CHESS TOURNAMENT MANAGEMENT SYSTEM (CTMS)

(SCORING MODULE)

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ABSTRACT

Chess is the game that has gained popularity among the people around the world. Nowadays, there are a lot of Chess Competition and Tournament held in all around the world. However, to organize such chess tournament, a lot time and resources is needed to perform the administrative work during the competition. One of the administrative tasks in organizing the chess tournament is to calculate the scoring and rating as well as to produce the standing table. Lots of time is spent in this work and it will place a delay on other administrative work such as pairing the player in the tournament. Instead that, when the confusion situation occurred such as the changes of previous round result, this will leads to mistake in re-calculating the score. Thus, a Chess Tournament Management System-Scoring Module is developed to deal with such situation. This system is the conversion of the rules and procedure in calculating chess score. It performs all the administrative work in handling the score for chess tournament and produce the functionalities in calculating the score (point and SolkOff) as well as the rating. It also produces the feature such as generate the standing table, rating/ranking of player and allow the modification of the previous results without affecting the entire tournament. By developing such system to deal with chess administrative work (Score Module), it will lessen the problem during organizing the Chess Tournament. Lots of time and administrative resources can be reduced.

ABSTRAK

Catur merupakan sejenis permainan yang semakin mendapat perhatian di kalangan masyarakat sedunia. Kebelakangan ini, semakin banyak pertandingan catur telah diadakan di seluruh dunia. Walaubagaimanapun, untuk menganjur sesuatu pertandingan catur, banyak masa dan sumber serta tenaga kerja diperlukan untuk melakukan kerja-kerja pentadbiran semasa pertandingan. Salah satu kerja pentadbiran yang perlu dilakukan semasa pertandingan catur adalah kerja pengiraan markah dan kedudukan serta menghasilkan senarai kedudukan peserta dalam pertandingan catur tersebut. Banyak masa diperlukan untuk melakukan proses tersebut dan ini akan melewatkan kerja-kerja pentadbiran yang lain seperti pengurusan jadual perlawanan. Selain itu, apabila situasi yang mengelirukan berlaku contohnya seperti pengubahan keputusan perlawanan yang lalu, ini akan menyebabkan kecuaian berlaku semasa melakukan pengiraan semula untuk markah sebelumnya. Oleh yang demikian, Sistem Pengurusan Pertandingan Catur-Modul Pemarkahan dibangunkan untuk mengatasi masalah tersebut. Sistem ini merupakan sistem yang mengaplikasikan segala peraturan dan prosedur untuk mengira markah dalam permainan catur. Sistem ini melakukan segala kerja pentadbiran yang berkaitan dengan pengiraan markah (markah dan solkoff) dan kedudukan bagi setiap peserta dalam pertandingan. Sistem ini juga mempunyai fungsi-fungsi seperti menghasilkan atau mengeluarkan senarai kedudukan dan membenarkan pengubahsuaian keputusan perlawanan yang lalu tanpa mempengaruahi kelancaran perjalanan pertandingan catur tersebut. Dengan adanya pembangunan sistem seperti ini, masalah berbangkit semasa pertandingan catur dapat dikurangkan. Banyak masa dan tenaga kerja juga dapat dikurangkan.

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LIST OF ABBREVIATIONS

CTMS   -   Chess Tournament Management System

KUKTEM   -   Kolej Universiti Kejuruteraan dan Teknologi Malaysia

PSM   -   Project Sarjana Muda

SDLC   -   Software Development Life Cycle

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CHAPTER 1

INTRODUCTION

Chess Tournament Management is a management that should be included during organizing Chess Tournament. It performs the administrative tasks such as arrange the schedule, pairing the player, calculating the scoring for each round to determine the next round schedule and also the winner of the tournament. This Chess Tournament Management is divided into few phases to handle the administrative work such as scheduling, player registration, player paring, results and standing control and scoring. Thus, to handle such a Chess Tournament, lots of resources and time is needed.

Generally, to organise a Chess Tournament, there's a lot of preparation that need to be set up. It takes a lot of time and work. Even a small size tournament will take more than a day to be completed. Scoring and produced the player standing phase is the most critical and complicated phase as it relate with other phases in chess tournament management. Any mistake or delay in this phase will place a problem and delay for entire tournament. In the worst case, it will leads to dissatisfaction of the participant.

