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Level 5 Object

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## ABSRTACT

*This paper presents results of a study that was done to develop an arabic expert system for diagnosing cracks on concrete buldings. The knowledge base for the system was extracted from specialized books, journals, actual case studies from Minstry of Housing and Public Works, and meeting experts in the domain. The system is designed to diagnose concrete cracks that appear on the following building's structural members: foundations, columns, beams and roof slabs. The system diagnosis six types of vertical and random cracks in foundation, six types of vertical, horizontal and random cracks in columns, eight types of vertical, horizontal and diagonal cracks in beams, and seven types of longitudinal and random cracks in roof slab.*

*The system is designed to be user frindly , interactive, and support arabic language so it could be used by wide range of local engineers and speciliasts. The consultation sesion of the system follows the same procedure used by the expert. First, the user is required to specify the cracked concrete member. The system, then, presents several pictures of different kinds of concrete cracks and request the user to select the picture that is similar to the diagnosed crack. Following that the system requests detailed information about the crack which may include performing concrete tests. The expert system will diagnose the crack after obtaining the required information about the crack.*

*The expert system is developed using Level 5 Object which supports arabic language. This feature makes it possible to use arabic language in both the intearction with the user and writing the program which is considered to be unique in this field.*

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(EXOBDR - Expert System On Building Diagnosis and Repair)

(Koo et. al. 1993)

(REPCON) (An Expert System For Building Repair ) (Kalyansundram et. al. 1990)

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WADI

(Chahine et. al. 1987)

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(Expert System for Diagnosing Cracks in Concrete Building (ESDCCB))

: ( Expert System Life Cycle)

(Identification)

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Level 5 Object

ESDCCB

Conceptualization

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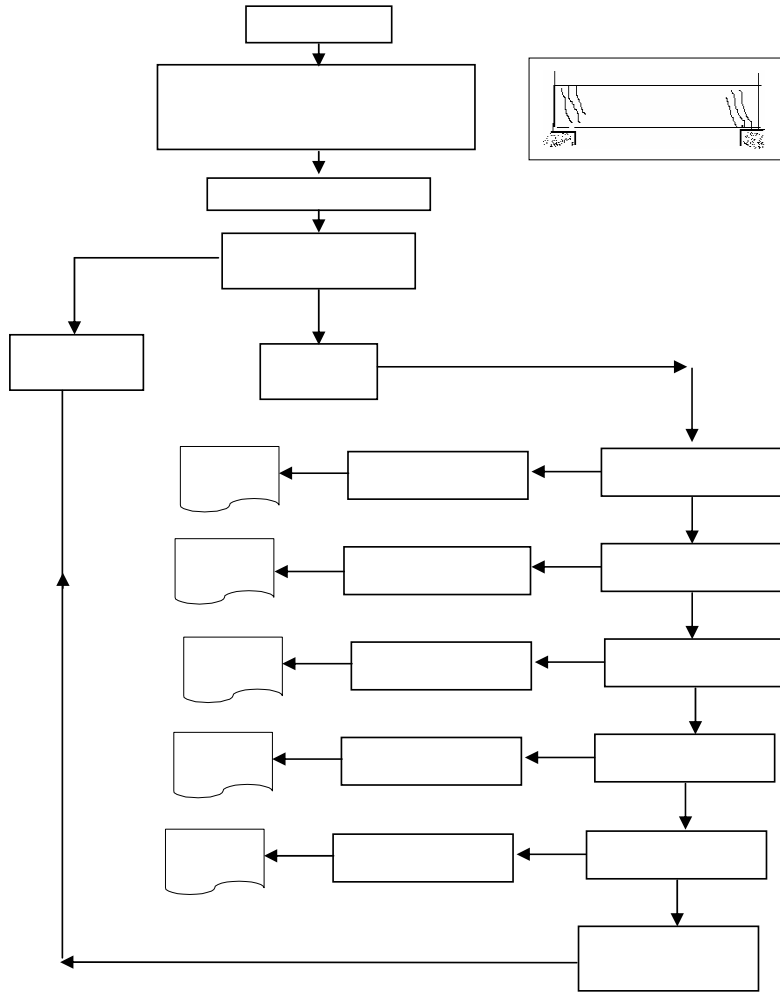
Formalization

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(Decision Tree)  
ESDCCB

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(Implementation) -

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((Rules

(IF-THEN Rules)

(Methods)

L5OBJECT

(WHEN-CHANGED Method)

(Forward chaining)

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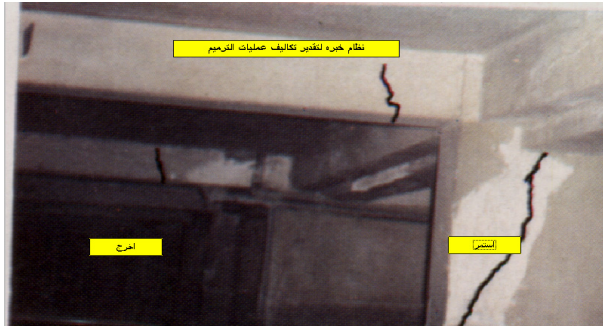
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ESDCCB

