Database Management System for Cricketers

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Abstract :

Cricket is the most popular sport in the world. The aim of the project is to provide full details of cricket players. Player analysis reveals important details of players, team management, selection boards and other interested teams because it will lead to better judgments about the players, their strengths and weaknesses. This information is at a level of flexible statistical data for all cricket matches.

The Database Management System (DBMS) is one of the ways to store or update cricket players information. In the Database Management System (DBMS), Data is stored in the form of tables. Most player-related processing is done using data query language. The introduction of player statistics, ODI career, T20 career, Test career, batting records, bowling records, wicket keeping, etc. to users, and the ability to answer frequently asked questions by cricket players is the result of the program.

Keywords:

Cricket, Project, Information, Sensor, Statistics, DBMS, Tables, Question, Players.

1. Introduction:

The world wide web is most commonly used and largest system available for information. Different sites are used for different purpose. Most of the sites use static webpages with hyperlinks to present information the reason of that is the creation of such pages are easy.

There are many disadvantages of using these websites .e.g., unable to update information in existing pages. if we want to solve these problem then we should use DBMS. In this we created database management system for cricketers. This database contain many information like player information, batting and bowling stats in different formats(Test ,ODI, T20, Domestic).There are many other information like batting style, bowling style, average, Economy rate, player rank(Batting-Bowling both in all formats),Duration etc. Other than that controversy, maritial status, salary(gradwise), achievements, special moments of any individual are also included in model. As we are from ICT department we also included sensor table in which it measures average and highest bowling speed. At the present we are going through a COVID pandemic so for that all the players temperature should be measured. that is also included in sensor.

In this database as per the player plays the matches,information like runs,innings,wickets,average etc. will be updated.It will be easier to update the information in DBMS compare to webpages.

1.1 Our Contributions :

Our team has done resourceful work which uses DBMS in the cricketer data with real-time assumptions and acquisition of considerable information on cricketers stats; covering personal information, maritial status, controversy, Test career, ODI career,T20 career, dismissal, Domestic records, salary, achievements, special moments, thermal report ,fitness report, sensor etc.

1.2 Paper Organization :

In this paper, Section 2 gives the Literature Survey of other research papers. In section 3, we give the proposed database system such as framework and models like relational model and entity relational model. In section 4, we have given the comparative analysis using features of our paper with other research papers. Finally, in section 5, we conclude and give the future scope of this work. References are at the end.

2. Literature Survey :

I. Our database management system is predicted the performance of player rather he/she is batsman, bowler, wicketkeeper or all rounder. Like a batsman played how many deliveries and how many runs he scored, it's average, strike rate and all it's stat likewise for bowlers how many deliveries he thrown, it's wickets, economy etc.

II. In our system we specialized format of matches for instance test match, ODI, T20I. so we clearly see in which format which player do well and it will be easy for team selection and also for player who can improve himself by seeing this stats.

III. Our project is sensor based which is special feature. Sensors like thermal sensor and fitness sensors. Fitness sensor measure fitness of players, it's workout, how much calorie he burnt, it's consistency and stamina. It will be useful to decide player's diet so he can give his maximum output. Thermal sensor measure humidity and give idea of weather and its condition during match time.

IV. Strength and weakness is also important to improve batting or bowling. Our system also predict data how player dismissed and to better performance of player one important thing is improve his skill by strength

and weakness player will predict himself and also do analysis for how he will bat or bowl.

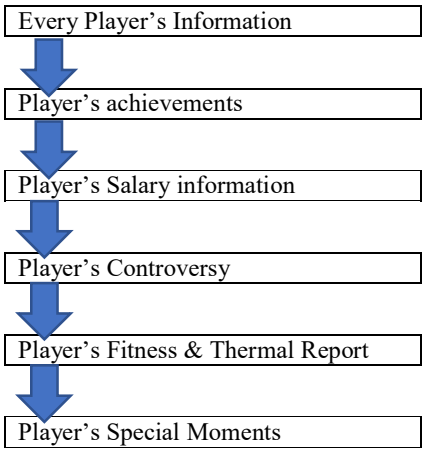
V. Our database system keep all records of all players so that it will be helpful for nominate players for any awards and here main thing is DBMS we just write a query and we will fetch the output while in file system it takes tremendous time. For player of the year and player of the decade, things will very easy to analyse.

