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JUDUL **CHESS TOURNAMENT MANAGEMENT SYSTEM (SCORING MODULE)**

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CHESS TOURNAMENT MANAGEMENT SYSTEM (CTMS)
(SCORING MODULE)

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A thesis submitted in fulfilment of the
requirements for the award of the degree of
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DECLARATION

I declare that this thesis entitled "Chess Tournament Management System (Scoring Module)" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not currently submitted in candidature of any other degree.

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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 mempengaruhi 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.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CTMS	-	Chess Tournament Management System
KUKTEM	-	Kolej Universiti Kejuruteraan dan Teknologi Malaysia
PSM	-	Project Sarjana Muda
SDLC	-	Software Development Life Cycle

LIST OF APPENDICES

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.

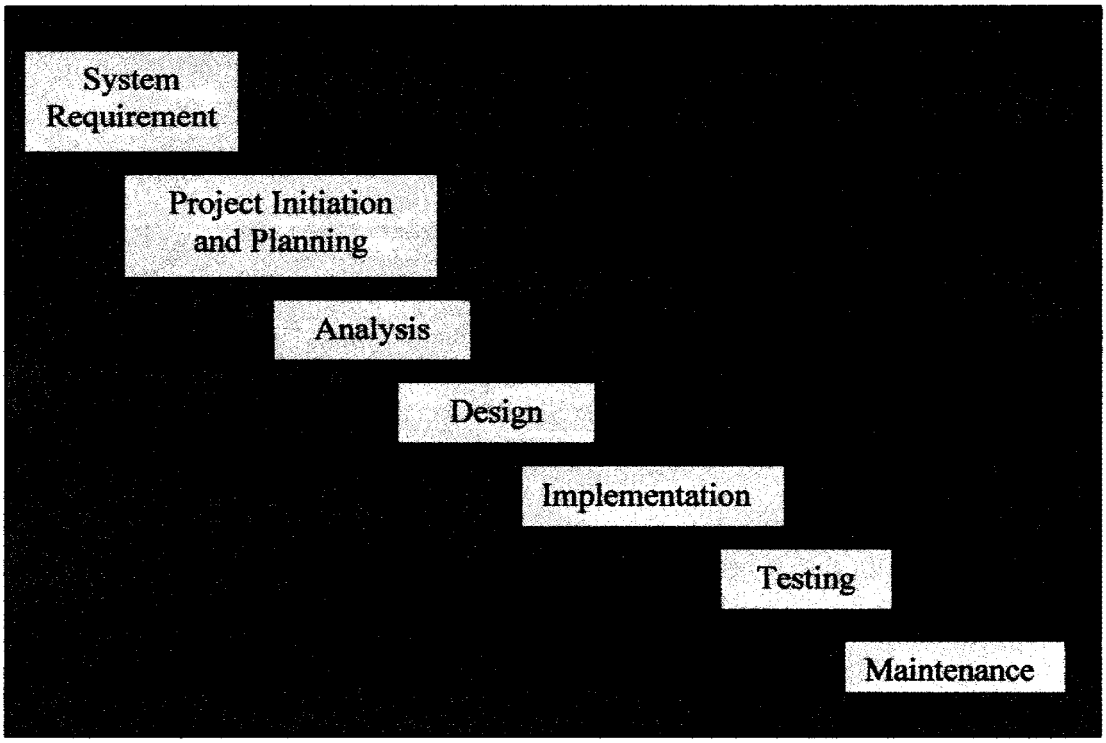


Figure 3.1: Phase of SDLC

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

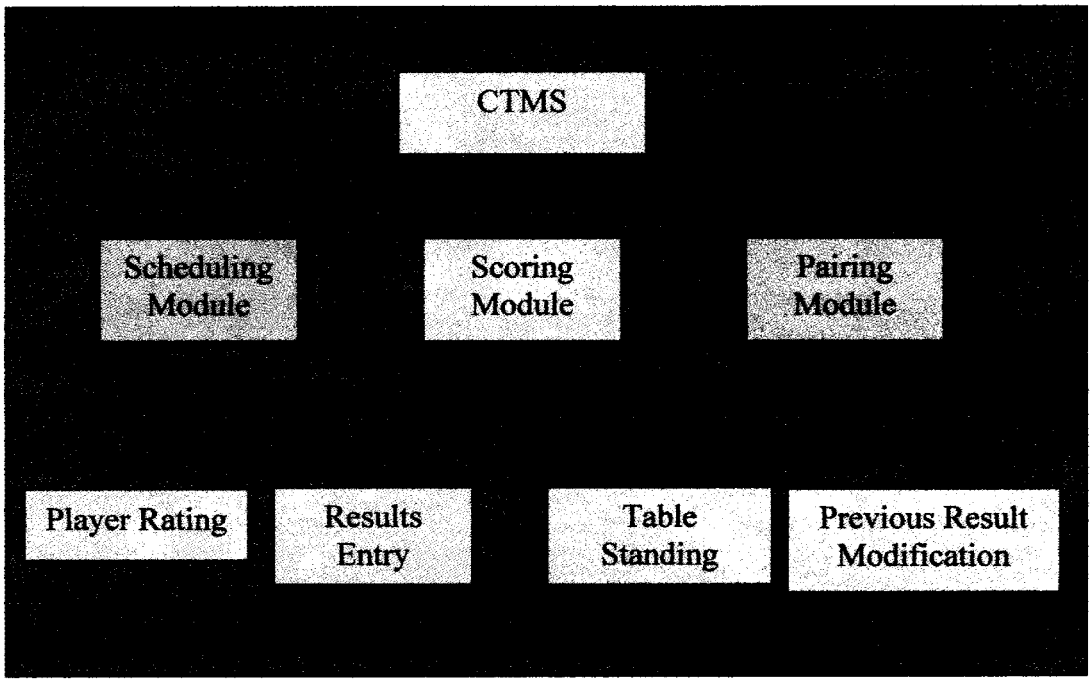


Figure 3.2: Feature of Scoring Module

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).

3.5.1.1 Algorithm to Calculate Scoring

The algorithm to calculate the Point, SolkOff and Rating is shown by below algorithm:

Algorithm to Calculate Scoring

a) Get the score from the Result Entry.

b) Match the player name with the score that get from Result Entry.

c) If the player get 1 in Result Entry (1 represent a win),
Point = Point + 1, Solkoff = SolkOff + Point and Rating = Rating + 15.

If the player get 0 in Result Entry (0 represent a lose),
Point = Point + 0, Solkoff = SolkOff + Point and Rating = Rating - 15.

d) The Point, SolkOff as well as Rating will be calculated for every player in that particular tournament.

e) After the Point, SolkOff and Rating has been calculated for every player, the latest Point, SolkOff and Rating are inserted into the database in the table called Player Table.

f) This process continued until the final round of that particular tournament is played.

Figure 3.3: Algorithm to Calculate Scoring

3.5.2 Previous Result Modification

This feature allows the administrator to change or modify the previous result. When the result is changed or modified, the system will re-calculate the score (point and

SolkOff) and rating using the formula that discussed in literature review before (refer Table 2.2). The new score and rating then will be updated in the database.

3.5.2.1 Algorithm to Calculate Modified Result

The algorithm to re-calculate the scoring for the case of modified results will be shown as below:

The algorithm to re-calculate the scoring fro the modified results will be discussed as below:

a) Get the newly modified scoring.
b) Match the player name with the modified score.
c) If the result is changed from 1 to 0,
   Point = Point -1, SolkOff = SolkOff – ((Current Round+1)-Modified Round),
   Rating = Rating – 30

   If the result is changed from 0 to 1,
   Point = Point +1, SolkOff = SolkOff + ((Current Round+1)-Modified Round),
   Rating = Rating – 30

d) The Point, SolkOff and Rating are re-calculated for every player that involved with the results modification.
e) After the Point, SolkOff and rating has been calculated, the updated Point, SolkOff and rating are inserted and updated in the database.
f) This process end after the database is updated.

Figure 3.4: Algorithm to Calculate Modified Result

3.5.3 Table Standing

This feature will provides the administrator the player table standing for every specific tournament. The score (point and SolkOff) produced in the feature before will be used to generate this player standing (Swiss Tournament Format). The player table standing then will integrate with the pairing module to generate the next round player pairing.

