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SCO 307 Assignment

Question

Briefly discuss the PIE model of interaction outlining its merits and demerits.

Interaction models help us understand what is going on in the interaction between the user and the system. They address the translations between what the user and the system want. Interaction models also provide a framework to compare different interaction styles to solve interaction problem.

PIE model of interaction :

This model was designed to attack the WYSIWYG(what you see is what you get properties) ,these properties include observability , predictability , reachability and undo.

The pie model is a black box model and as thus it does not try to define the internal architecture and constructs of a computer systems but defines everything as purely inputs and outputs to the user.

Observability principles in the pie model can be expressed by the relationship between the Results(what you get) and Displays(what you see). These sets can be expressed by the letters R and D respectively.

An Effect (E) is defined to express the internal state of the system by not contradicting the black box definition, this effect is the minimal state required to account for changes in the external behavior of the system.

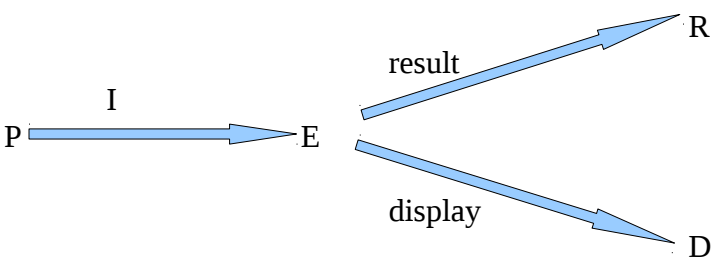
A command , single user actions also play important roles in how the model responds .A history of all commands is called a program (P = seq C). This can be represented using I to mark the input history.

All these states can therefore be represented as :-

display : E ⟶ D
result : E ⟶ R
I : P ⟶ E

This makes it possible to express all the properties in the model in terms of I , however some properties are not easy to express due to their past histories as such a state transition function doit is used.

:- doit : E * P ⟶ E



Properties of PIE interaction model

The properties of the PIE interaction are emboddied in the components of (WYSIWYG).The PIE interaction model works to test and attack this properties.

1.Obeservability

what you can tell about the current system from the display. ?

2.Predictability

what you can tell about the future behavior of a particular system.

3.Reachability

can you get anywhere from anywhere in the system

4.Undo

can you perfom backward operation

Advantages of PIE

- It is a very simple model that is uncluttered the details of system implementation.
- It can be represented Mathematically, so that the statements of properties that it allows are precise and they provide a possibility for proof.
- The PIE model can be used as a semi formal aid design.
- It is a very efficient model when used on large systems.
- Testing is balanced and prejudiced since tester and developer are independent of each other.
- There is no need for the tester to have detailed functional knowledge of the system.
- The identification of vagueness and contradictions in functional specifications is easier.
- Test cases can be designed as soon as functional specifications are complete

Disadvantages of PIE

- The techniques that the model presents are not constructive that is they don’t provide enough support for practicing designers from an initial specification to an implementation.
- The model has no way of managing the proof obligation of large specifications because it makes no attempt to modularize the descriptions.
- The model is Insufficient since it defines necessary but not sufficient properties for usability.
- It is Generic for can be applied to any system.
- The proof obligations for system defined in SE formalism
- The scalability of the model is narrow since it cannot prove many properties of a large system
- Its scope is limiting applicability of certain properties
- The Insight gained from abstraction of the PIE model is reusable.