3. Proposed System:

3.1 Frame work:

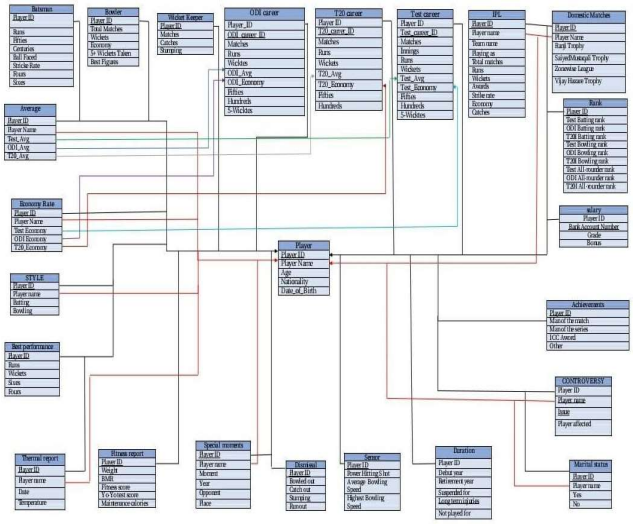
Here in our system, how database management system is useful in Cricket management system and how it time reducible against file system. There are many points like data redundancy, inconsistency, data isolation, security, difficulty in access data, integrity problem, concurrency and atomicity of update etc. There are lot of data and it takes lots of time for search for something now a days Database Management System is quite is to simulate such queries for desired output.

Here we are going to look into certain Data as Given Below: -

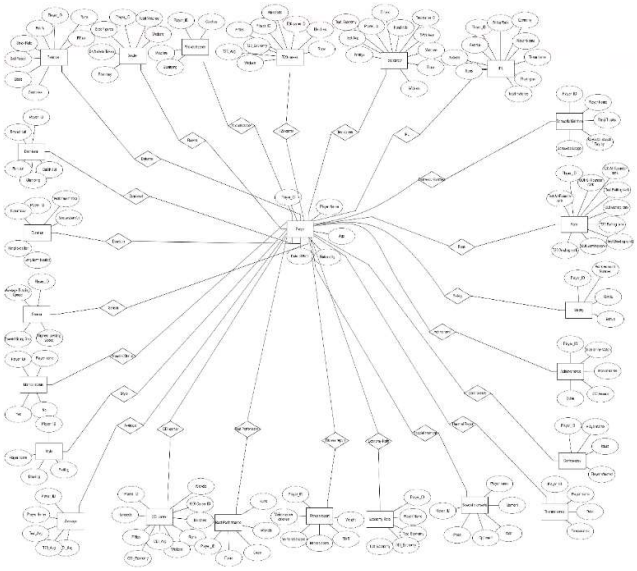


In this Relational model we have many tables like information of Batsman, Bowler, Wicket keeper in batsman table there is a data of player id, total number of matches, total runs, total number of Centuries & half centuries, Best Scores etc. In the Bowlers Table there is information of total matches, total wickets taken, Best Figure of bowler etc.in the wicket keeper table there are data of total matches, catches taken and total stumping. In our model there are separate table for ODI, T20, Test Match, IPL, Domestic Match.in this tables there is a data of every players in different series. there is a data of total matches, Runs, Wickets, average, economy, Best Score, Best Figures etc for every Series of Match. There are separate table for Rank in every match series for that player There are table for achievement in that table we have data of man of the match, man of the series, ICC awards etc. in this model also we have a data of salary for every player like bank account number and grade of salary, Yearly Bonus. There are separate table for Average, Economy Rate, Batting and Bowling Style Right-handed or left-handed, Best performance in Batting and Bowling, also there are table for dismissals like Bowled out stump out or catch out etc. Also, there are Controversy Table for which there is a data of what is the Issue, How Player affected. In the Duration Table there is a data for Duration of that Cricket Player if there is any long-term Injuries, Debut Year, Suspended for any reason and any other reason. In this Thermal and Fitness Report table. In this thermal table is very important in this Covid Situation In this we have a data for Player temperature with date. Fitness Report there is a data for fitness for every player like Wight, BMR, yoyo test score, maintains calories. In the sensor table there is data for power hitting shot speed and Highest bowling speed and average Bowling Speed. We translated Relational model into E-R model. Now we are ready to Decode some SQL Queries so we are using latest version of XAMPP.then we are creating the table in that XAMPP Server then we are making some entries of data for Run the SQL Queries.