3.5.4 Player Rating

In this feature, every player will be rated in every game and tournament they played. Every result of the game will affect the rating of player. The rating that calculated and produced by the previous feature will be used to generate the rating table or well-known as ranking of the player.

3.5.5 Database

SQLServer2000 is used to develop the database of CTMS-Scoring Module. The database table that used in CTMS-Scoring Module is based on the data that needed in order to perform the calculation of scoring and rating as well as to perform the additional function of scoring module such as to produce table standing and result modification. The contents of each table are show in following (Figure 3.5, Figure 3.6, Figure 3.7). The Tournament Table (Figure 3.5) keep all the Chess Tournament information. The Player Table (Figure 3.6) keep the player chess tournament profile such as player rating, specific tournament point and SolkOff score and round that played for specific tournament. The Pairing Table (Figure 3.7) keep the all the tournament pairing information and result of every matches and the previous colour allocation record. All the tables are linked by the Tournament ID.

	Column Name	Data Type	Length	llow Null
🔑	id	int	4	
	name	varchar	100	✓
	system	int	4	✓
	round	int	4	✓

Figure 3.5: Tournament Table content

	Column Name	Data Type	Length	llow Null
▶	TournamentID	int	4	
	PlayerName	varchar	50	✓
	Point	float	8	✓
	SolkOff	int	4	✓
	Mark	int	4	✓
	TempMark	int	4	✓
	Rating	int	4	✓
	Round	int	4	✓
🔑	GamesID	int	4	

Figure 3.6: Player Table content

	Column Name	Data Type	Length	llow Null
▶🔑	pair_id	int	4	
	tour_id	int	4	✓
	board_no	int	4	✓
	white	varchar	50	✓
	black	varchar	50	✓
	round_no	int	4	✓
	white_res	float	8	✓
	black_res	float	8	✓
	white_rating	float	8	✓
	black_rating	float	8	✓
	white_no	int	4	✓
	black_no	int	4	✓

Figure 3.7: Pairing Table content

3.6 Implementation

In implementation phase, all components of the system are put together to be developed. The physical specifications of the system are converted into reliable software. All the feature of the system is developed according to the design that described in the previous phase. The database table (refer Figure 3.5, Figure 3.6 and Figure 3.7) is created by SQLServer to interact with the system as the database. The system will be developed using the VB .Net language. The formula (refer Table 2.2) that discussed in the Literature Review in Chapter 2 is used to calculate the score (point and SolkOff) for the result modification case. Finally, the application is tested in the Testing Phase to determine whether it is function properly or not.

3.7 Testing

In this phase, unit testing is performed to every feature in Scoring Module to check for the valid output. The output of the tested module is shown in the Chapter 4. After the unit system is done for the Scoring Module, the integration testing is done with the tested Pairing Module to produce the complete CTMS system. The testing phase is a critical part to identify any error that occurred. It's also to ensure the system functioning according to the expected result. There are many other aspects that need to be considered such as the results produced during the testing process. Testing of system is done in step by step until the system can function properly.

3.8 Maintenance

After the implementation of system is being done, any errors and interoperability problems that occur will be corrected here and modification will be done at this phase to satisfy the system requirement thus enhance the functionality of the system. Beside that,

the application is developed to accommodate changes that could happen during the implementation period.

CHAPTER 4

RESULT AND DISCUSSION

4.1 Result and Discussion

The unit testing is performed during the Testing Phase in Chapter 4. The CTMS-Scoring Module is tested to ensure the output that produced is correct.

4.1.1 Output from Testing Phase

In the chapter 4, testing is performed to ensure the valid output is produced. The feature that tested is Result Entry, Previous Result Modification, Table Standing and Player Rating. All features above interact with each other as all the feature is related with the calculation either for scoring or rating. Every changes or modification that made on the result will affect the scoring and rating.

Input1: The result will be entered in the Result Entry page (refer Figure 4.1). The entered result should be number 1 or 0 where 1 represent as win and 0 represent as lose.

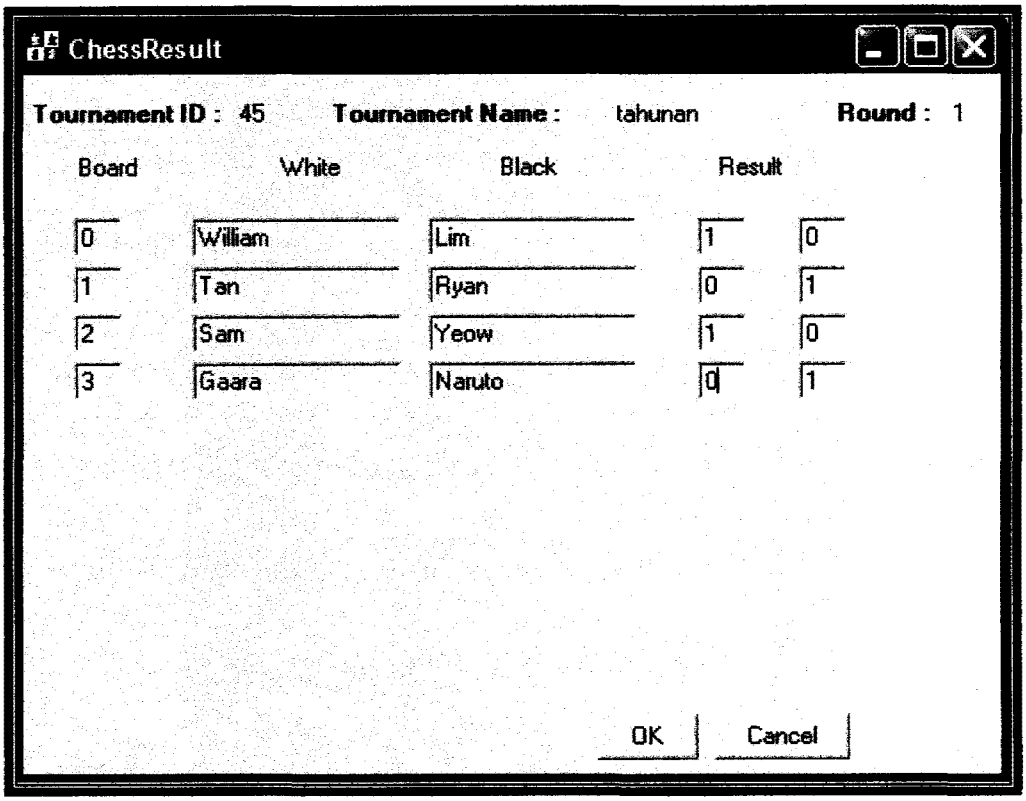


Figure 4.1: Result Entry

Output1: After the results of every player is entered, the system calculated the score (Point and solkOff) and Rating for every player and all the score (Point and SolkOff) then updated in the database in the table called PlayerTable1 (refer Figure 4.2). Then, the player Standing based on the Score is generated by the system (refer Figure 4.3). The Player Rating is also generated by the system at the same time (refer Figure 4.4).

TournamentID	PlayerName	Point	SolkOff	Mark	TempMark	Rating
45	William	1	1	1	1	915
45	Tan	0	0	0	0	885
45	Yeow	0	0	0	0	885
45	Lim	0	0	0	0	885
45	Ryan	1	1	1	1	915
45	Sam	1	1	1	1	915
45	Naruto	1	1	1	1	915
45	Gaara	0	0	0	0	885

