Orphans and Families of Martyrs of Terrorism Expert System-OFMTES

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Abstract

The increasing number of orphans and their organizations and institutes in our community makes it increasingly important to design and develop an expert system that supports decisions concerning orphans and their families. This system can be used by any orphans organization to facilitate its work.

The proposed work is designed to manage the Orphans and Families of Martyrs of Terrorism Expert System (OFMTES) by registry all information about all orphans to display mostly orphan deserves bill, data is entered for each orphan, and with each entry a counter is increased according to this input information; the output result represents the score for that orphan. Different orphans have different scores. Coloring is used to know the degree of orphans merit; that is, when background color of that text is red this means that the orphan does not deserve bill, when the color is yellow this means that the orphan deserves bill but in little ratio, when the color is blue this means that the orphan deserves bill but in more ratio from blue, and when the color is green this orphan is mostly deserves bill.

The program was implemented using Microsoft office access 2003 and visual basic programming language, and can be executed using Pentium two or more computer.

Keywords: Expert system, knowledge engineering, decision support system, Knowledge Representation, Information Technology and Artificial Intelligence.

نظام خبير لايتام وأسر شهداء الارهاب

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المستخلص

ان ازدياد عدد الايتام والمنظمات والمؤسسات المهتمة بهم في مجتمعنا جعلت من الضروري تصميم وتطوير نظام خبير يدعم القرارات المتعلقة بالايتام وعوائلهم. هذا النظام يمكن ان يستخدم من قبل اي منظمة للايتام لتسهيل عملها.

النظام المقترح لادارة الامور المتعلقة بايتام وأسر شهداء الارهاب وذلك عن طريق ادخال كافة المعلومات المتعلقة بهم ومن ثم عرض الايتام الاكثر استحقاقا للمعونة المادية، اذ يتم ادخال المعلومات الخاصة بكل يتيم ومع كل عملية ادخال يتم زيادة عداد بحسب المعلومات المدخلة والنتيجة تمثل درجة الاستحقاق لهذا اليتيم. حيث يختلف الايتام بدرجة استحقاقهم للمعونات. لذا يتم استخدام الوان لمعرفة مدى حالة اليتيم للاستحقاق. فعندما يكون لون خلفية الكتابة لهذا اليتيم هو اللون الاحمر فهذا يدل على ان اليتيم لا يحتاج للمعونة. واذا كان اللون هو الاصفر فهذا يعني ان اليتيم بحاجة الى المعونة ولكن بنسبة ضئيلة. واللون الازرق يدل على ان اليتيم يستحق المعونة ولكن بنسبة اعلى من الايتام ذوي اللون الاصفر. اما اللون الاخضر فيدل على ان اليتيم يستحق المعونة وبصورة ملحة.

تم تطبيق النظام باستخدام لغة برمجة فيجيوال بيسك ومايكروسوفت اوفس ٢٠٠٣ ويمكن ان ينفذ على حاسبة من نوع بنتيوم٢ فما فوق.

1.Introduction:

In recent years, organizations and institutes have evinced considerable interest in using Information Technology. One of the areas where organizations are exploring the potential

benefits of Information Technology is Expert Systems (ES)[1]. Expert Systems (ES) is a branch of Artificial Intelligence (AI) [2].

An Expert System is an interactive computer- based decision tool that uses both facts and heuristics to solve difficult decision problems based on knowledge acquired from an expert. An Expert System may be viewed as a computer simulation of a human expert. Expert Systems are an emerging technology with many areas for potential applications [3].