3.2 Relational Model :



3.3 Entity-Relation Model :



* zoom view of relation model and entity-relation model is at end of our paper.

4. Experimental Analysis :

Queries have shown for some situations its output in database. To be helpful in understanding database how it deeply linked.

a) To determine the absolute value from bowlers economy :-

SELECT ABS(Economy) FROM bowler;

ABS(Economy)
2.5161290168762207
2.3017752170562744
3.3381295204162598
2.025423765182495
3.127819538116455

b) To determine the last date of players birthday month.

SELEC Player_ID,Date_of_Birth,LAST_DAY(Date_of_Birth)AS LAST_DAY_OF_MONTH FROM player;

Player_ID	Date_of_Birth	LAST_DAY_OF_
1	1983-04-12 00:00:00	1983-04-30
2	2000-07-30 00:00:00	2000-07-31
3	1988-09-17 00:00:00	1988-09-30
4	1987-04-23 00:00:00	1987-04-30
5	1980-03-31 00:00:00	1980-03-31

c) To determine player id performing best runs grater then 160.

```
SELECT `Player_ID`, `Runs`
FROM `best performance`
HAVING Runs > 160
ORDER BY `Runs` DESC;
```

d) To determine player id and runs having some conduction shown in code.

```
SELECT `Player_ID`  FROM `player`
 WHERE EXISTS ( SELECT player_ID FROM `best performance` WHERE player.Player_ID=`best performance`.`Player_ID` AND `best performance`.`Sixes`>9);
```

E) To determine player id and runs grater then 170.

```
SELECT `Player_ID`, `Runs`
FROM `best performance`
HAVING Runs > 170
ORDER BY `Runs` DESC;
```

Comparative analysis table

study done by	features															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Kalpdrum Passi and Niravkumar Pandey Department of Mathematics and Computer Science Laurentian University, Sudbury, Canada	yes	yes	yes	yes	yes	yes	no	no	yes	yes	no	no	no	no	yes	no
Sricharan Shah, Partha Jyoti Hazarika and Jiten Hazarika Department of Statistics Dibrugarh University Dibrugarh, Assam,	yes	yes	yes	no	yes	no	no	no	yes	yes	no	no	no	no	yes	no
Student, MBA, Assistant Professor, Symbiosis School of Sports Sciences, Symbiosis International (Deemed University), Pune, Maharashtra, India	yes	yes	yes	no	no	no	no	no	no	no	no	no	no	no	yes	no
students of Department of Computer Science and Engineering Institute of Engineering and Technology JK Lakshmipat University, Jaipur, India	yes	yes	yes	no	yes	yes	no	no	no	no	no	no	no	no	no	no
Peter Totterdell University of Sheeld, UK	yes	yes	yes	no	yes	yes	yes	no	yes	no	no	no	no	no	no	no
Dr Craig Ranson, Cardiff School of Sport, Cardiff Metropolitan UniversityUWIC, Cyncoed, Cardiff, Wales CF23 6XD, UK;	yes	yes	yes	yes	yes	yes	yes	no	yes	no	no	no	yes	no	no	no
our approach	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Legends	Meaning
feature 1	Average of the cricketer
feature 2	Economy of cricketer
feature 3	Centuries
feature 4	stumping
feature 5	Player name
feature 6	Rank of player in different formats
feature 7	Debut year, retirement year and long term injury of the player
feature 8	Salary and bonus of the player
feature 9	Best performance and reward of the player
feature 10	Some special moments of players.
feature 11	Temperature and fitness level of player
feature 12	Gives the matter in which player is involved
feature 13	Sensing of average bowling speed, highest bowling speed
feature 14	Whether player married or not
feature 15	Domestic leagues played by individual
feature 16	Dismissal in different ways