In fact of that, the Chess Management Tournament System (CTMS)-Scoring Module is being developed to perform and simplify the administrative task on chess tournament. This system will convert the process of calculating the scoring and rating phases in chess tournament management into more manageable and effective management system. To develop this system, KUKTEM Chess Club will be taken as the case study.

1.1 Problem Statement

Without the development of the system, all the scoring and rating calculation is done by manually. To perform such function, a lot of staff and time is needed. It place a burden to the administrative staff to handle it. Any mistake or delay in this module will affect the entire tournament and lead to the disatisfaction of the participants.

Currently, this system is done by manually in KUKTEM Chess Club. Thus, even organizing the small size tournament, it takes at least more day to be completed.

1.2 Objectives

The objectives of this project are:

a) To generate an algorithm to calculate the scoring in chess tournament.

b) To develop Chess Tournament Management System – Scoring Module.

1.3 Scopes

The scope of this project are:

a) Develop CTMS-Scoring module that consists the algorithm to calculate the scoring.

b) Using Vb .Net as programming language and SQLServer as the database.

CHAPTER 2

LITERATURE REVIEW

2.1   Current Chess Tournament System in KUKTEM

Currently in KUKTEM, All chess tournament was organized by chess club and handled by manually. To organize a fair and no arguments chess tournament, the organizer has to be a very knowledgeable person that expert in all chess rules and tournament rules. All pairing task and scoring task as well as judging task in that particular tournament must be handled carefully so that no argument will occurred during the tournament.

Before the tournament start, the organizer has to set the round that will be played. All the participants' name is collected. Then organizer and the tournament administrative team will do the pairing for first round by manually. All players will be given their board or seat. Each board consists of 2 players. The colour allocation for player (Black or White) will be allocated by organizer and his members.

After the first round completed, the result is collected and the score and Solkoff score calculated. A standing table is generated in order to set the schedule for the following round. This process takes about 30-45 min for the organizer to produce the standing as well as the new schedule. Based on the score, the pairing for next round will be determined. In chess , there are always an occasion where 2 or 3 player have same scores, so there are a lot of international rules that used to deal with this situation.

After all round finished, the highest rank in standing table will be the champion of the tournament.

2.2 Problem with the Current System

The current chess tournament system which is handled by manually produces the problem as the following:

2.2.1 Waste of Time

A lot of time needed to complete that entire task; participant will need to wait for a long time until the overall score and standing published. Besides that, they need to wait until the whole pairing process complete as the pairing process dependent to the scoring process. Due to this problem, even a small size tournament which consists less than 15 participants need a day to be completed in KUKTEM. Table 2.1 show the calculation of point and the SolkOff [2].

Table 2.1: Calculation of Point and SolkOff

Round	1	2	3	4	5	Total	Rank
SolkOff	0	1	2	3	4	14	1
Point(Player1)	1	1	1	1	0	4	
SolkOff	0	1	2	3	3	13	2
Point(Player2)	1	1	1	0	1	4	
SolkOff	0	0	1	2	3	10	3
Point(Player3)	0	1	1	1	1	4	
***SolkOff = Total SolkOff + Total Point**							

2.2.2 Need Lots of Human Resource

A lot of work is needed to calculate the score and produce the rank/standing. Manually, the result of every round is collected by manually which is wrote in a result paper [3]. In needs a lot of paper and people to collect the previous round result and combine all the result to produce the scoring as well as the standing of the player. Thus, lots of resources are needed in order to complete this task even for the small size chess tournament.

2.2.3 Mistake on Manual Chess Tournament System

When the confusing situation occur such as the changes/modify the previous result, there's a lot of confusion in re-calculate [3] the scoring as well as the standing table. In this situation, the management will be having the possibility of making a mistake.

2.3 Solution

As the solution for the problems above, the software approach is needed. Thus, the CTMS scoring module will be developed to deal with the problem that occurred. There are 2 types of Chess Tournament that always used by KUKTEM Chess Club in organizing a chess tournament which are Swiss and Knock-out based [6]. CTMS scoring module will include all the tournament rules and criteria in calculating the scoring and produce the standing table.

2.3.1 Swiss Tournament Format

In the Swiss tournament format [6], scoring is the important part to determine the winner as well as the scheduling (pairing module). The next round player pairing is determined by the standing of the player after the previous round is completed [1]. Thus, mistake in calculating the scoring will affect the standing and this will lead to the protest from the participants. In CTMS, the user will just need to key in the result of the previous round and all the scoring calculation will be done automatically by the CTSM scoring module. Then, CTMS will produce the standing table to be view by the participant as well as to schedule the next round. This approach will produce better, accurate, effective and efficient results because it doesn't need lots resources and time.