Asraa M. developed *an Expert System in Visual Prolog for Weekly Time Table (ESWTT)*. The suggested ESWTT mainly consists of two phases. The phase one is responsible for automatic acquiring of human expert knowledge. Phase two is concerned with the construction of time table from the entered knowledge by using forward chaining method (data driven interface) [4]. Tanzila Saba, Saleh Al-Zahrani and Amjad Rehman presented in their paper up to date critical review of existing clinical expert systems namely AAPHelpm, MYCIN, EMYCIN, PIP, GLIF and PROforma. Additionally, an analysis is performed to evaluate all these fundamental clinical expert systems. And they developed a clinical expert system to help healthcare professionals for treatment [5]. Alan J. Thomson A and Ian Willoughby B developed a web-based system to advise on the relative efficacy of different herbicides for mixes of weed and crop species at different times of the year in a forestry or farm forestry setting. The system assumed that weed identification and impact assessment or prediction have already been accomplished and that there are no cost-effective non-chemical alternatives. The expert system produced a relative suitability index for each herbicide, as well as an English language discussion of the case [6]. **Anindito, Bens Pardamean, Robby Christian and Bahtiar Saleh Abbas** built an expert system using an inference engine that provides stroke risk level based on information provided by the user. Information collected are self measured blood pressure, cigarettes consumed, amount of physical activity and body mass index. Users are presented with suggested preventive tasks to reduce their stroke risk[7]. Magdalena Hajdasz, presented an intelligent system *MoCCAS* (a monolithic construction computer aided system), which is a comprehensive decision support tool for flexible construction site management in repetitive projects. *MoCCAS* aids the construction site manager in developing optimal and attainable execution scenarios by providing contextualized variants of construction strategies[8]. Gregory W. C. and Andrea M. T. developed an expert decision making system. The original intent of the project was to provide an improved means of equitably comparing the costs of developing brackish and freshwater resources. The model (ACASE) is developed in Microsoft Excel format and integrated with Reclamation's Water Treatment Estimation Routine (WaTER), such that both models can provide a comprehensive estimate of the "total costs of supply and treatment [9].

2.Benefits of Expert System:

There are several benefits of Expert Systems [1]:

- •Increase the probability, frequency, consistency of making good decisions;
- •Help distribute human expertise;
- •Facilitate real time, low cost expert level decisions by the non expert;
- •Enhance the utilization of most of the available data;
- •Permit objectivity by weighing evidence without bias and without regard for the user's personal and emotional reactions;
- •Permit dynamism through modularity of structure;
- •Free up the mind and the time of the human expert to enable him or her concentrate on more creative activities;
- •Encourage investigations into the subtle areas of a problem

Expert systems can be used as a decision tool by orphan's organization to ensure that information is available to the managers in the form they want it and when they need it. Such systems provide a valuable time-saving benefit to the workforce. Employees do not have to collect data manually for filing and analysis. Instead, that information can be entered quickly and easily into a computer program. With faster access to needed information, managers can make better decisions and more quickly [10].

3.System Design and Development:

The **first step** in designing and developing OFMTES is information collecting and gathering and then converting that information to a relational database; this process is done by the system engineer. The database consisted of tables; each one consists of specific data. Table 1 consists general information about orphan's father and family such as orphan's code, father name, death date of orphan's father, death reason, …etc. as shown in figure 1 below:

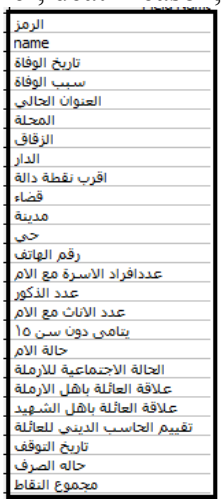

Figure 1: Attributes of Table 1.

Table2 consists information concerning the orphan him/her self as shown in figure 2 below:

Figure 2: Attributes of Table 2.

Table 3 concerning parent's job as shown in figure 3 below:

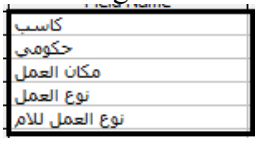

Figure 3: Attributes of Table 3.

Table 4 concerning family's resources as shown in figure 4 below:

Figure 4: Attributes of Table 4.

Table 5 concerning orphan's sponsor's information as shown in figure 5 below:

Figure 5: Attributes of Table 5.

Table 6 concerning the general follow up director margin information as shown in figure 6 below:

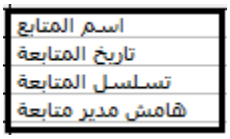

Figure 6: Attributes of Table 6.

Table 7 concerning type of accommodation information as shown in figure 7 below:

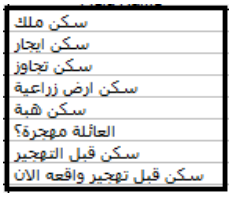

Figure 7: Attributes of Table 7.