5. Conclusion and Future work :

The study presented the easy and simple approach for organizing all the data regarding cricketers in DBMS domain. This approach is used to overcome the problems faced in file system. We can easily stack up information and retrieve whenever needed through this system. The system represent everything in a very systematic way, information is divided in different tables and attributes to segregate them very easily through simple queries. The problem of storing such a big data in file system is solved by DBMS. Ontologies are stored in DBMS for efficient maintenance, sharing and scalability. Relational database to achieve maturity, performance, robustness, reliability and availability. System uses the different semantic matching operators for searching data and is simplified because of relational database features. We have included many unique features in our system other than the existing systems. We have include temperature table as in covid's era it is mandatory for measuring temperature of every player. We have also included tables for controversy and marital status for reference. The sensor table is also there to measure the bowling speed and shot hitting speed for players. Table for domestic matches is there which can be easy for keeping track on players' past performances and for selections. A dismissal table is included just for tracking and improving players' performance on field. Studies carried out earlier, their features and our approach everything is included and showed in this study.

References :

1. Semantic Search using Ontology and RDBMS for Cricket, International Journal of Computer Applications (0975 – 8887) Volume 46– No.14, May 2012

2. Improved Mole Cricket Management Through an Enhance Understanding of pest Behavior ACS Symposium SeriesVol. 743, December 29, 1999

3. Cricket Squad Analysis Using Multiple Random Forest Regression 2019 1st International Conference on Advances in Information Technology (ICAIT), 10 February 2020

4. Design, Development, and Evaluation of an Injury Surveillance App for Cricket: Protocol and Qualitative Study, JMIR Publications 22.1.2019 in Vol 7, No 1 (2019): January

5.https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.735.5190&rep=rep1&type=pdf

6. https://github.com/Salil1896/Cricket-Database-Management

7. Eeswara M.P., "Internet based Statistical Information System for Cricket", B.Sc. dissertation, University of Colombo, Colombo, Sri Lanka, 1998.

8. Cricinfo, "The home of Cricket", http://www.cricket.org

9. https://www.researchgate.net/profile/Gihan-Wikramanayake/publication/216361330_Internet_Based_Information_System_for_ODI_Cricket/links/0912f5119998e8ff8b000000/Internet-Based-Information-System-for-ODI-Cricket.pdf

10. International Journal of Recent Advances in Multidisciplinary Topics Volume 2, Issue 4, April 2021 https://www.ijramt.com | ISSN (Online): 2582-7839

11. R. P. Schumaker, O. K. Solieman, H. Chen, Predictive Modeling for Sports and Gaming," in Sports Data Mining, Boston, Massachusetts: Springer, vol. 26, 2010.

12. R. L. Holder and A. M. Nevill, "Modelling performance at international tennis and golf tournaments: is there a home advantage?" Journal of the Royal Statistical Society: Series D (The Statistician), vol. 46, no. 4, pp. 551–559, 1997.

13. H. H. Lemmer, "A measure for the batting performance of cricket players: research article," South African Journal for Research in Sport, Physical Education and Recreation, vol. 26, no. 1, 2004.

14. Balasaheb. T, Maman. P, Sandhu J. S, The impact of visual skills training on batting performance in cricketers. Serbian Journal of Sports Sciences, vol. 2, no. 1, pp. 17-23, 2008.

15. Chatterjee T, Raizada S, et al (2020): Evolution of Test cricket in the last two decades, Ann Trop Med & Public Health; 23(S17): SP231749. DOI:http://doi.org/10.36295/ASRO.2020.231749

16. A Study on Performance of Cricket Players using Factor Analysis Approach by Sricharan Shah, Partha Jyoti Hazarika and Jiten Hazarika Department of Statistics Dibrugarh University Dibrugarh, Assam. https://www.researchgate.net/publication/333669213_A_Study_on_Performance_of_Cricket_Players_using_Factor_Analysis_Approach