Besides that, the changes or modification of the previous round result won't affect the entire tournament. An algorithm/formula to re-calculate the point and SolkOff is included in CTMS [2]. Table 2.2 show the formula to calculate the changes of the previous Round result.

Table 2.2: Formula to calculate SolkOff and Point for the modified result case

Result Changes	SolkOff Changes	Point Changes
From 1 to 0 in Round x (Total Round = y)	Total SolkOff − ((y+1)-x)	Total Point = Total Point - 1
From 0 to 1 in Round x (Total Round = y)	Total SolkOff + ((y+1)-x)	Total Point = Total Point + 1

2.3.2 Knock-out Tournament Format

In the Knock Out tournament format, scoring is not an essential component and is not needed [4]. The players that lose in the round will directly be eliminated from the tournament. Thus, rating is the most important part in this type of format. It is the most critical part to ensure the favourite player is avoided to play with each other in the early

stages. The schedule or pairing of the player will be done based on the rating for every player. In CTMS this feature is included to calculate the rating for every player. The player will be rated in every tournament they join. The rating calculation method which will be based on the Club Rating Criteria as discussed below [5].

2.3.2.1 Club Rating Criteria

a) At the beginning, no one has a club rating, everyone starts at 900 points.

b) A player receives 15 points for every win and loses 15 points for every loss for every single game they played in tournament.

c) In future tournaments, higher-rated players (rank top 20, if there are more than 100 people) receive 10 points for every win in their section and lose 15 points for every loss. Lower-rated players receive 15 points for every win against a higher-rated player in their section, but only lose 5 points for a loss.

d) When a tournament ends, bonus points can be awarded to the top three players in each section. The first place finisher could receive 25 points, second place 15, and third place 10.

2.4   Formula in Calculating the Scoring

The formula calculating the SolkOff as well as the point (score) is shown as below [2]. Table 2.2 will be taken as the case in generating calculation for both SolkOff and point. In chess, when the player gets 1 point in the particular round that played, it means that the player won against his or her opponent in that round. The symbol i represent the round that played, symbol x represent the SolkOff and symbol y represent the point.

When i = 1,

x(1) = 0, point(1) = 1(the player won in this round)

Total point = point(1)

Total SolkOff = x(1) + Total Point

When i = 2,

x(2) = x(1) + point(1), point(2) = 1 (the player won in this round)

x(2) = 0 + 1, point(2) = 1

x(2) = 1, point(2) = 1

Total point = point(1) + point(2)

Total SolkOff = x(1) + x(2) + Total Point

When i = 3,

x(3) = x(2) + point(2), point(3) = 1 (the player won in this round)

x(3) = 1 + 1, point(3) = 1

x(3) = 2, point(3) = 1

Total point = point(1) + point(2) + point(3)

Total SolkOff = x(1) + x(2) + x(3) + Total Point

When i = 4,

x(4) = x(3) + point(3), point(4) = 1 (the player won in this round)

x(4) = 2 + 1, point(4) = 1

x(4) = 3, point(4) = 1

Total point = point(1) + point(2) + point(3) + point(4)

Total SolkOff = x(1) + x(2) + x(3) + x(4) + Total Point

When i = 5,

x(5) = x(4) + point(4), point(5) = 0 (the player lost in this round)

x(5) = 3 + 1, point(5) = 0

x(5) = 4, point(5) = 0

Total point = point(1) + point(2) + point(3) + point(4) + point(5)

Total SolkOff = x(1) + x(2) + x(3) + x(4) + x(5) + Total Point

Table 2.2: Formula to calculate SolkOff and Point

Round (i)	1	2	3	4	5	Total
SolkOff (x)	0	1	2	3	4	14
Point(Player) (y)	1	1	1	1	0	4
*SolkOff = Total SolkOff + Total Point						
*Point = 1 represent a win, 0 represent a lose						

2.5 Formula in Calculating the Rating

The formula to calculate the rating is based on the Club Rating criteria that discussed before [5]. In the starting, all registered player will have 900 points. All registered player will be rated in every Club tournament and games that they played. In every win games, a player will be conceded 15 points. In every lose games, a player will be deducted 15 points. Based on the Club Rating Criteria, bonus points will be awarded to the top three winners. The first place received 25 bonus points, the second place received 15 points and the third place received 10 points.