Figure 4.2: Player Table

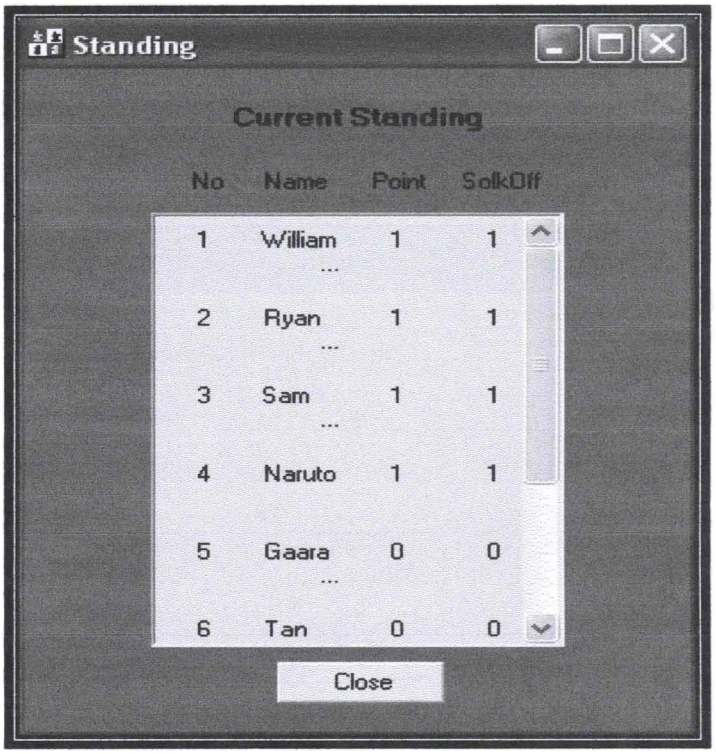


Figure 4.3: Player Standing

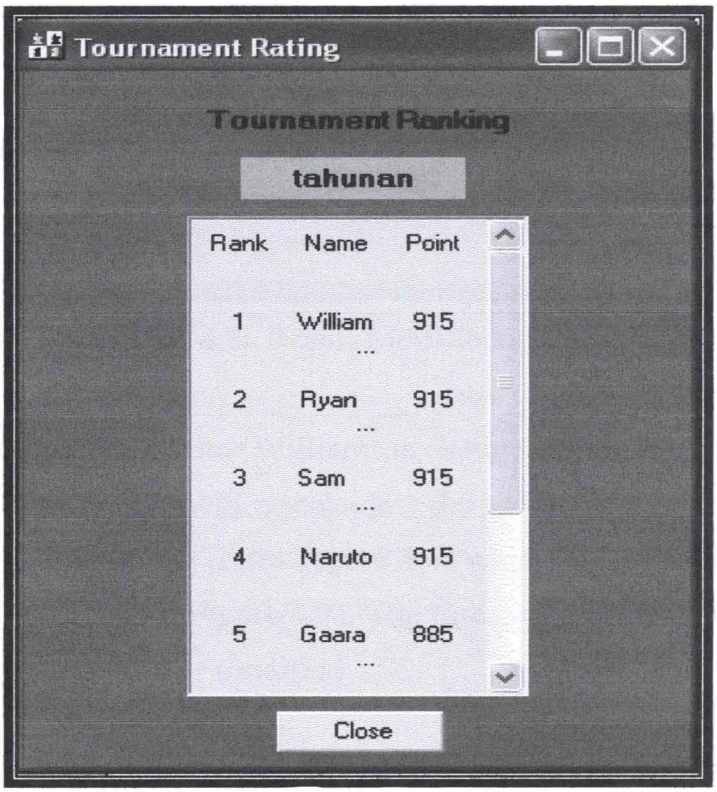


Figure 4.4: Player Rating

Input2: All the modification is done in the Result Modification page (refer Figure 4.5). The page includes the results of previous match which allow any modification to be done on any of those result.

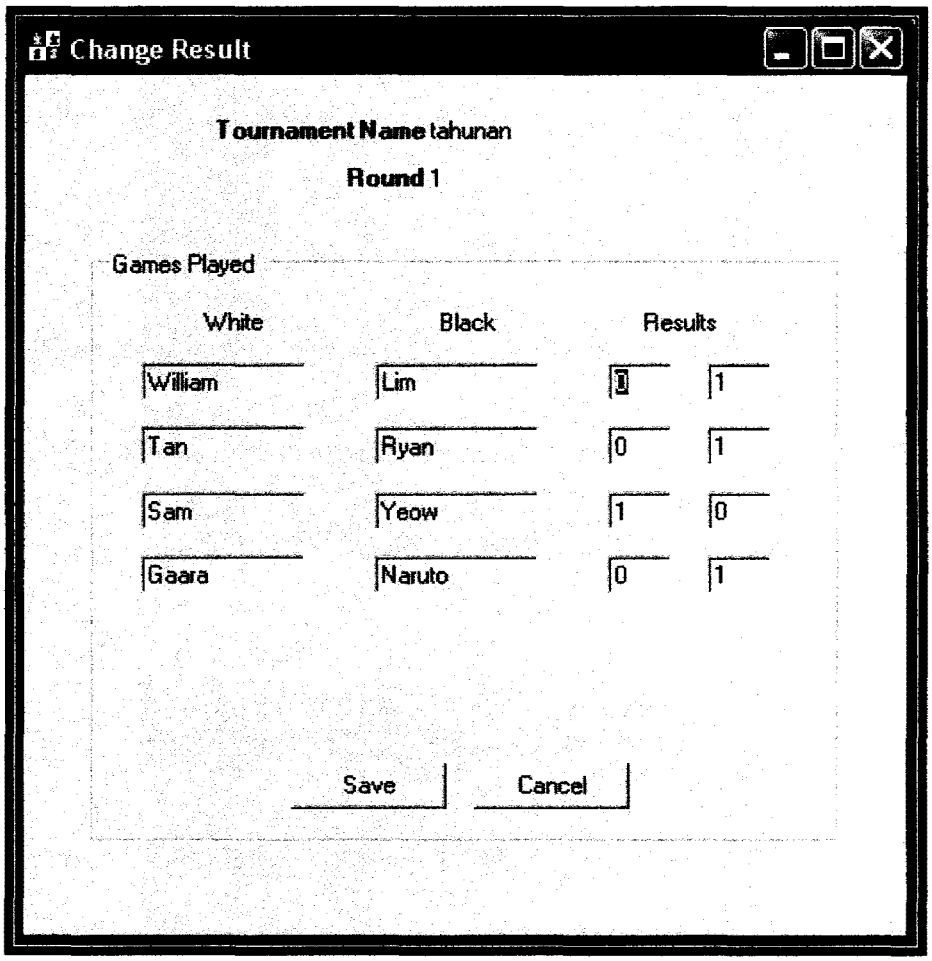


Figure 4.5: Result Modification page

Output2: When the result for White (William) is changed from 1 to 0 and Black (Lim) is changed from 0 to 1, the system will re-calculate the score (Point and SolkOff) and re-generate the new player Standing (refer Figure 4.6) which is based on the new score and also the new player rating (refer Figure 4.7). The re-calculation Scoring will not be done to the result that is not changed or modified.