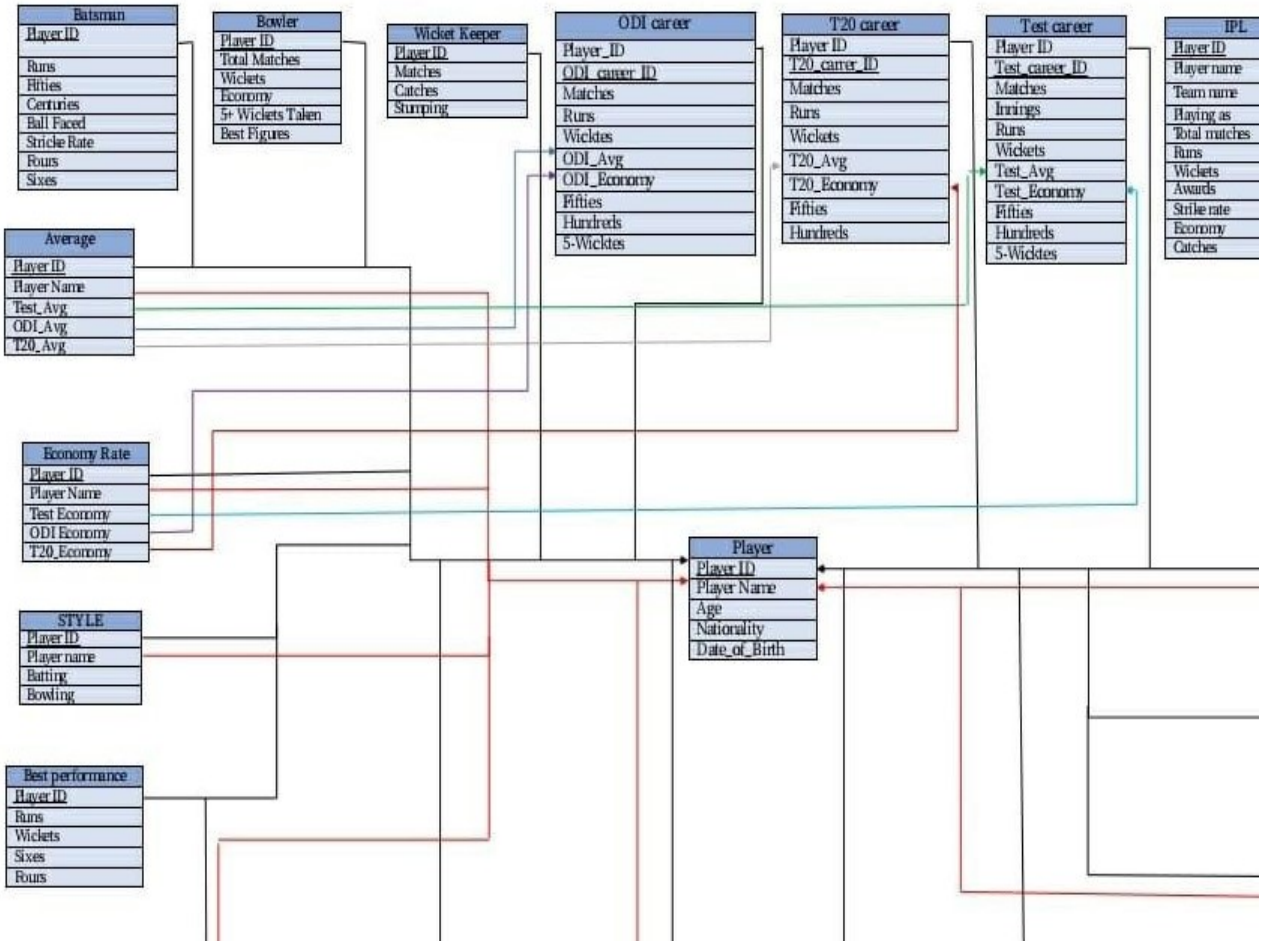
17.Mood scores: Mood and performance in professional cricketers by Peter Totterdell, University of Sheffield, UK

https://www.researchgate.net/profile/PeterTotterdell/publication/234066121_Mood_scores_Mood_and_performance_in_professional_cricketers/links/5a444d43aca272d2945c18c6/Mood-scores-Mood-and-performance-in-professional-cricketers.pdf

18.International cricket injury surveillance: a report of five teams competing in the ICC Cricket World Cup 2011 BJSM Online First, published on February 16, 2013 as 10.1136/bjsports-2012-091783 Published by group.bmj.com

19.International Journal of Data Mining & Knowledge Management Process (IJDKP) Vol.8, No.2, March 2018 INCREASED PREDICTION ACCURACY IN THE GAME OF CRICKET USING MACHINE LEARNING By Kalpdrum Passi and Niravkumar Pandey Department of Mathematics and Computer Science Laurentian University, Sudbury, Canada

20.International Journal of Advanced Science and Technology Vol. 29, No. 6, (2020), pp. 1574-1579 An Analysis of Batting Performance of the Cricket Player By Harshita Khangarot, Alok Kumar, Department of Computer Science and Engineering Institute of Engineering and Technology JK Lakshmipat University, Jaipur, India.