Table 8 concerning Aspects which family spends on information as shown in figure 8 below:

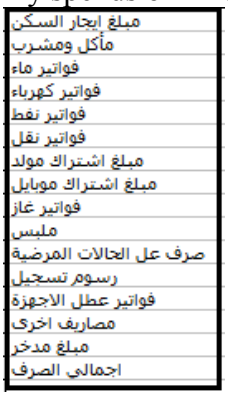

Figure 8: Attributes of Table 8.

Each martyr will have the information shown in figures 1-8. This information is stored in a relational database system using Microsoft access 2003 as shown in figure 9 below:

Figure 9: General Information about Orphan's Father and Family.

Some of these information are associated with weights (scores) so that each orphan will have a final score generated from the summation of the sub scores associated with his/her information.

4.System Architecture:

The **second step** is to design system architecture shown in figure 10 below, the system is composed of Knowledge Base, Inference Engine Module, Calculating Scores Module and User Interface.

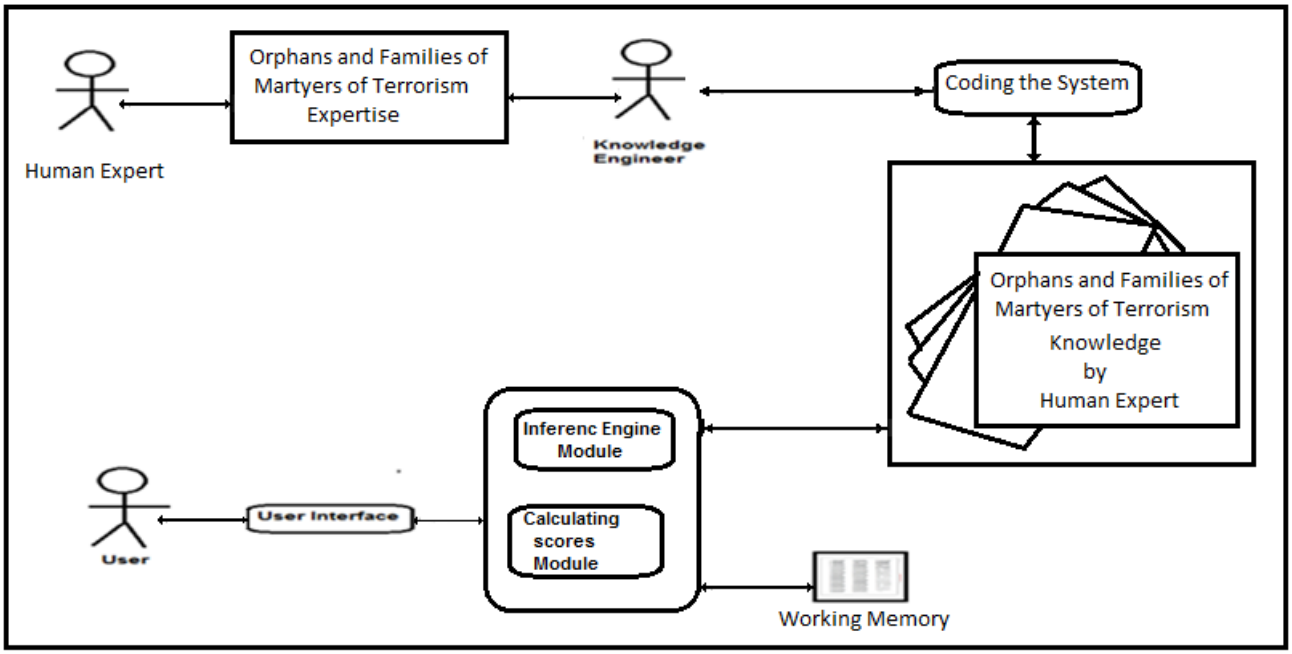

Figure 10: OFMTES Architecture.

Knowledge Base consists of facts and rules concerning related to orphans and their families. Inference engine is responsible on finding the degree of orphan's merit. That degree is represented by a color. Calculating scores module, is responsible on finding the final score generated from the summation of the sub scores associated with orphan's information. User interface consists of main menu and the sub menus that enable the user from using the system.