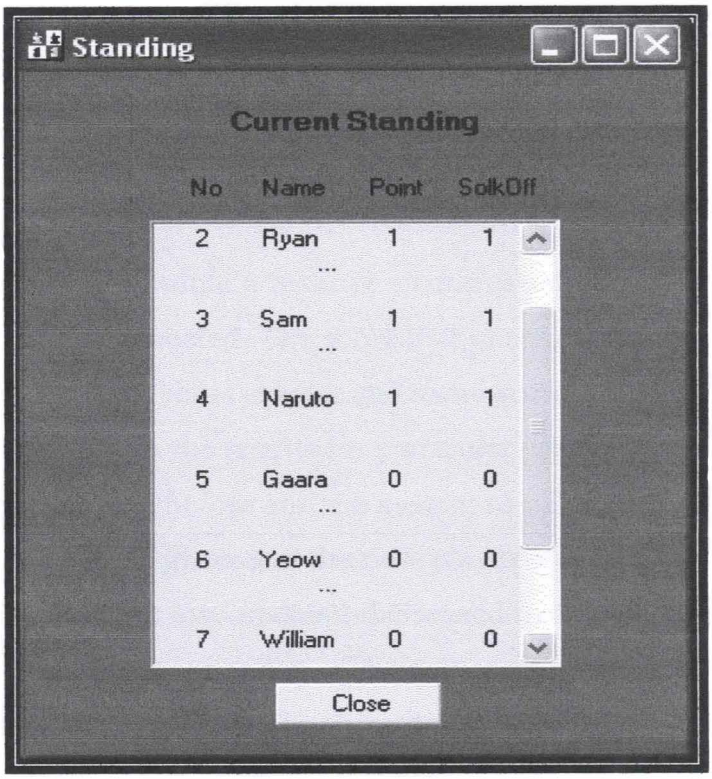


Figure 4.6: New Player Standing

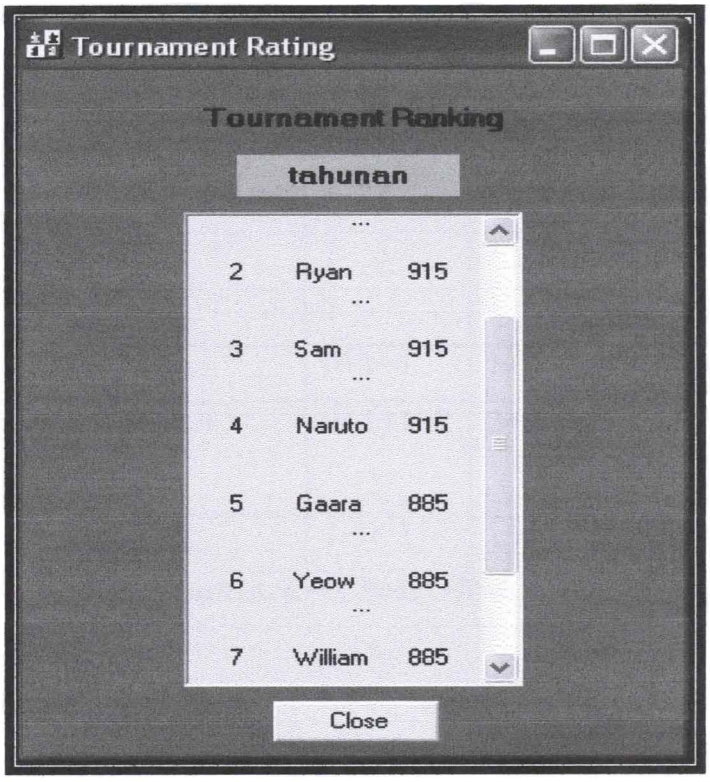


Figure 4.7: New Player Rating

4.1.2 Discussion

The CTMS-Scoring Module's features as discussed above is tested and the all the output is correct and as expected. The score that generated by the system after the results in entered for every player is correct and same goes to the player standing that generated of the system. When the results for particular player is modified, it will affect the entire score that calculated before and the system re-calculated the whole score for the specific player and then re-generated the new player standing as well as the new player rating table. The system also updated the scored into straight away after the re-calculation work is done. The conversion of the rules and procedure in calculating the Chess Score into a system is success. The formula (refer Table 2.2) to calculate the score of modified result had been work properly when applied into the system. The input or changes of results affect and interact with the player score in the database directly. The logic of coding that developed during system implementation to calculate SolkOff is as shown at Table 4.1.

Table 4.1: Formula to calculate SolkOff and Point

Round	**1**	**2**	**3**	**Total**
Result	1	1	1	
Mark	1	1	1	
TemMark = TemMark + Mark	0+1=1	1+1=2	2+1=3	
SolkOff = SolkOff + TemMark + Mark	0+1+1=2	2+2+1=5	5+3+1=9	**9**
Point = Point + Mark	1+0=1	1+1=2	2+1=3	**3**
*** In First Round, Mark=0, TemMark=0, SolkOff=0, Point=0**				

4.1.3 Advantages

The formula that generated to calculate for the score (point and SolkOff) can perform the function as rollback to search for the modified result, change the result, re-calculate the SolkOff as well as the point , and update the score for player. The CTMS – Scoring Module that developed can perform the administrator staff works in calculating the score during handling a Chess Tournament, thus, it also reduce the administrator work, time and also reduce the resources that needed during handling Chess Tournament manually. It also overcome the weakness of organizing the tournament by manually such as mistake in re-calculating the score (Point and SolkOff) for the modified result case.

4.1.4 Disadvantages

The disadvantage of this system is lack of security when entering or modifying the previous result. The administrator is allowed to enter and modify any previous result without any security or authentications which mean anyone have the authority to handle the system and change the previous result at any time they want. Thus, this will allow the sabotage work or dirty tactic done during tournament because there is no any authentication needed to modify the result.

4.1.5 Further Research

An enhancement of this system can be done in the future to overcome the disadvantage of this system. The system authentication for security can be developed to overcome the security problem above. It also can ensure only authorized user can perform the critical function such as entering the results and modifying the previous results. Instead that, this CTMS-Scoring Module interface can also be upgraded to be look more attractive and user friendly.

CHAPTER 5

CONCLUSION

Chess has become one of the famous games all around the world. In KUKTEM, Chess Tournament is organised for every single semester due to the request and interest shows by students. Thus, there is a requirement and needs of Chess Tournament Management System (CTMS) to handle the Chess Tournament. Scoring Module is one of the critical modules in the CTMS. Scoring Module can perform the functionalities to calculate the score based on the rules and procedure of Chess.

The CTMS-Scoring Module had been developed and documented in this thesis. CTMS-Scoring Module performs the administrative task in calculating the score during the Chess Tournament. It allows the modification made in the previous result and able to re-calculate the score (point and SolkOff) without affecting the entire results. The algorithm is used to perform the logic in calculating the score. This system had been tested and the output result is same with the expected result.

This paper had discussed about the benefits of using CTMS-Scoring Module and it might be suite for KUKTEM Chess Club. In term of reliability and efficiency, it can reduce the time spent on administrative work in organizing a Chess Tournament in KUKTEM. The development and completion of this CTMS-Scoring Module has reached the objective of this thesis. This system is successfully developed and the algorithm that uses to calculate the score had produced the expected result during testing phase.

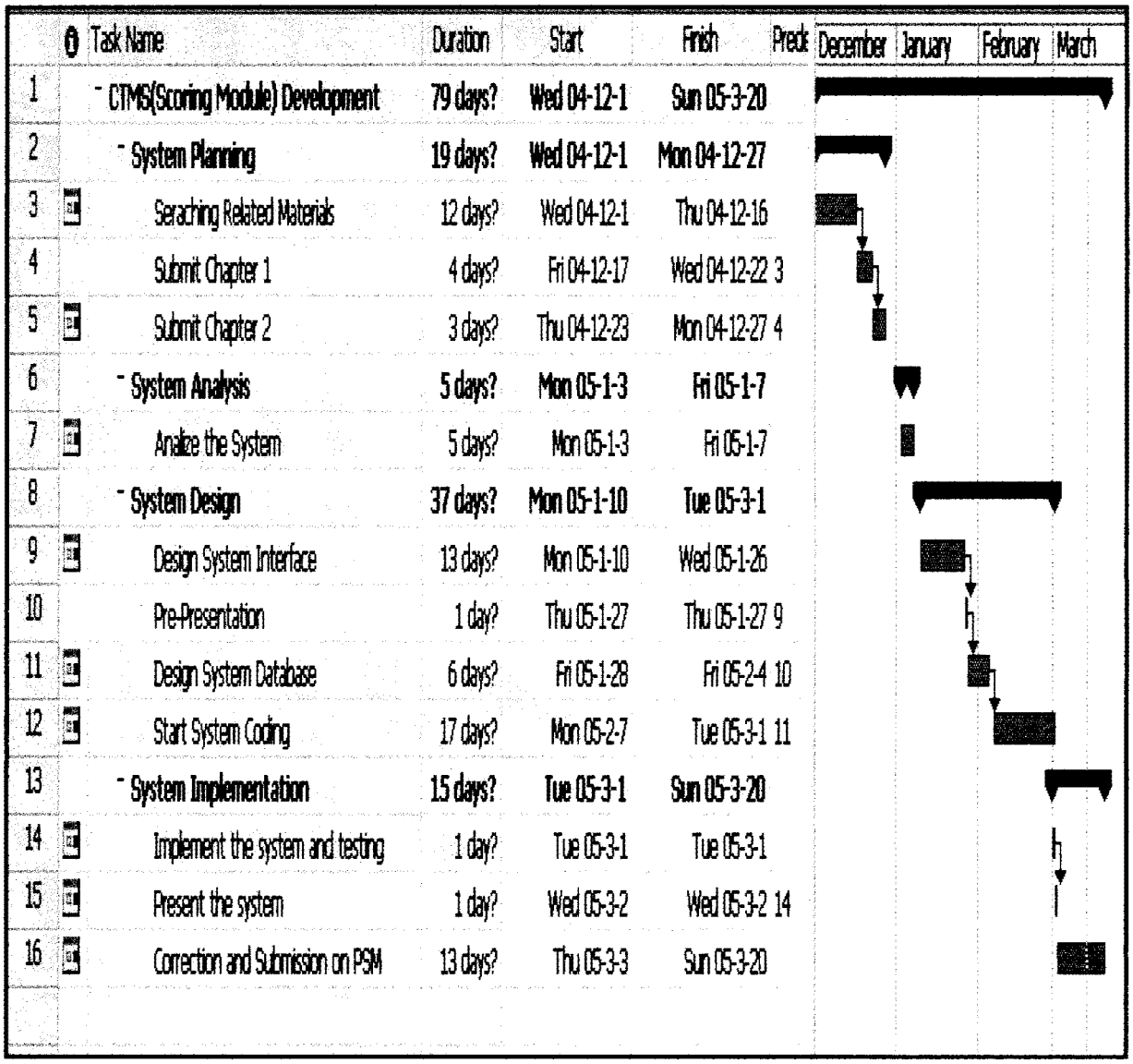
As the conclusion, as the completion of this system, hopefully this system will provide benefits to students. More on that, lesser work and time is used to organise Chess Tournament in the future.