CHAPTER 3

METHODOLOGY

3.1   System Overview

This project is carrying out by using the System Development Life Cycle (SDLC) method. It provides a consistent framework of tasks and deliverables needed to develop systems. The SDLC methodology is chosen as it includes only those activities that appropriate for this project. This is the most popular development model in the contemporary IT industry and most of the software products or systems have been developed successfully by using this model.

There are seven phases being classified in the SDLC method and those phases include identify the system requirement, project initiation and planning, analysis, design, development implementation, testing and maintenance. Each phase within the overall cycle may be made up of several steps.
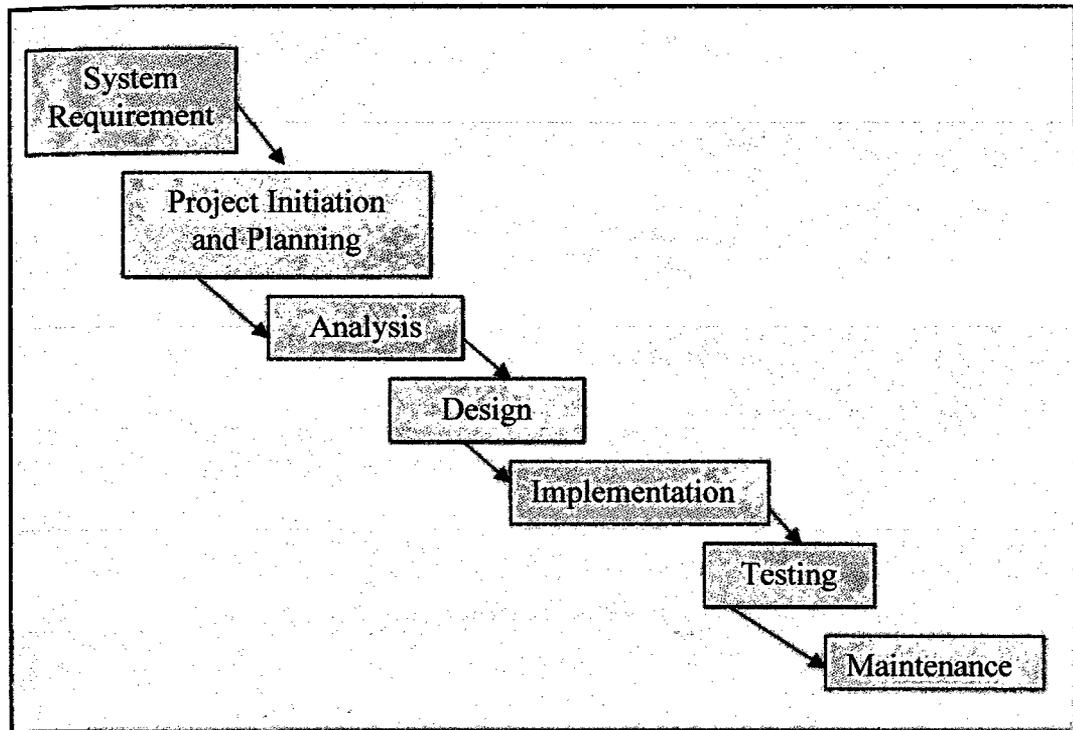
Figure 3.1: Phase of SDLC

3.2 Identify the system requirement

The first phase of the development in which all the data and information required is identified, collected and analyzed. The purpose of this phase is to determine the needs and define the problems that need to solve. During the process, the possible information's that could undertake include:

a) Identifying the type of Chess Tournament system.

b) Identify the method, rules and procedure of calculating the scoring and rating for player.

c) Consideration on what type of data that is critical and needed in handling a chess tournament management system.

3.3 Project Initiation and Planning

In this phase, a high level view of the intended projects need to be establish and the goals is determined. It is a critical activity in the life cycle of project in which at this point, projects would be accepted for development, rejected infeasible, or redirected. The system initiation and planning process are explained in below section.

3.3.1 Initiation

a) This CTMS-Scoring Module is used to simplify the chess tournament management administrative work as it perform the function to calculate scoring(point and solkoff), produce rating, generate the player standing table, allow the modification of the previous result and determine the winner of tournament.

b) Only the record of registered user is kept inside the database. The new player must register first before their record is kept into the database.

c) Based on the rules and procedure in calculating the chess scoring, an algorithm will be develop and used in this system to calculate the scoring.

d) This system will be develop as a stand-alone system which using the VB .Net and SQLServer as the database of the system.