5.Design Menus:

The **third step** is to design menus structure of the system as shown in figure 11 below:

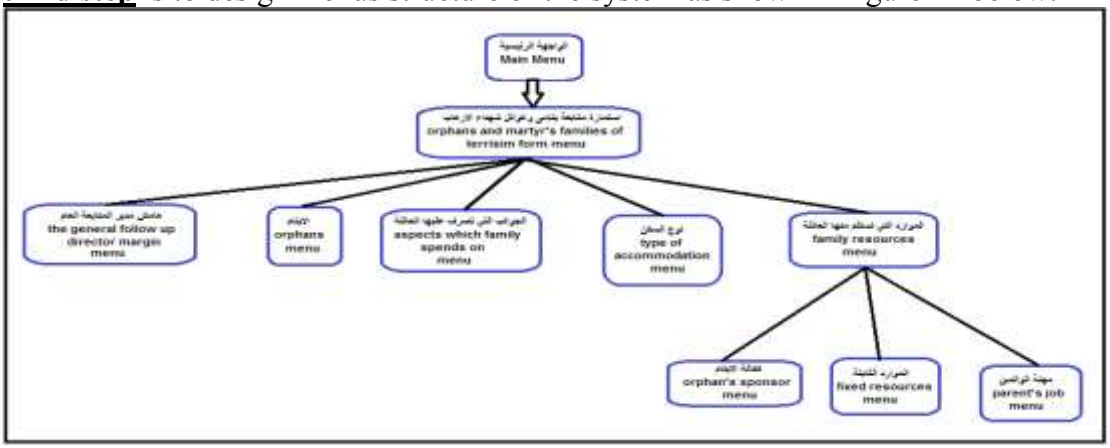

Figure 11: Menus Structure

When running the program, main menu will appear as shown in figure 12 below:-

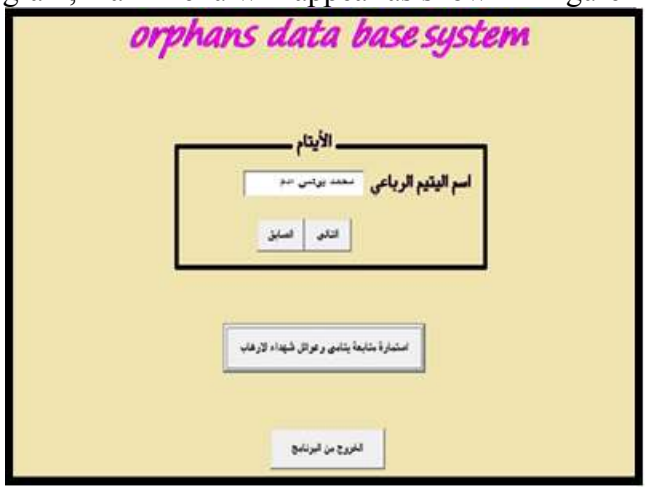

Figure 12: Main Menu.

This menu enables the user from browsing all orphans' names in the database by pressing the "next التالي" and "previous السابق" buttons. Detailed information about each orphan can be browsed by pressing "orphans and families of martyrs of terrorism استمارة متابعة يتامى وعوائل شهداء الإرهاب" button as shown in figure 13 below:

Figure 13: Orphans and Families of Martyrs of Terrorism Menu.

From this menu, sub menus shown in figure 14, figure 18, figure 19, figure 20 and figure 21 can be driven to fill the required information. Some of these sub menus call for other sub menus shown in figures 15, 16 and 17.

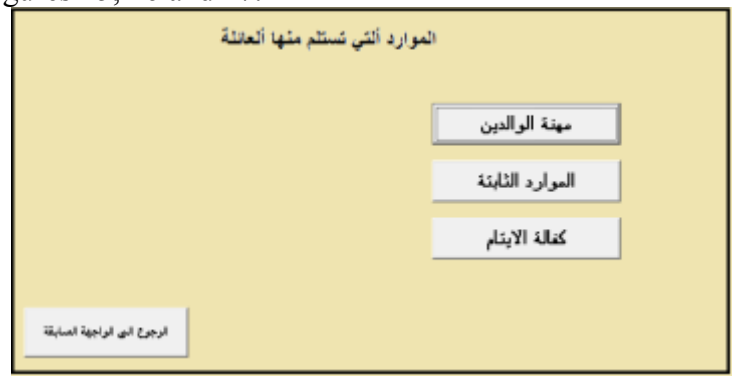

Figure 14: Family Resources Menu.