REFERENCES

1. Gus_eld, D., The structure of the stable roommate problem: e_cient representation and enumeration of all stable matchings, SIAM J. Comput. 174 (1988), 742-769.
2. Gus_eld, D., Irving, R. W., The Scoring, Structure and Algorithms, The MIT Press, 1989.
3. Hooper, D., Whyld, K., The Oxford Companion to Chess, Oxford University Press, 1984.
4. Irving, R. W., An E_cient Algorithm for the \Stable Roommates" Problem, J. Algorithms 6 (1985), 577-595.
5. Olafsson, S., Weighted Matchings in Chess Tournaments, J. Opl. Res. Soc. 41, 1(1990), 17-24.
6. Krause, Ch., Protos, Version 6.ENG.|A computer Program for the Swiss Pairing System, 1994.

APPENDICES

Appendix A: Gantt chart



	Task Name	Duration	Start	Finish	Predc
1	CTMS(Scoring Module) Development	79 days?	Wed 04-12-1	Sun 05-3-20	
2	System Planning	19 days?	Wed 04-12-1	Mon 04-12-27	
3	Seraching Related Materials	12 days?	Wed 04-12-1	Thu 04-12-16	
4	Submit Chapter 1	4 days?	Fri 04-12-17	Wed 04-12-22	3
5	Submit Chapter 2	3 days?	Thu 04-12-23	Mon 04-12-27	4
6	System Analysis	5 days?	Mon 05-1-3	Fri 05-1-7	
7	Analize the System	5 days?	Mon 05-1-3	Fri 05-1-7	
8	System Design	37 days?	Mon 05-1-10	Tue 05-3-1	
9	Design System Interface	13 days?	Mon 05-1-10	Wed 05-1-26	
10	Pre-Presentation	1 day?	Thu 05-1-27	Thu 05-1-27	9
11	Design System Database	6 days?	Fri 05-1-28	Fri 05-2-4	10
12	Start System Coding	17 days?	Mon 05-2-7	Tue 05-3-1	11
13	System Implementation	15 days?	Tue 05-3-1	Sun 05-3-20	
14	Implement the system and testing	1 day?	Tue 05-3-1	Tue 05-3-1	
15	Present the system	1 day?	Wed 05-3-2	Wed 05-3-2	14
16	Correction and Submission on PSM	13 days?	Thu 05-3-3	Sun 05-3-20	

Appendix B: User Manual

Start the application. (CTMS – Scoring Module)

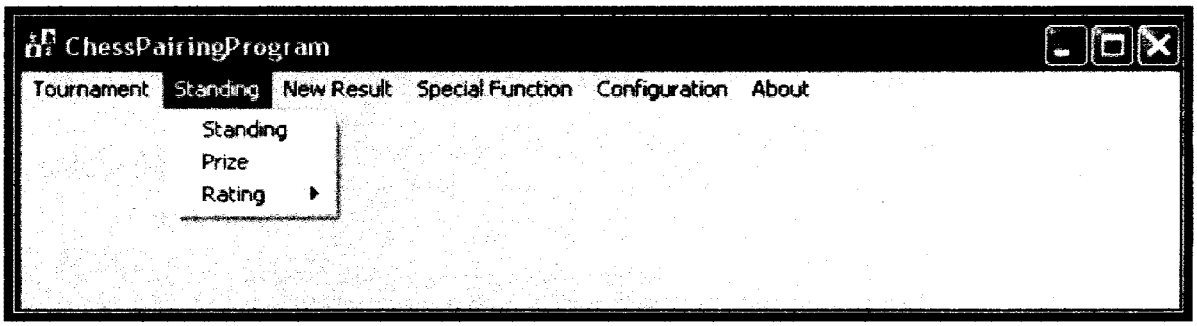


Figure 1: Main Page

To View The Standing Table for Specific Chess Tournament

1. Go to the "Standing" Menu as shown in the Figure 1.
2. Select "Standing" in the Sub-Menu as shown in the Figure 2.

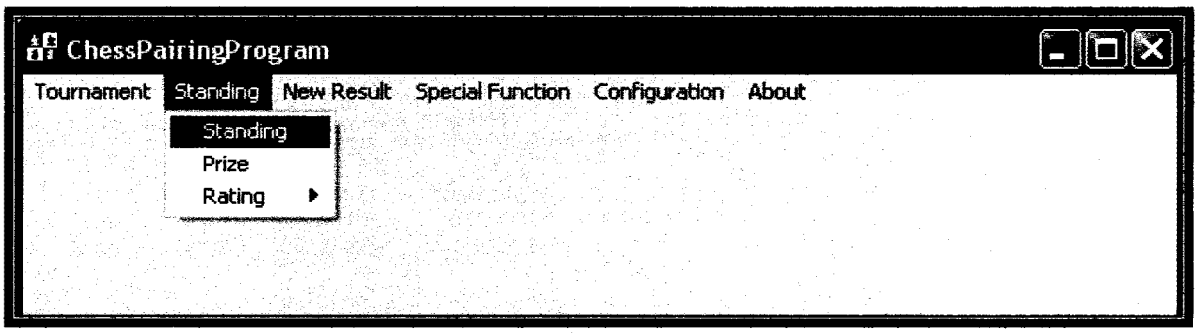


Figure 2

3. After selecting the "Standing" Sub-Menu, the following Window will appear as shown in the Figure 3.

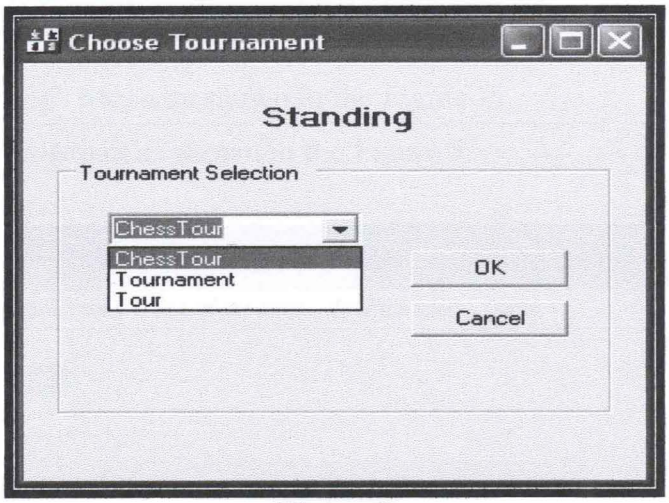


Figure 3

4. Choose the desired Tournament Standing from the ComboBox as shown in the Figure 3 and then click "OK" button.
5. After the "OK" button is clicked, the following screen will appear as shown in the Figure 4.