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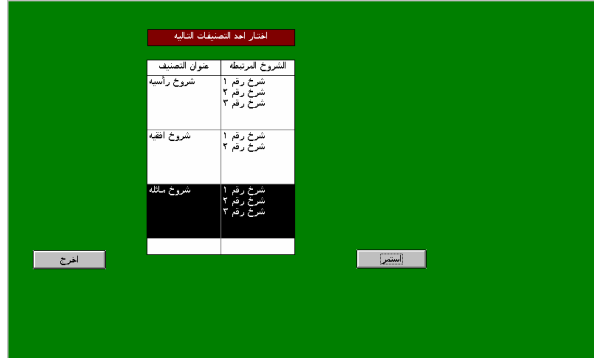
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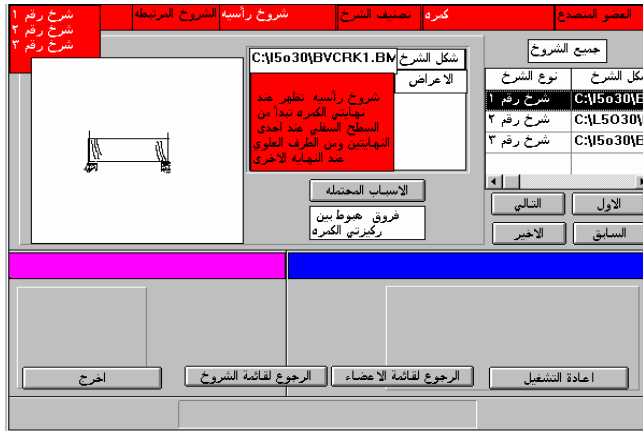
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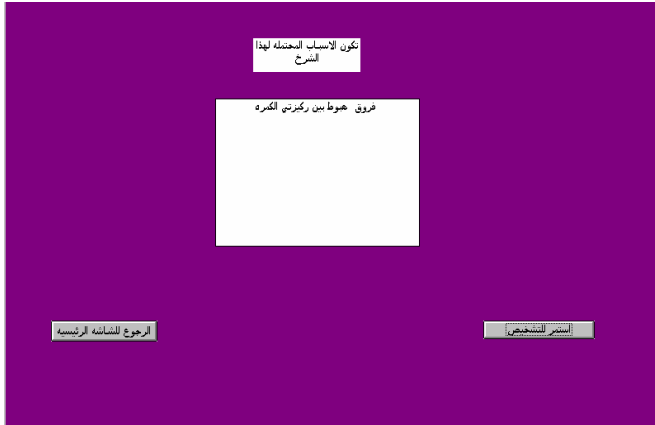


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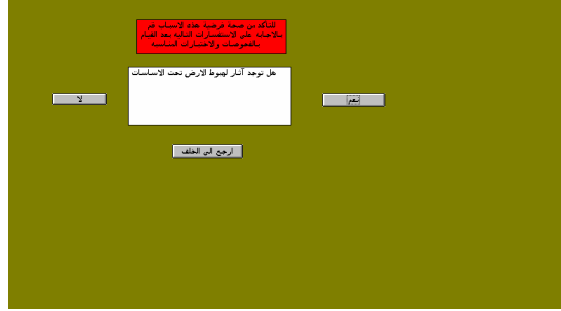
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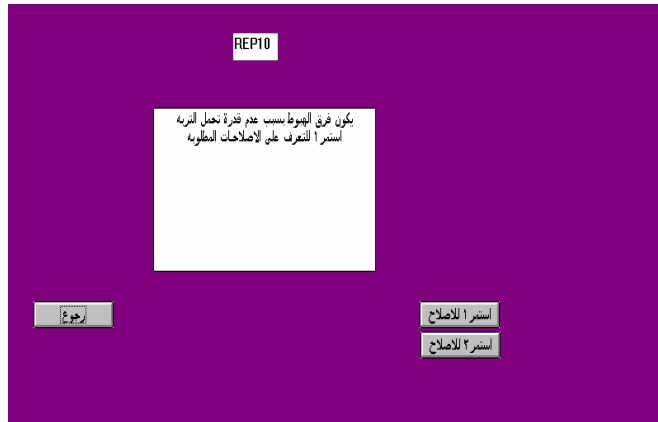
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4. Chahine, J.R., and Janson, B.N. (1987). "Interfacing databases with Expert Systems: a Retaining Wall Management Application." J. of Microcomputer in Civ. Engrg., ASCE, vol. 2, no. 1.
  5. Hamed, G. M. (1993). "An Expert System For Concrete Diagnosis", Master Thesis, Civil Eng. Dept., King Fahad University Of Petroleum & Minerals, Dhahran, Saudi Arabia.
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