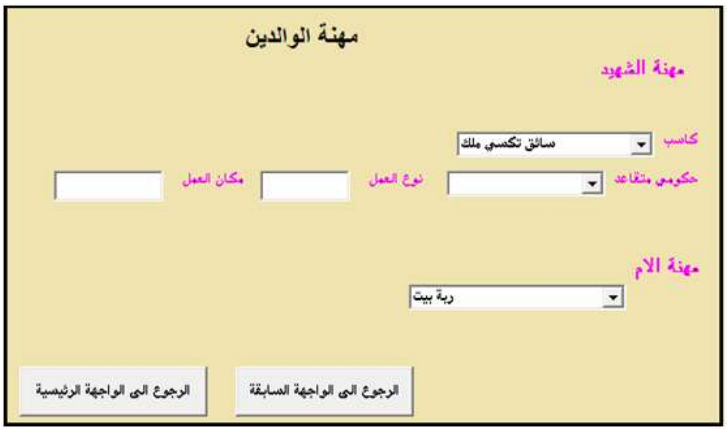

Figure 15: Parent's Job Menu

Figure 16: Fixed Resources Menu.

Figure 17: Orphan's Sponsor Menu.

Figure 18: Type of Accommodation Menu.

Figure 19: Aspects which Family Spends on Menu.

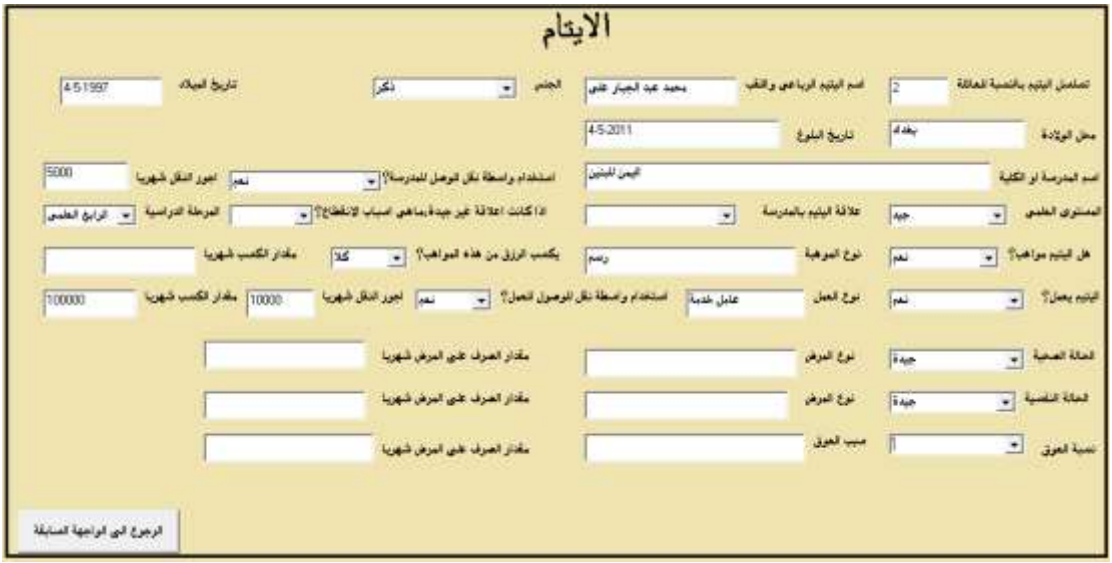

Figure 20: Orphan's Menu**.**

Figure 21: General Follow up Director Margin Menu.

6.Experimental Results:

OFMTES provides user-friendly interface (consists of menus and windows). It provides many facilities to help both human experts and end-users with writing, and updating the knowledge they enter. To test the OFMTES behavior and results, OFMTES was used to manage the Orphans and Families of Martyrs of Terrorism by registry all information about all orphans to display mostly orphan deserves bill, data is entered for each orphan as shown in figure 9 above, the output result represents the score for the orphan. Different orphans have different scores. Coloring is used to know the degree of orphan's merit. figure 13 above shows that the orphan deserves bill but in little ratio.

he knowledge-base was constructed by domain human experts. The feedback was positive. The system was tested by end-users. When OFMTES tested by experts and end users, it was found that OFMTES performance in displaying mostly orphan deserves bill was exact.