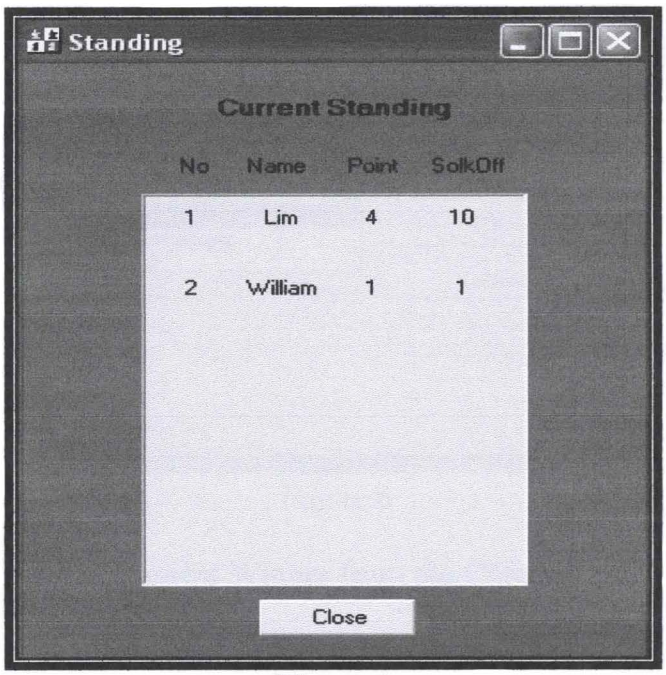


Figure 4

To View The Past/Current Chess Tournament Winner

1. Go to the "Standing" Menu as shown in the Figure 1.
2. Select "Prize" Sub-Menu as shown in the Figure 5.

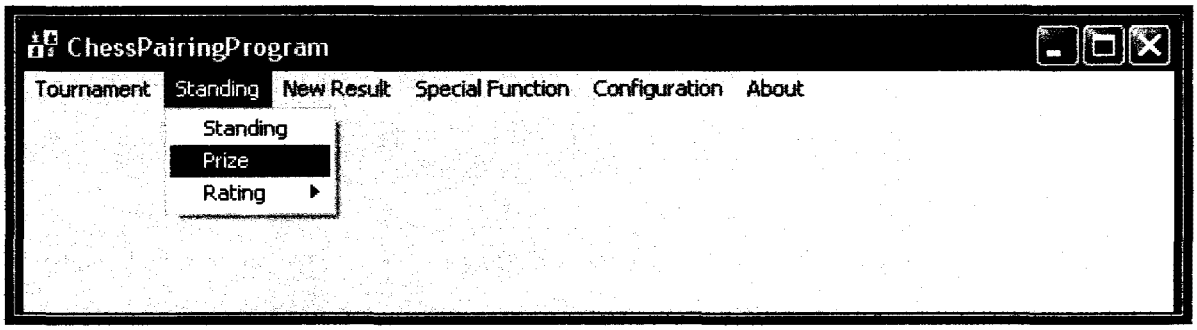


Figure 5

3. After selecting the "Prize" Sub-Menu, the following Window will appear as shown in the Figure 6

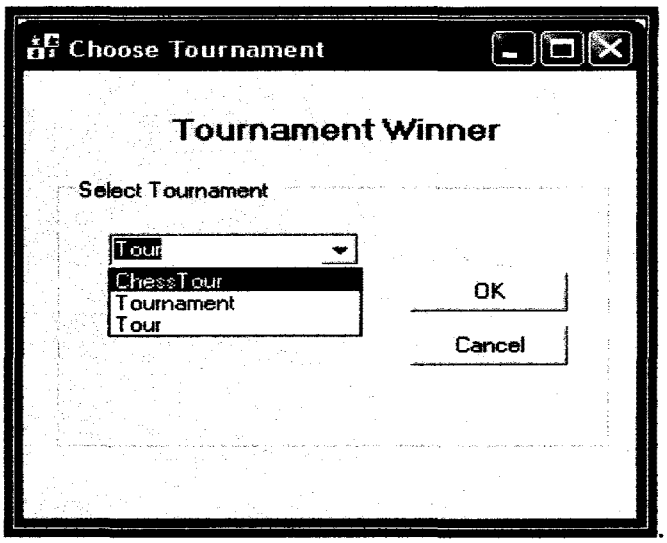


Figure 6

4. Choose the desired Tournament Winner from the ComboBox as shown in the Figure 6 and then click "OK" button.
5. After the "OK" button is clicked, the following screen will appear as shown in the Figure 7.


TournamentWinner
Tournament Winner
Champion
Tournament
Tour
Player Winning Statistic
Player Name
Ryan
Point Scored
4
SolkOff
14
Player Rating
930
Game Played
6
Win
4
Lose
2
Close

Figure 7

To View Rating For All Player/ Rating For Player In Specific Tournament

View Rating For All Player

1. Go to the "Standing" Menu as shown in the Figure 1.
2. Select "Rating" Sub-Menu and "All Player" Sub-SubMenu as shown in the Figure 8.

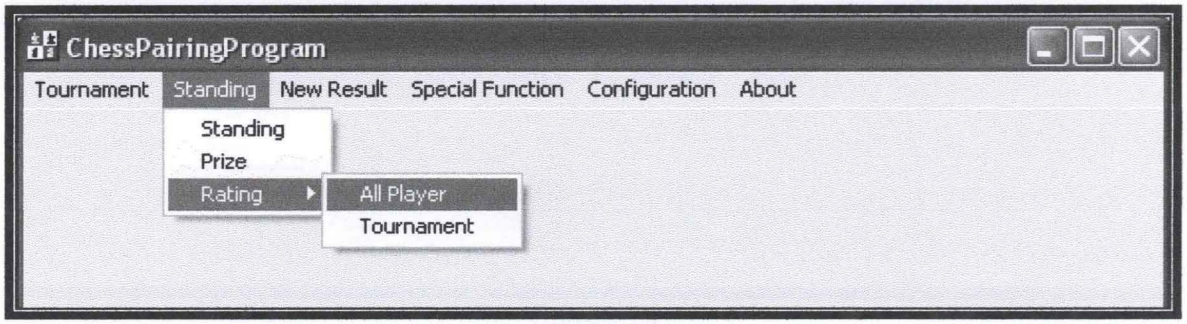


Figure 8

3. After selecting the "Rating" Sub-Menu and "All Player" Sub-SubMenu, the following Results will appear as shown in the Figure 9

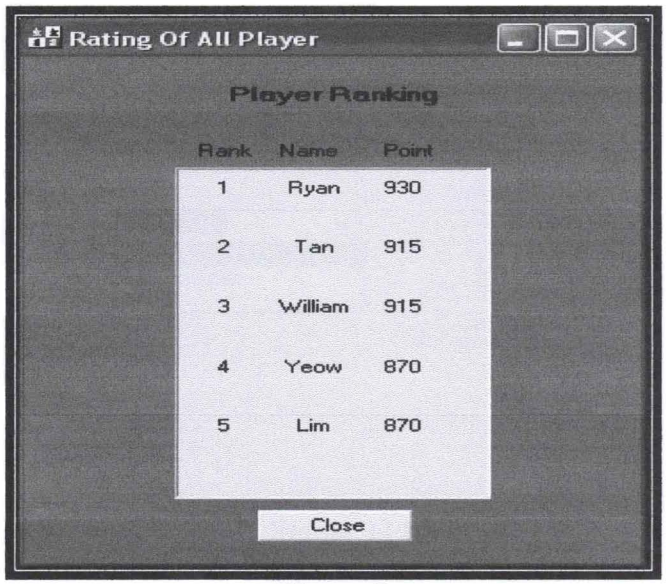


Figure 9

View Rating For Player In Specific Tournament

1 Go to the "Standing" Menu as shown in the Figure 1.

2 Select "Rating" Sub-Menu and "Tournament" Sub-SubMenu as shown in the Figure 10.

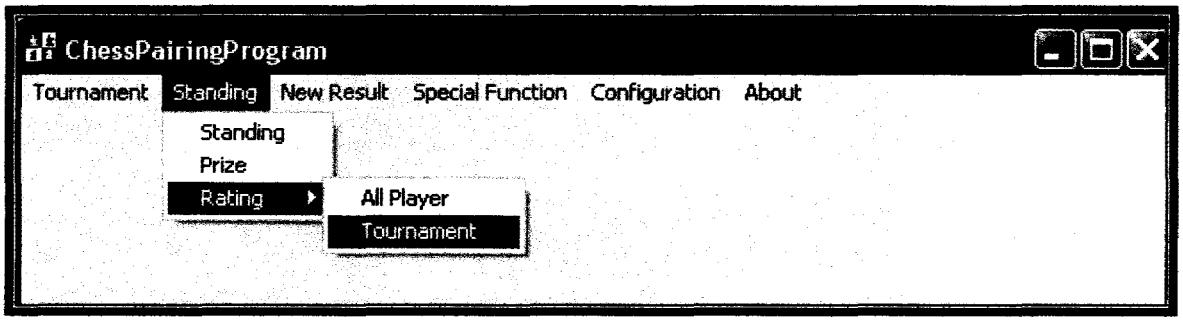


Figure 10

3. After selecting the "Rating" Sub-Menu and the "Tournament" Sub-SubMenu, the following Window will appear as shown in the Figure 11

