

dialogue notations

what to do when

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

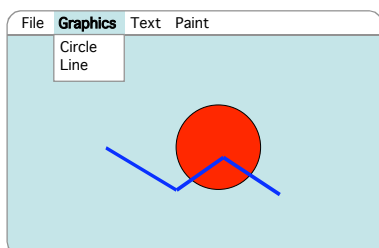
... and more

- 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

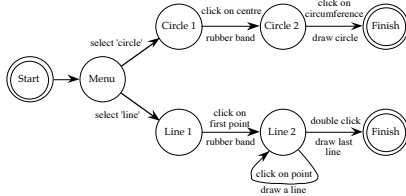
 - the process of the trial depends on the defendants response
- focus on normative responses
 - doesn't cope with judge saying "off with her head"
 - or in computer dialogue user standing on keyboard!

a simple graphics package



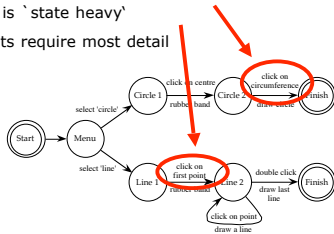
state transition networks (STN)

- circles - states
- arcs - actions/events



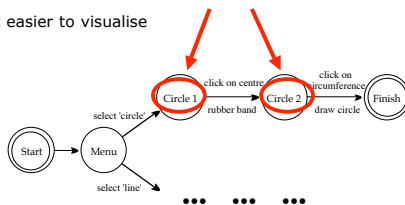
state transition networks - events

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



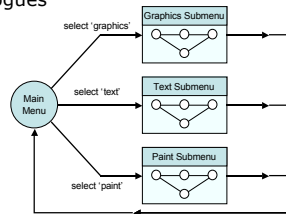
state transition networks - states

- 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

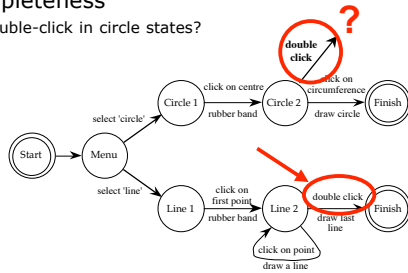
- completeness
 - missed arcs
 - unforeseen circumstances
- determinism
 - several arcs for one action
 - deliberate: application decision
 - accident: production rules
- nested escapes
- consistency
 - same action, same effect?
 - modes and visibility

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

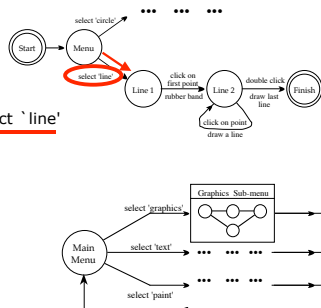
checking properties (i)

- completeness
 - double-click in circle states?



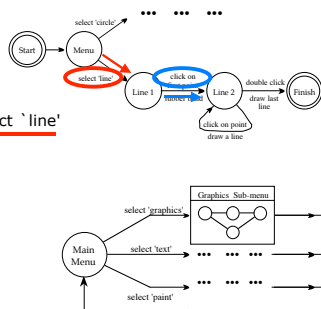
checking properties (ii)

- Reversibility:
 - to reverse select `line`



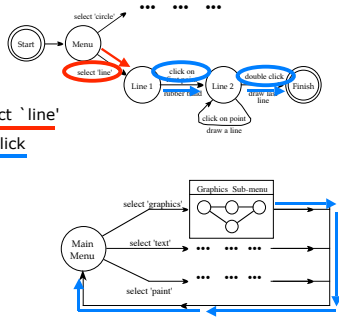
checking properties (ii)

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



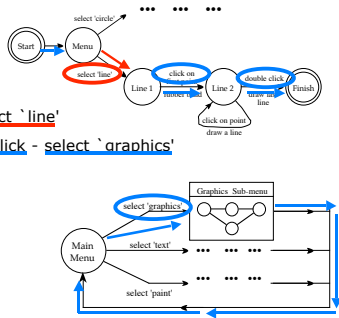
checking properties (ii)

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

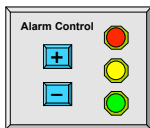


checking properties (ii)

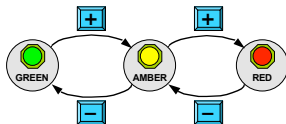
- Reversibility:
 - to reverse select 'line'
 - click - double click - select 'graphics'
 - (3 actions)
- N.B. not undo



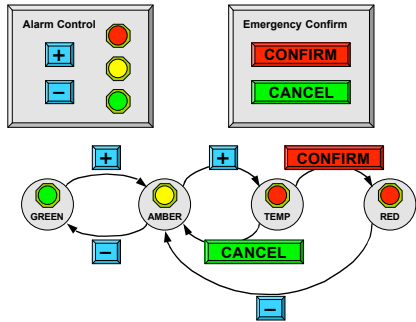
example - nuclear control



- missing arcs
- dangerous state?



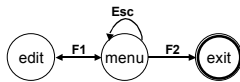
revised STN



dangerous states

- word processor: two modes and exit

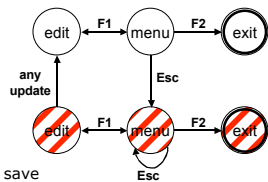
F1 - changes mode
 F2 - exit (and save)
 Esc - no mode change



but ... Esc resets autosave

dangerous states (ii)

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



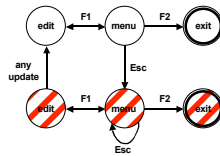
F1-F2 - exit with save
 F1-Esc-F2 - exit with no save

lexical Issues

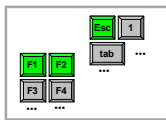
- visibility
 - differentiate modes and states
 - annotations to dialogue
- style
 - command - verb noun
 - mouse based - noun verb
- layout
 - not just appearance ...

layout matters

- word processor - dangerous states



- old keyboard - OK

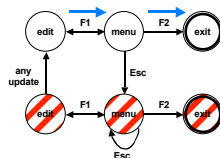


layout matters

- new keyboard layout

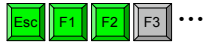


intend F1-F2 (save)
finger catches Esc



layout matters

- new keyboard layout



intend F1-F2 (save)

finger catches Esc

F1-Esc-F2 - disaster!