7. Conclusions

The proposed work is designed to manage the Orphans and Families of Martyrs of Terrorism Expert System (OFMTES) by registry all information about all orphans to display mostly orphan deserves bill, data is entered for each orphan, and with each entry a counter is increased according to this input information; the output result represents the score for that orphan. Different orphans have different scores. Coloring is used to know the degree of orphans merit; that is, when background color of that text is red this means that the orphan does not deserve bill, when the color is yellow this means that the orphan deserves bill but in little ratio, when the color is blue this means that the orphan deserves bill but in more ratio from blue, and when the color is green this orphan is mostly deserves bill. Practical use of the system is used to show OFMTES system effectiveness in displaying mostly orphan deserves bill was exact. Information is available to the managers in the form they want it and when they need it. Such systems provide valuable time-saving benefits. Data do not have to be collected manually for filing and analysis. Instead, that information can be entered quickly and easily into a computer program.

References

[1] Razieh ArabChadegani and Zahra ArabChadegani **, "A Review On Expert Systems And Their Usage In Management**", Advances in Environmental Biology, 7(8): 1460-1465, 2013 ISSN 1995-0756.
http://www.aensiweb.com/aeb/2013/1460-1465.pdf

[2] Michael Treacy, "**Future directions in DSS Technology**", Center for Information Systems Research, Sloan School of Management, Massachusetts Institute of TECHNOLOGY ,January 1985.
http://dspace.mit.edu/bitstream/handle/1721.1/47983/futuredirections00trea.pdf?sequence=1

[3] Swati Gupta, Ritika Singhal, "**Fundamentals and Characteristics of an Expert System**", International Journal on Recent and Innovation Trends in Computing and Communication ISSN 2321 – 8169 Volume: 1 Issue: 3 110 – 113. MAR 2013
http://ijritcc.org/IJRITCC%20Vol_1%20Issue_3/IJRITCC_1324.pdf

[4] **Asraa Moayad , "Building an Expert System in Visual Prolog for Weekly Time Table", 2013.**

[5] Tanzila Saba, Saleh Al-Zahrani and Amjad Rehman,"**Expert System for Offline Clinical Guidelines and Treatment** ", citeseer, 2013.
Iraq virtual science library, http://www.ivsl.org/

[6] Alan J. Thomson A and Ian Willoughby B, "**A web-based expert system for advising on herbicide use in Great Britain", Year**: 2013 **Provider**: citeseer
http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.329.6857
Iraq virtual science library, http://www.ivsl.org/

[7] **Anindito, Bens Pardamean, Robby Christian and Bahtiar Saleh Abbas**, "**EXPERT-SYSTEM BASED MEDICAL STROKE PREVENTION",** Journal of Computer Science**ISSN**: 15493636 **Year**: 2013 **Volume**: 9 **Issue**: 9 **Pages**: 1099-1105 **Provider**: DOAJ **Publisher**: Science Publications.
Iraq virtual science library, http://www.ivsl.org/

[8] Hajdasz, M., "Magdalena Hajdasz, **Flexible management of repetitive construction processes by an intelligent support system",** Expert Systems with Applications, Volume 41, Issue 4, Part 1, March 2014, Pages 962–973. **Provider**: Elsevier **DOI**: 10.1016/j.eswa.2013.06.063
http://www.sciencedirect.com.tiger.sempertool.dk/science/article/pii/S0957417413004582
Iraq virtual science library, http://www.ivsl.org/

[9] Gregory W. Characklis and Andrea M. Traviglia, "**An Expert System for Decision making in the Use of Desalination for Augmenting Water Supplies** ", August 2008.
www.usbr.gov/research/AWT/reportpdfs/report107.pdf

[10] G.SATYANARAYANA REDDY, RALLABANDI SRINIVASU, SRIKANTH REDDY RIKKULA, VUDA SREENIVASA RAO, "**MANAGEMENT INFORMATION SYSTEM TO HELP MANAGERS FOR PROVIDING DECISION MAKING IN AN ORGANIZATION**", International Journal of Reviews in Computing, 2009.
www.ijric.org