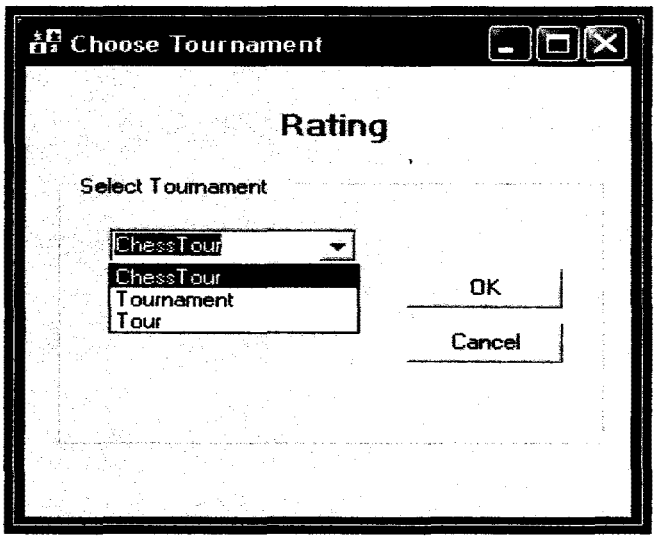


Figure 11

4. Choose the desired Tournament Rating from the ComboBox as shown in the Figure 11 and then click "OK" button.
5. After the "OK" button is clicked, the following screen will appear as shown in the Figure 12.


Tournament Rating
Tournament Ranking
Tour
Rank
Name
Point
1
Ryan
930
2
Tan
915
3
Yeow
870
Close

Figure 12

Key in result

1. Go to the "New Result" Menu as shown in the Figure 13.
2. Select "Result From Last Round" SubMenu as shown in the Figure 13.

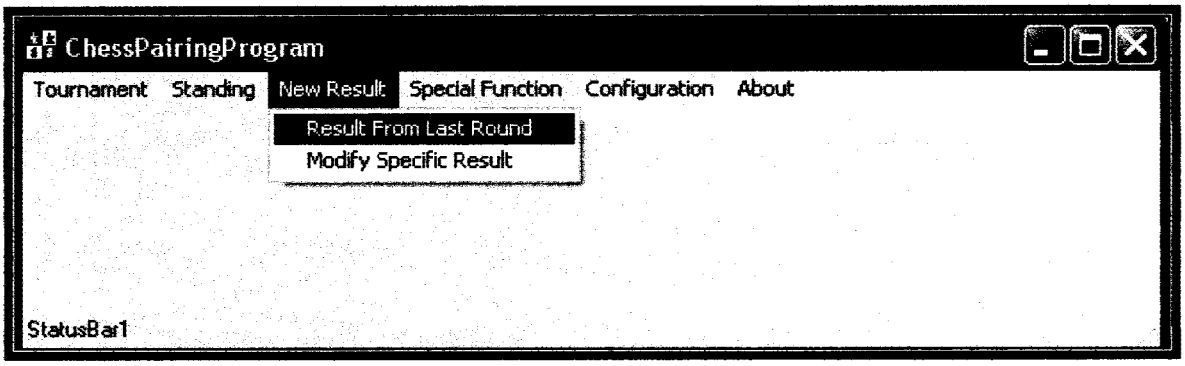


Figure 13

3□ After selecting the "Result From Last Round" Sub-Menu, the following Window will appear as shown in the Figure 14.

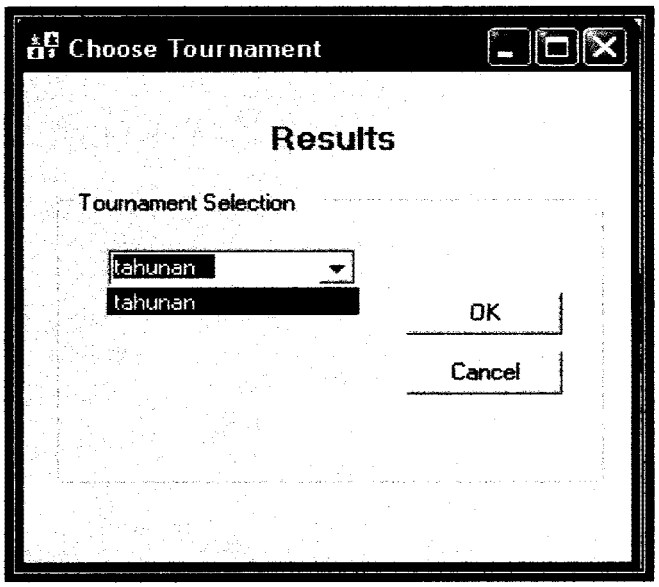


Figure 14

4□ Select the desired tournament from the ComboBox and then click "OK" button.

5. After that, key-in the result and then click "OK" button as shown in the Figure 15.

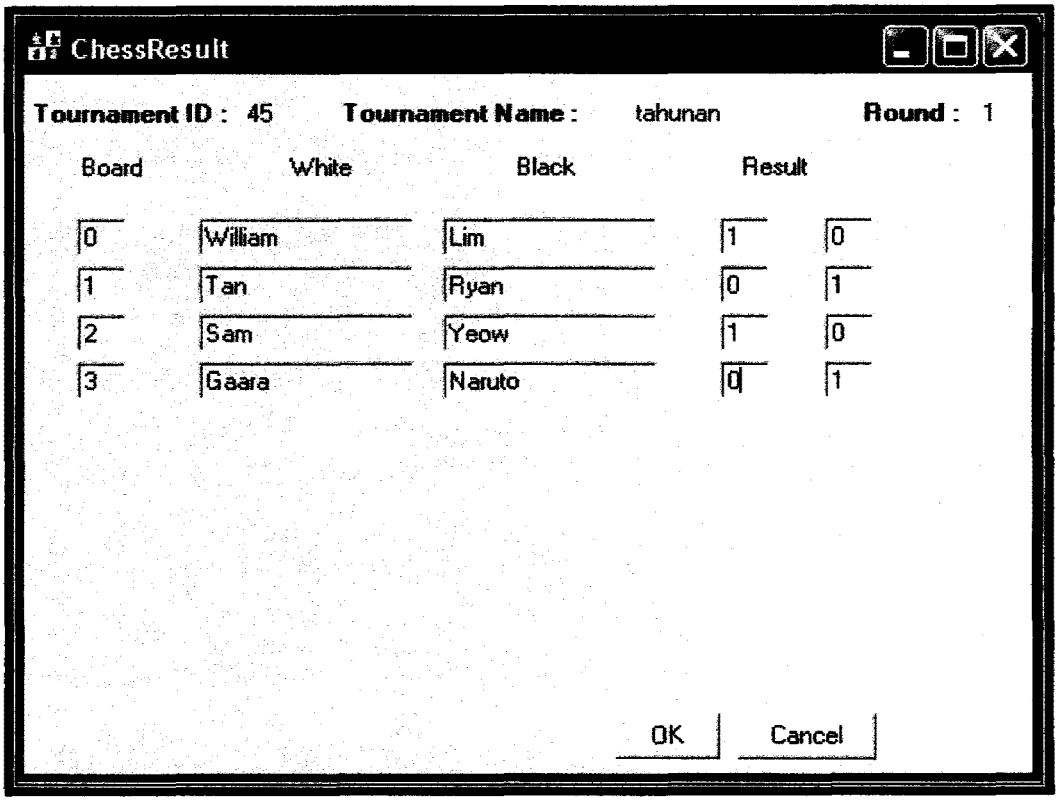

ChessResult
Tournament ID : 45
Tournament Name : tahunan
Round : 1
Board
White
Black
Result
0
William
Lim
1
0
1
Tan
Ryan
0
1
2
Sam
Yeow
1
0
3
Gaara
Naruto
0
1
OK
Cancel

Figure 14

Modified the previous round result

1. Go to the "New Result" Menu as shown in the Figure 15.
2. Select "Modify Specific Result" SubMenu as shown in the Figure 15.