3.3.2 Planning

a) The Gantt chart (appendix A) shows the duration of each activity that being done. The planning stage starts from propose the project title and defining the scope. Then, continue with the out come of the literature review and methodology in which is analysis process is the major activity.

b) All the rules procedure and algorithm that discussed in literature review will be followed and included into the CTMS-Scoring Module to calculate the Scoring and Rating.

3.4   Analysis

During analysis phase, the overall CTMS-Scoring module is studied. The formula to calculate the scoring as well as the rating is well understood. There are three main activities in analysis phase: requirement determination, requirement structuring and alternative generation and selection process. Requirement determination is the only use in the development of this system.

Requirement determination is process of finding resources either primary or secondary resources. All data that required is collected from KUKTEM Chess Club on how a chess tournament is handled in KUKTEM, type of system that preferable as well as the important data that should be included. Besides, existing resources from the books, internet and thesis documentation is analyze to meet the requirement of the system. All Chess Rules in calculating the scoring point, solkoff and rating, for the club management, is studied and well understood to be applied during the system development in design phase.

3.5   Design

The physical characteristics of the system are designed during this phase. The operating environment is established, inputs and outputs are defined. A design strategy is a combination of system features of the CTMS-Scoring Module which will be described in design phase. In CTMS, the Scoring Module consists of the features as below:

a) Results Entry (Calculate Score and Rating)

b) Previous Result Modification (Re-calculate score and rating)
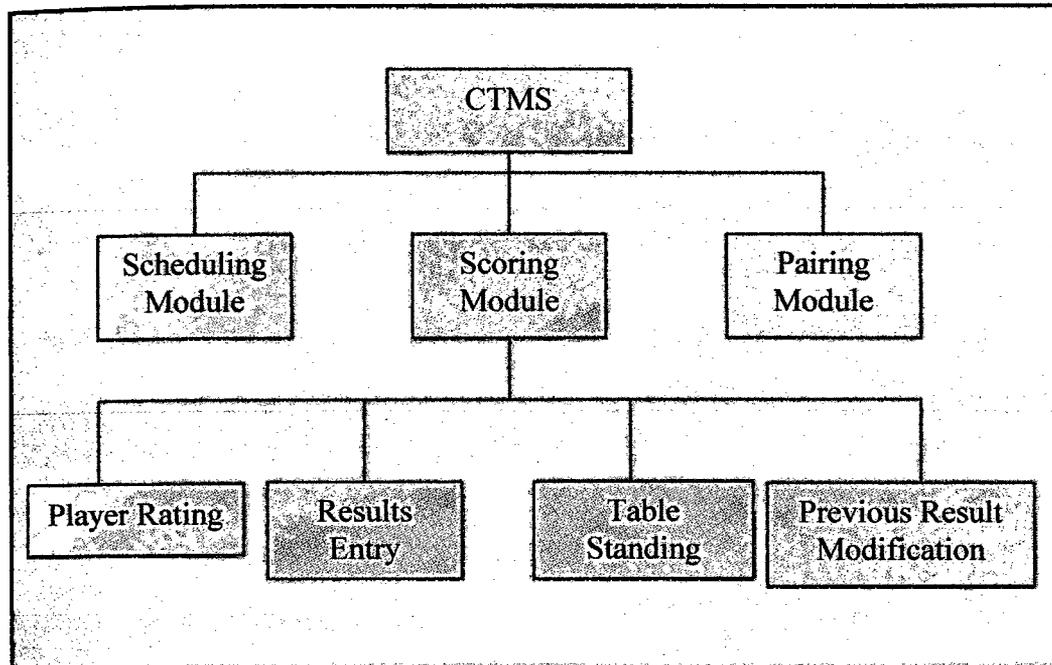
c) Table Standing

d) Player Rating

Figure 3.2: Feature of Scoring Module

3.5.1 Results Entry

Results Entry allows the system administrator to key in the results of every match and round that being played. Every match that held is displayed in the Results Entry interface. The event-driven of this feature to calculate the scoring and rating is in the "OK" button Control. When the button is clicked, the system will use the results to calculate for the scoring and rating. After all, the score and rating will be insert into table in the database called Player Table (refer Figure 3.6).