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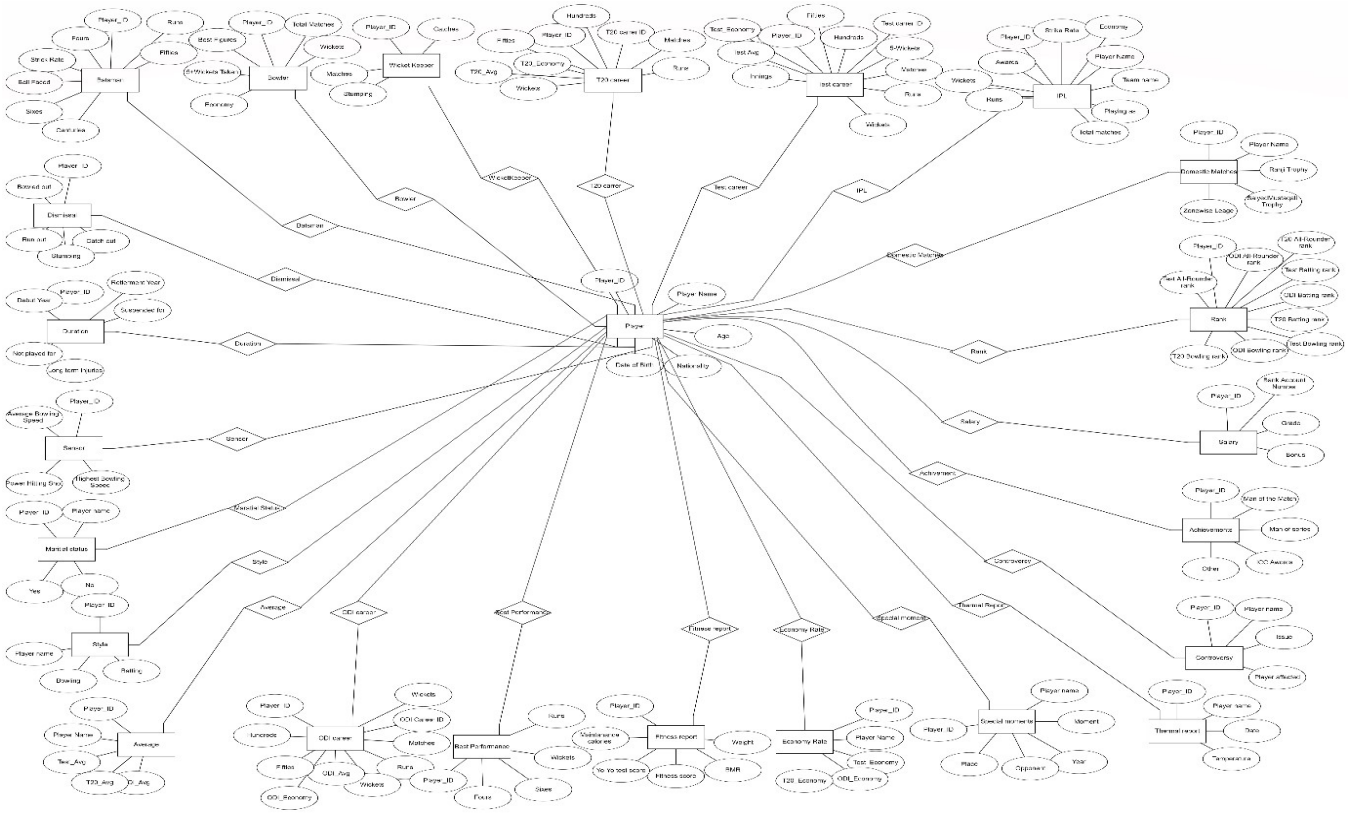

3.3 Entity-Relation Model