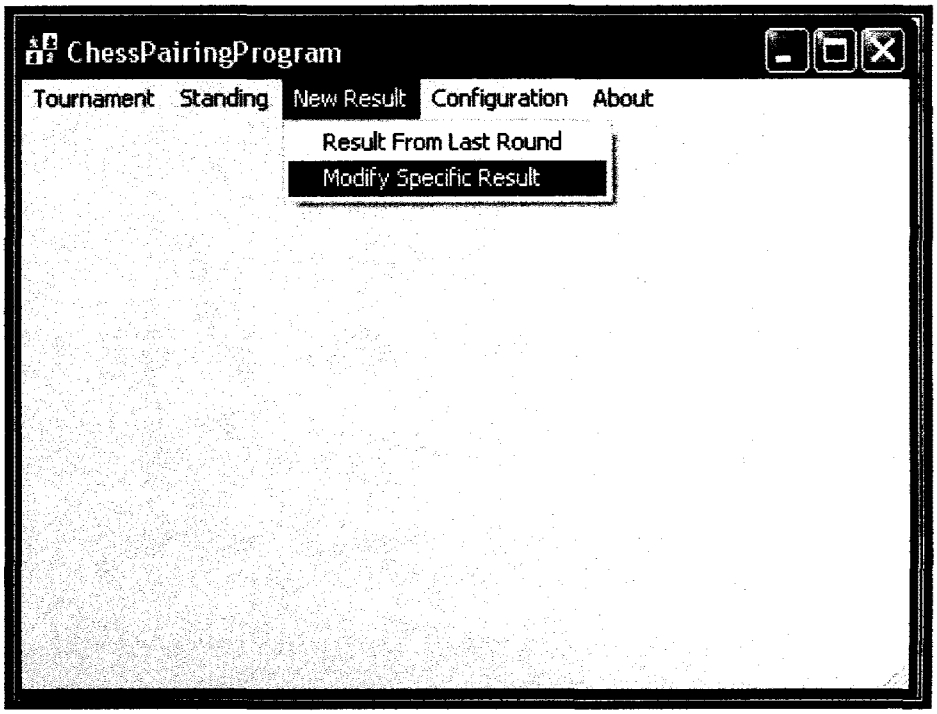


Figure 15

3. After selecting the "Modify Specific Result" Sub-Menu, the following Window will appear as shown in the Figure 16.

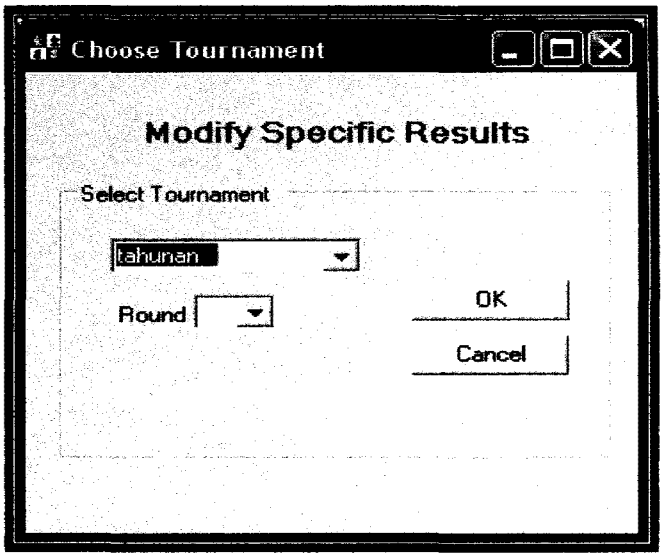


Figure 16

4. Select the desired tournament from the ComboBox and then select the round of the tournament that u wish to modify as shown at Figure 17.

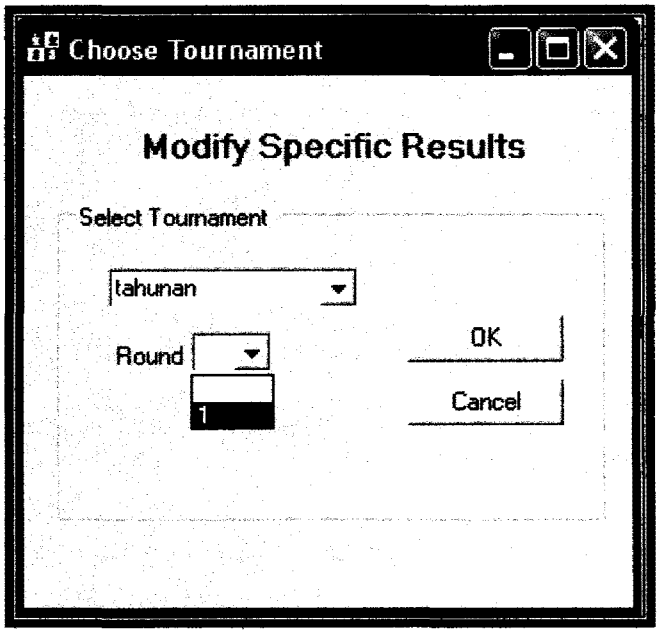


Figure 17

5. After selecting the tournament and round that u wish to modify, click the "OK" button.
6. After all, the following window will appear as seen at Figure 18.

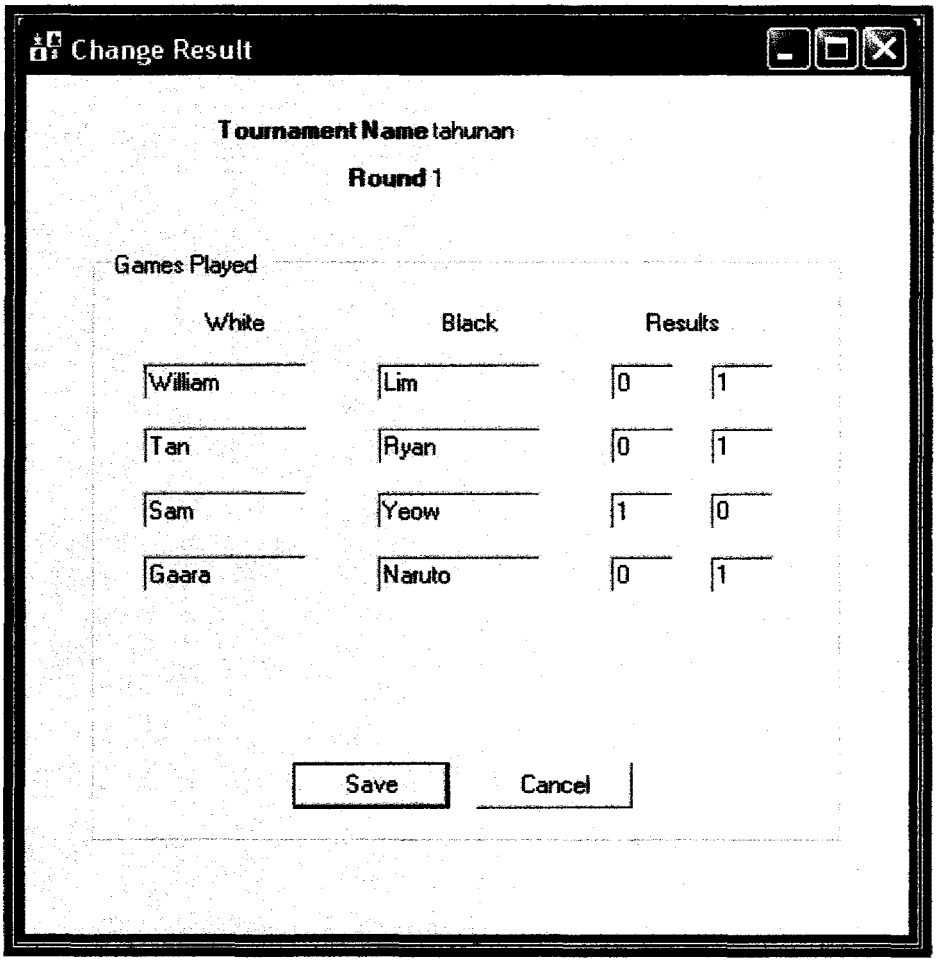


Figure 18

7. Key in the result that u wish to modify and then click "OK" button.