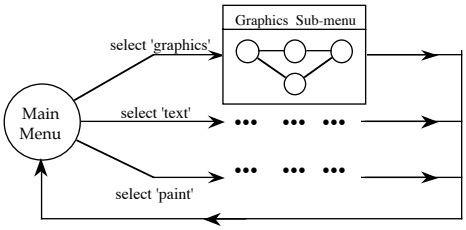




checking properties (ii)

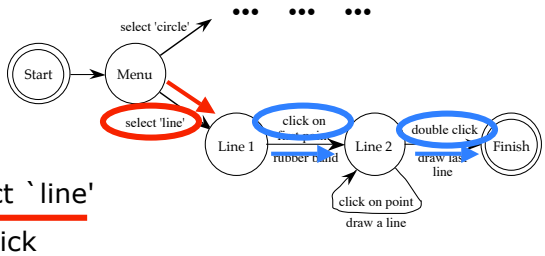
- Reversibility:
  - to reverse select `line'
  - click

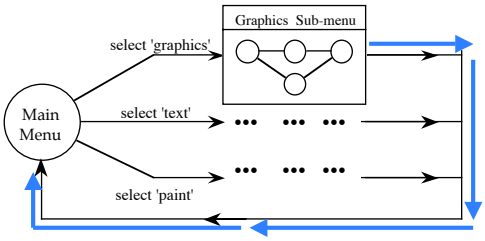




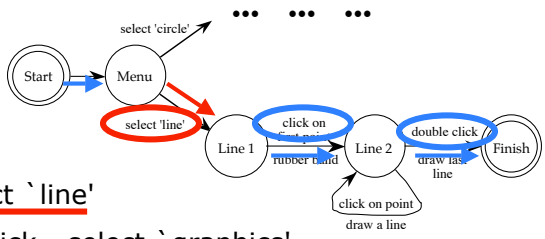
checking properties (ii)

- Reversibility:
  - to reverse select `line'
  - click - double click

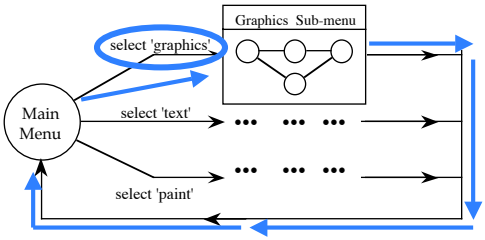




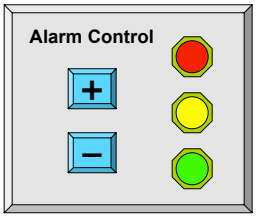
checking properties (ii)



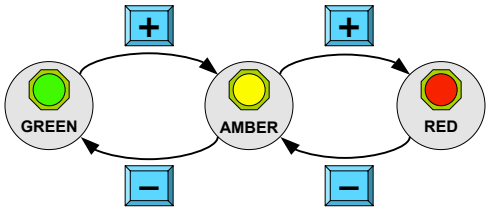
- Reversibility:
  - to reverse select `line'
  - click - double click - select `graphics'
  - (3 actions)
- N.B. not undo



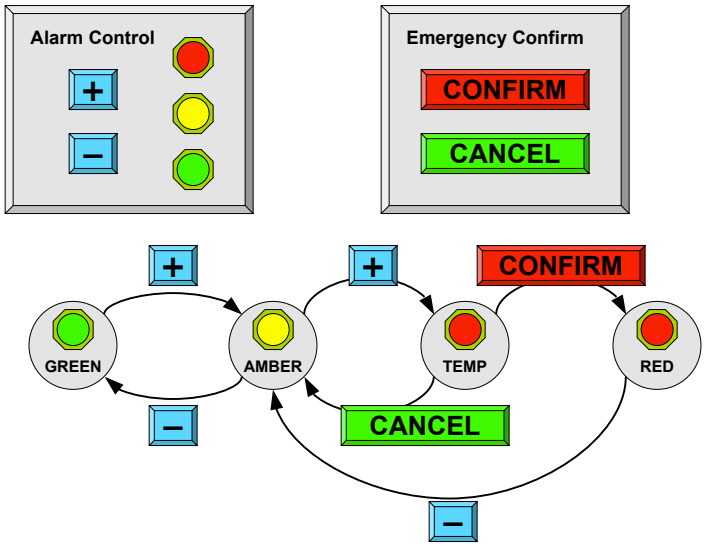
example - nuclear control



- missing arcs
- dangerous state?



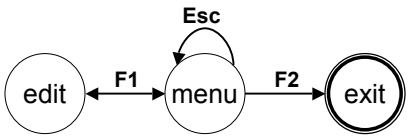
revised STN



dangerous states

- word processor: two modes and exit

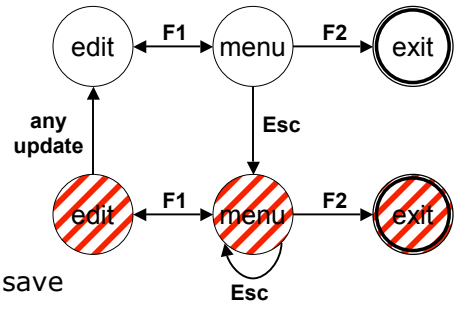
  F1 - changes mode
  F2 - exit (and save)
  Esc - no mode change



but ... Esc resets autosave

dangerous states (ii)

- exit with/without save ⇒ dangerous states
- duplicate states - semantic distinction



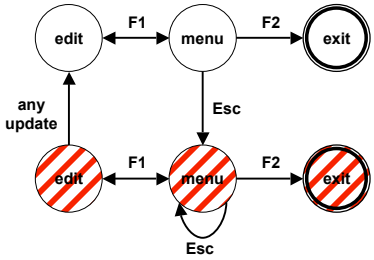
F1-F2 - exit with save
F1-Esc-F2 - exit with no save

lexical Issues

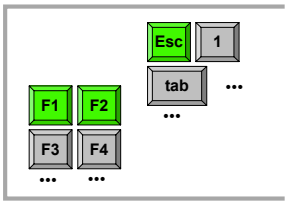
- visibility
  - differentiate modes and states
  - annotations to dialogue
- style
  - command - verb noun
  - mouse based - noun verb
- layout
  - not just appearance ...

layout matters

- word processor - dangerous states

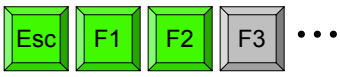


- old keyboard - OK



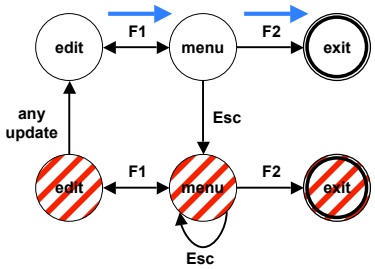
layout matters

- new keyboard layout



intend F1-F2 (save)

finger catches Esc



layout matters

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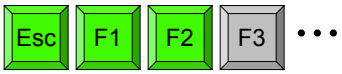

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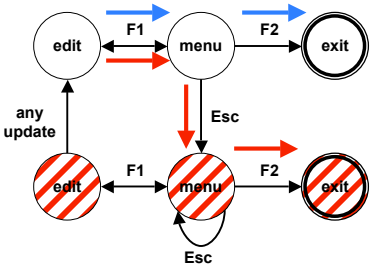
F1-Esc-F2 - disaster!